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ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

Big Bend Power Station Economizer Ash and Pyrite Pond System 13031 Wyandotte Road Gibsonton, FL 33572

Prepared for

TECO Tampa Electric Tampa, FL

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ACRONYMS

BBS	Big Bend Station
CCR	Coal Combustion Residuals
CCR Rule	Coal Combustion Residuals Rule
CFR	Code of Federal Regulations
EAPPS	Economizer Ash and Pyrite Pond System
GWPS	Groundwater Protection Standard
PE	Professional Engineer
RCRA	Resource Conservation and Recovery Act
SP	Statistical Analysis Plan
SSI	Statistically Significant Increase
TEC	Tampa Electric Company
USEPA	United States Environmental Protection Agency

1. BACKGROUND

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 October 14, 2015. The rule 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, Gibsonton, Florida (**Figure 1**).

This document has been prepared to meet the requirements of 40 CFR 257.90(e) concerning the Annual Groundwater Monitoring and Corrective Action reporting required by the CCR Rule for the EAPPS and BBS. At a minimum, the annual groundwater monitoring and corrective action report must contain the information described below and the information required by 257.90(e)(1) through (5), to the extent available.

"For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2018, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action report. For new CCR landfills, new CCR surface impoundments, and all lateral expansions of CCR units, the owner or operator must prepare the initial annual groundwater monitoring and corrective action report no later than January 31 of the year following the calendar year a groundwater monitoring system has been established for such CCR unit as required by this subpart, and annually thereafter. For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. For purposes of this section, the owner or operator has prepared the annual report when the report is placed in the facility's operating record as required by § 257.105(h)(1)"

This annual report covers the period January 1, 2019 through December 31, 2019. Sections of this report that are required by the CCR Rule but are not applicable for the reporting period, contain the text "Not applicable for this annual reporting period".

Site features, geology, lithology, design of the CCR monitoring well network, the Sampling and Analysis Plan including requirements, procedures, documentation, laboratory analytical procedures and quality control, and the Quality Assurance Plan are provided in the *CCR Rule Groundwater Monitoring Program Plan (GWMP)*, *Big Bend Power Station*, (October 2016).

2. SITE DESCRIPTION

2.1 Site Setting

The BBS is located on the eastern shore of Tampa Bay in Sections 9, 10, 15, and 16, Township 31, Range 19 East of the Gibsonton Quadrangle, with the center of the facility at approximately 27°47'36" north latitude and 82°24'16" west longitude and encompasses approximately 1,492 acres. Topography at the Site ranges from approximately sea level (along the western portion of the BBS) to approximately 10 feet mean sea level (MSL) near the eastern portions of the property along U.S. Highway 41. The location of the BBS and the components of the EAPPS, namely the north and south economizer ash ponds and the suction pond, are shown on **Figures 1** and **2**.

Construction of BBS began in the late 1960s on two dredge/fill peninsulas. Four coal-fired power generating units are present at the BBS and were placed into service in 1970, 1973, 1976, and 1985. Units 1, 2, and 3 are wet-bottom slag-tap type units that originally used saltwater slag-handling systems and electrostatic precipitators for stack gas emissions control. However, these units are now operating as freshwater systems that allow more internal water recycling. Unit 4 is a dry-bottom unit with a closed-loop freshwater ash-sluice system. All units are equipped with electrostatic precipitators and stack gasses are treated with limestone flue gas desulfurization (FGD) and selective catalytic reduction (SCR) systems.

2.2 CCR Units

The EAPPS was built in the early 1980s to support the operation of Big Bend Unit 4 and consists of three lined ponds. The EAPPS is considered one CCR unit by 40 CFR 257.53 and is located approximately 1,000 feet southeast of the active power generating units (**Figure 1**). The EAPPS ceased operation in April 2018. Economizer ash from Unit 4 is now combined with bottom ash and the combined product is stored in the Bottom Ash Ponds at the site for beneficial reuse.

The pond bottom and dike crest elevations for each pond are reportedly 5.5 ft NGVD and 31 ft, NGVD respectively. The South Economizer Ash Pond contains an estimated 337,400 cubic yards (cy) of CCR material over a surface area of 7.2 acres. The north pond contains an estimated 90,000 cy of CCR material (Geosyntec, 2016) over a surface area of 5.4 acres. Closure activities, including dewatering, commenced on the EAPPS in December 2019 and will continue until completion in 2021.

2.3 Summary of Site Geology and Hydrogeology

The units that form the hydrogeologic framework in the region include the surficial aquifer system (SAS), the Intermediate Confining Unit (ICU), and the upper Floridan aquifer system (UFAS). Based on Site-specific data as well as hydrogeologic studies of west-central Florida, the intermediate aquifer system has not been identified as being present at this location (Tihanksy and Knochenmus, 2001).

The SAS sediments consist of Pleistocene shell deposits and terrace sands. Due to the irregular surface of the underlying limestone, the SAS varies in thicknesses but typically

ranges between 20 and 30 feet (ft) thick in the area of the Site (SWFWMD, 2010). Groundwater (the water table) in the SAS is unconfined. The groundwater flow direction in the SAS is generally towards Tampa Bay as the discharge point; however, flow direction is influenced by various surface water features including ponds, drainage ditches, canals, and small creeks locally. Upward vertical flow gradients from the UFAS to the SAS are common based on historical data trends, and in certain cases can lead to artesian conditions (ECT, 2003; 2007).

The ICU resides within the undifferentiated Hawthorn Group. Due to the absence of the intermediate aquifer system, the permeable strata are absent and consequently the less permeable, fine grained clastic clay units are generally more prevalent. These clay units with varying silt, sand content, and marls comprise the semi-confining unit that separates the SAS and the UFAS.

The UFAS consists of a continuous series of carbonate units and is composed of the limestone sequences that occur in the Tampa Member of the Arcadia Formation of the Hawthorn Group as well as the underlying Suwannee Limestone and other carbonate strata. The Tampa Member encompasses sandy limestone containing varying amounts of clays and marls. The thickness of the UFAS may exceed 1,200 ft beneath the facility. Groundwater in the UFAS generally flows regionally from northeast to southwest towards Tampa Bay.

The *GWMP* may be consulted for additional details regarding the regional and Site-specific geology and hydrogeology.

2.4 Aquifer System Description

2.4.1 Identification of Uppermost Aquifer

The uppermost aquifer is defined by § 257.91(a)(1) as the geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically interconnected with this aquifer within the facility's property boundary. The uppermost aquifer at the Site is the SAS.

2.4.2 Groundwater Flow Direction

A surface water feature, Jackson Branch, to the north/northeast of the EAPPS appears to influence local groundwater flow toward the stream in contrast to the general groundwater flow direction at the BBS, which is east to west. The groundwater flow direction near the EAPPS has consistently been north to northeast, as shown in **Figure 3** from groundwater elevations generated during the September 2019 detection monitoring event.

2.4.3 Groundwater Flow Rates

The average linear velocity of groundwater in the SAS at the EAPPS ranges from 0.03 to 0.07 ft/day¹. This flow velocity corresponds to a range of flow velocities from approximately 12

 $^{^{1}}$ Based on average hydraulic conductivity of 3.4 feet/day for SAS deposits, a porosity of 0.2 for sand, and horizontal hydraulic gradients between 0.002 and 0.004.



to 27 feet per year. An approximate groundwater flow velocity of 20 feet per year was estimated using the September 17, 2019 groundwater level measurements.

3. GROUNDWATER MONITORING SYSTEM

The groundwater monitoring system (GMS) installed at the EAPPS was designed to monitor the water quality in the SAS upgradient of the EAPPS to evaluate background concentrations and downgradient of the EAPPS to evaluate the potential effects of a release. The documentation for the design, installation, and development of these wells is found in *Groundwater Monitoring Well Design, Installation, Development, and Decommissioning Report, October 2017.* The GMS consists of two background monitoring wells (identified as BBS-CCR-BW1 and BBS-CCR-BW2) located hydraulically upgradient of EAPPS. The background monitoring wells were used to derive background concentrations for Appendix III constituents. Three monitoring wells (identified as BBS-CCR1, BBS-CCR-2, and BBS-CCR-3) are located at the waste boundary and at the "hydraulically downgradient perimeter (i.e., the edge) of the CCR unit or at the closest practical distance from this location" [80 FR 21400]. The screen intervals are at or below the actual depth of CCR material in the upper portion of the SAS and therefore meet the performance standards specified in 257.91(a) through (d). The locations of the monitoring wells comprising the GMS are shown on **Figure** 2.

3.1 Status of the Groundwater Monitoring and Corrective Action Program

Groundwater monitoring was initiated at the EAPPS in June 2016 in accordance with the requirements of 40 CFR 257.90(b). Ten sampling events were conducted as part of baseline monitoring between June 2016 and August 2017. The first detection monitoring event was conducted in October 2017 and resulted in statistically significant increases (SSIs) in groundwater pH above the established upper prediction limit at two downgradient monitoring wells. An Alternate Source Demonstration (ASD) was prepared in April 2018 to document that the SSIs for pH were not associated with the EAPPS. The statistical analyses of each semi-annual detection monitoring event confirm that elevated groundwater pH at downgradient monitoring wells are within the local background range of pH. Therefore, detection monitoring continued in March 2019 and September 2019, as assessment monitoring was not required.

3.2 Identification of Monitoring Wells Installed, Abandoned, or Decommissioned -257.90 (E)(2)

The monitoring wells comprising the GMS for compliance with the CCR Rule were installed in May 2016 to meet the groundwater monitoring system requirements in 257.91. A monitoring well construction summary is provided in **Table 1**.

In 2018, no additional monitoring wells were installed, and none of the existing monitoring wells in the GMS were abandoned or decommissioned.

4. SUMMARY OF 2019 CCR RULE ACTIVITIES COMPLETED

4.1 Requirements Completed

The actions completed during this reporting period are summarized below.

- The evaluation of the semi-annual groundwater monitoring data for SSIs over background levels for the constituents listed in Appendix III of 40 CFR Part 257, as required by §257.94, was completed in January 2019 (third detection monitoring event), July 2019 (fourth detection monitoring event), and December 2019 (fifth detection monitoring event).
- Initial construction activities to support the EAPPs closure project commenced in December 2019.

4.2 **Completion of Required Reports**

The following reports were completed during the reporting period:

- Summary of Results Third Detection Monitoring Event, Economizer Ash and Pyrite Pond System, Big Bend Station, January 2019.
- Annual Groundwater Monitoring and Corrective Action Report, Big Bend Power Station Economizer Ash and Pyrite Pond System, January 2019.
- Summary of Results Fourth Detection Monitoring Event, Economizer Ash and Pyrite Pond System, Big Bend Station, July 2019.
- Summary of Results Fifth Detection Monitoring Event, Economizer Ash and Pyrite Pond System, Big Bend Station, December 2019.

4.3 Problems Encountered and Resolution

During preliminary closure design activities, several of the monitoring wells in the groundwater monitoring system were identified as requiring abandonment due to their locations in construction areas. The monitoring wells will be abandoned in accordance with state and federal requirements in 2020 to facilitate construction.

5. GROUNDWATER MONITORING DATA - 257.90(E)(3)

5.1 Detection Monitoring

Detection monitoring (Appendix III) parameters (**Table 2**) were evaluated to assess the potential release of CCR from the EAPPS into groundwater. Detection monitoring samples were collected semi-annually from each background and compliance well and analyzed for Appendix III constituents.

The fourth and fifth detection monitoring events were conducted in March 2019 and September 2019. The Appendix III and Appendix IV analytical results from the two detection monitoring events are provided in **Table 3** with the baseline monitoring results generated at the EAPPS between June 2016 and October 2017. Summary tables of the field parameters and Appendix III and Appendix IV groundwater monitoring results since June 2016 are provided in Table A-1 and Table A-2, respectively, in Appendix A. The analytical laboratory reports for the March 2019 and September 2019 are provided in **Appendix B** and **Appendix C**, respectively.

5.1.1 Alternative Monitoring Frequency – 257.94(d)(3)

Not applicable for this annual reporting period.

5.1.2 Identification of Appendix III Constituents Detected at SSI Over Background – 257.94(e)

Groundwater pH has been the only Appendix III constituent reported above background concentrations in each of the detection monitoring events conducted in 2019, which is consistent with the 2018 findings. Groundwater pH was documented above the 95% upper prediction limit (UPL) at BBS-CCR-1 in the fourth (March 2019) detection monitoring event and above the UPL at BBS-CCR-1 and BBS-CCR-2 in the fifth (September 2019) detection monitoring event; the fifth (September 2019) detection monitoring event also indicated a groundwater pH below the lower prediction limit (LPL) at BBS-CCR-3. These exceedances of groundwater pH do not represent an SSI due to the findings from the 2018 ASD discussed in Section 5.1.3.

5.1.3 Alternate Source Demonstration – 257.94(e)(2)

In April 2018, an ASD was successfully completed and certified by a Professional Engineer to address SSIs of groundwater pH at BBS-CCR-1 and BBS-CCR-2 in accordance with 40 CFR.94(e)(2). The groundwater pH SSIs were shown to be a result of alternate sources, which continued to be the case in 2019.

5.1.4 Transition from Detection to Assessment Monitoring – 257.90(e)(4)

The detection monitoring program for the groundwater monitoring system was initiated in October 2017 pursuant to §257.90(b). Because of the successful ASD completed in April 2018 in accordance with §257.94(e)(2), the EAPPS remained in detection monitoring.

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5.2 Assessment Monitoring

None of the provisions of 40 CFR 257.95 are applicable for this annual reporting period.

6. DATA USABILITY EVALUATION

The Appendix III and Appendix IV groundwater results were reviewed based on the following references:

- *CCR Groundwater Monitoring Program Plan*, Big Bend Power Station, September 2016;
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, August 2014 (OSWER 9355.0-131, EPA 540-R-013-001);
- the applicability and appropriateness of the analytical methods referenced by the data package; and
- professional and technical judgment by the data validation team.

A Stage 2A data validation report evaluating the quality control (QC) parameters was generated for each detection monitoring event. Additional data qualifiers generated from the data validation were applied where appropriate. The groundwater data generated from each detection monitoring event was deemed usable for meeting the project objectives.

The data validation reports for the fourth and fifth detection monitoring events are included with the statistical analysis summary memoranda in **Appendix C**.

7. DETECTION MONITORING STATISTICAL ANALYSIS

The statistical analysis of the fourth (March 2019) and fifth (September 2019) detection monitoring data was performed in accordance with the *CCR Statistical Analysis Plan*. The statistical approach employed is based on the following findings documented in the *Summary of Statistical Analyses of Baseline Groundwater Samples* (15 January 2018).

- The baseline dataset revealed that each of the Appendix III constituents exhibited a non-parametric distribution among the two background monitoring wells.
- The two background monitoring wells exhibited spatial variability for all the Appendix III constituents.
- An intra-well comparison could not be performed due to the absence of groundwater data at the EAPPS representative of pre-operational conditions.
- The data from the two background monitoring wells were aggregated to create a pooled background dataset.
- The 95% UPL achieved 95% confidence and was calculated for each constituent and resulted in the maximum detected concentration of each constituent in each of the background monitoring wells.
- The Appendix III constituents detected in each of the detection monitoring events were compared to the 95% UPL for each constituent to evaluate the presence of SSIs.

The statistical analysis summary memoranda for each of the 2019 detection monitoring events are provided in **Appendix D**. As stated in Section 5.1.2, groundwater pH was reported above the UPL in downgradient monitoring well BBS-CCR-1 during both events and downgradient monitoring well BBS-CCR-2 during the September 2019 event; these findings are consistent with those observed during the first three detection monitoring events. Groundwater pH was below the LPL at the third downgradient monitoring well during the September 2019 event for the first time.

As stated in Section 5.1.3, the 2018 ASD documented that groundwater pH is influenced by sources unrelated to the EAPPS and measurement resolution, and therefore does not indicate a release of CCR from the EAPPS.

Detection monitoring will discontinue in 2020 due to well abandonment requirements during voluntary closure of the EAPPs by TEC.



8. ASSESSMENT MONITORING STATISTICAL ANALYSIS

Not applicable for this annual reporting period.

9. ACTIVITIES PLANNED FOR 2020

The projected key activities for the upcoming year include the following:

- The abandonment of several monitoring wells in the GMS will be conducted as necessitated by closure activities for the EAPPs.
- Continuation of EAPP closure in accordance with 40 C.F.R. § 257.102(c) (closure by removal).



10. CORRECTIVE MEASURES

Not applicable for this annual reporting period.



11. REMEDY SELECTION

Not applicable for this annual reporting period.

12. CORRECTIVE ACTION

Corrective action of the EAPPs is not required in accordance with the Rule. However, TEC has opted to pursue clean closure of the EAPPS in accordance with 40 C.F.R. § 257.102(c).

13. REFERENCES

- Environmental Consulting & Technology (ECT). 2003. Supplemental Assessment Report, Tampa Electric Company, Big Bend Station. Tampa, Florida.
- Environmental Consulting & Technology. 2007. Sodium Ground Water Quality Exemption Application for the TECO Big Bend Station. Tampa, Florida.
- Geosyntec Consultants, Inc. 2016. CCR Groundwater Monitoring Program Plan, Big Bend Power Station, Economizer Ash and Pyrite Ponds, September 2016.
- Geosyntec Consultants, Inc. 2016. Basins of Design and Preliminary Closure Evaluation Report; Economizer Ash and Pyrite Ponds; Big Bend Power Station, September 2016.
- Geosyntec Consultants, Inc. 2017. Groundwater Monitoring Well Design, Installation, Development, and Decommissioning Report, Big Bend Power Station, Economizer Ash and Pyrite Pond System, October 2017.
- Geosyntec Consultants, Inc. 2017. Statistical Analysis Plan, Big Bend Power Station, Economizer Ash and Pyrite Pond System, October 2017.
- Geosyntec Consultants, Inc. 2018. Alternate Source Demonstration, Economizer Ash and Pyrite Pond System, Big Bend Power Station, April 2018.
- Southwest Florida Water Management District, 2010. 2010 Regional Water Supply Plan, Tampa Bay Planning Region. Brooksville, Florida.
- Tihanksy, A.B. and L.A. Knochenmus. 2001. Karst Features and Hydrogeology in West-central Florida-A Field Perspective. US Geological Survey-Water-Resources Investigations Report 01-4011.
- USEPA, April 2015. 40 CFR Part 257, Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule, EPA-HQ-RCRA-2009-0640.

TABLES

Table 1: CCR Monitoring Well Construction Details

TEC Big Bend Station Economizer Ash and Pyrite Pond System Gibsonton, FL

Well ID	Designation	Northing (NAD 1983)	Easting (NAD 1983)	Ground Surface Elevation (ft NAVD)	TOC Elevation* (ft NAVD)	Total Depth (ft bls)	Screen Interval (ft bls)	Top of Screen Elevation (ft NAVD)	Bottom of Screen Elevation (ft NAVD)
BBS-CCR-BW1	Background	1256638.34	528461.95	29.10	33.40	40	30-40	-0.90	-10.90
BBS-CCR-BW2	Background	1256966.67	527897.28	7.70	12.54	19	9-19	-1.30	-11.30
BBS-CCR-1	Detection	1257433.85	528211.74	5.00	9.82	17.5	7.5-17.5	-2.50	-12.50
BBS-CCR-2	Detection	1257429.29	528769.31	5.00	9.34	17.5	7.5-17.5	-2.50	-12.50
BBS-CCR-3	Detection	1257154.61	529023.26	4.90	9.20	18.5	8.5-18.5	-3.60	-13.60

Notes

1. Monitoring wells are 2 inches in diameter.

2. ft bls = feet below land surface

3. Horizontal datum surveyed to the North American Datum (NAD) of 1983 US State Plane Florida West.

4. Vertical datum surveyed to the North American Vertical Datum (NAVD) of 1988.

5. *Top of casing elevations were revised in September 2016 during final aboveground well completions. The additional PVC stickup was measured in the field and added to the surveyed top of casing elevation

Table 2: Summary of Detection and Assessment Monitoring Constituents TEC Big Bend Station Economizer Ash and Pyrite Pond System Gibsonton, FL

Constituent	Constituen	t Reference	Analytical Methods(s)	EPA Primary or Secondary MCL		
	40 CFR 257 Appendix III	40 CFR 257 Appendix IV		(ug/L)		
Arsenic (Total)		Х	EPA 200.8 or 6020	10		
Antimony (Total)		Х	EPA 200.8 or 6020	6		
Barium (Total)		Х	EPA 6010	2,000		
Beryllium (Total)		Х	EPA 6010	4		
Boron (Total)	X		EPA 6010	NA		
Cadmium (Total)		Х	EPA 200.8 or 6020	5		
Calcium (Total)	Х		EPA 6010	NA		
Chloride	Х		EPA 300.0	250,000		
Chromium (Total)		Х	EPA 6010	100		
Cobalt (Total)		Х	EPA 6010	NA		
Fluoride	X		EPA 300.0	4,000		
Lead (Total)		Х	EPA 200.8	15		
Lithium (Total)		Х	EPA 6010	NA		
Mercury (Total)		Х	EPA 7470	2		
Molybdenum (Total)		Х	EPA 6010	NA		
pH	X		Field	6.5-8.5 (SU)*		
Radium 226 and 228 (Total)		Х	EPA 903	5 (pCi/L)		
Selenium (Total)		Х	EPA 200.8 or 6020	50		
Sulfate	X		EPA 300.0	250,000		
TDS	Х		SM2540C	500,000		
Thallium (Total)		Х	EPA 6020	2		

Notes.

1. EPA = US Environmental Protection Agency

2. MCL = Maximum Contaminant Level

3. ug/L = Micrograms per liter

4. SU = Standard Units; *2018 Alternate Source Demonstration documented that background levels and field instrument error influence groundwater pH.

5. pCi/L = picoCuries per liter

FIGURES







APPENDIX A

CCR Groundwater Monitoring Data – June 2016 through September 2019

TABLE A-1 EAPP CCR GROUNDWATER MONITORING FIELD PARAMETERSTECO Big Bend Station

					Fiel	d Parameters				
		Top of Casing Elevation (a)	Depth to Water	Groundwater Elevation	Temperature	Specific Conductivity (field)	pH (field)	Dissolved Oxygen	Redox Potential	Turbidity(field)
	Units	ft NAVD 88	ft BTOC	ft NAVD 88	С	umhos/cm	SU	mg/L	mV	NTU
	MCL				NA	NA	6.5-6.8	NA	NA	NA
Well ID	Sample Date		Result	Result	Result	Result	Result	Result	Result	Result
	6/24/2016	30.13	25.37	4.76	27.84	5620	6.51	0.18	-8.6	5.14
	7/27/2016	30.13	26.19	3.94	28.25	5420	6.38	0.17	-7.3	7.1
	8/26/2016	30.13	25.78	4.35	28.11	5140	6.41	0.12	-22.8	6.47
	10/28/2016	33.40	29.42	3.98	27.46	4860	6.50	0.13	-76.2	4.08
	11/10/2016	33.40	29.84	3.56	27.50	5000	6.52	0.13	-71.1	1.77
	1/26/2017	33.40	30.49	2.91	26.98	4940	6.46	0.20	-20.2	2.04
	4/13/2017	33.40	30.71	2.69	27.20	1580	6.49	0.14	-114	4.22
BBS-CCR-BW1	6/28/2017	33.40	29.92	3.48	27.72	5010	6.47	0.42	-11.4	0.69
	7/20/2017	33.40	28.89	4.51	27.89	4960	6.49	0.60	-23	2.38
	8/16/2017	33.40	28.74	4.66	28.08	5000	6.52	0.45	3.6	6.03
	10/13/2017	33.40	29.60	3.80	28.16	4570	6.55	0.40	-18.4	2.51
	4/13/2018	33.40	29.37	4.03	27.64	4800	6.51	0.27	-10.3	4.26
	9/12/2018	33.40	28.42	4.98	27.71	4410	6.51	0.55	-11.1	2.62
	3/14/2019	33.40	29.03	4.37	27.89	4225	6.49	0.14	3	3.64
	9/17/2019	33.40	28.34	5.06	29.71	4172	6.52	0.100	-19	3.67
	6/24/2016	9.81	4.72	5.09	26.42	1640	6.53	0.37	-59.4	6.7
	7/27/2016	9.81	5.52	4.29	27.56	1500	6.48	0.15	-84.1	4.86
	8/26/2016	9.81	5.22	4.59	27.74	1380	6.48	0.10	-59.5	1.73
	10/28/2016	12.54	8.06	4.48	27.22	1340	6.67	0.37	-91.5	3.99
	11/10/2016	12.54	8.45	4.09	27.10	1400	6.68	0.20	-73.8	5.86
	1/26/2017	12.54	9.13	3.41	25.25	1460	6.62	0.30	-74.1	16.4
	4/13/2017	12.54	9.24	3.30	30.71	1480	6.67	1.3	-42	19
BBS-CCR-BW2	6/28/2017	12.54	8.53	4.01	26.69	1538	6.64	0.19	-82.4	6.09
	7/20/2017	12.54	7.45	5.09	27.20	1540	6.66	0.33	-94	5.27
	8/16/2017	12.54	7.33	5.21	27.69	1580	6.68	0.43	-53.3	3.66
	10/13/2017	12.54	7.38	5.16	27.95	1700	6.70	0.28	-72.1	3.96
	4/13/2018	12.54	8.02	4.52	24.90	1590	6.69	0.61	-36.3	17.3
	9/12/2018	12.54	7.05	5.49	27.46	1960	6.60	0.83	-44.2	4.34
	3/14/2019	12.54	7.68	4.86	24.7	1929	6.56	0.11	-12	16.8
	9/17/2019	12.54	6.54	6.00	27.36	1940	6.60	0.16	-26	5.54
	6/24/2016	7.79	3.51	4.28	25.48	3940	6.80	0.10	-49.1	8.01
	7/27/2016	7.79	5.00	2.79	26.41	4180	6.67	0.22	-74.1	3.88
	8/26/2016	7.79	5.06	2.73	27.05	4000	6.71	0.14	-34.8	2.08
	10/28/2016	9.82	6.78	3.04	25.78	4060	6.83	0.10	-107	3.22
	11/10/2016	9.82	7.38	2.44	25.70	4290	6.82	0.10	-136	0.89
	1/26/2017	9.82	7.46	2.36	24.03	4320	6.79	0.10	-110	1.99
	4/13/2017	9.82	7.64	2.18	23.70	4170	6.84	0.10	-80.4	4.12
BBS-CCR-1	6/28/2017	9.82	7.41	2.41	25.54	4063	6.78	0.27	-80.6	3.63
	7/20/2017	9.82	5.86	3.96	25.81	3960	6.81	0.10	-122	1.58
	8/16/2017	9.82	7.03	2.79	25.80	4110	6.82	0.28	-109	1.88
	10/13/2017	9.82	7.32	2.50	26.57	4260	6.83	0.24	-83.3	0.89
	4/13/2018	9.82	7.40	2.42	24.90	4170	6.83	0.11	-61.6	3.76
	9/12/2018	9.82	6.75	3.07	26.10	4120	6.80	0.20	-74.9	9.47
	3/14/2019	9.82	7.27	2.55	24.09	4040	6.81	0.10	-66	1.74
	9/17/2019	9.82	6.97	2.85	26.05	4266	6.82	0.15	-66	2.73

					Fiel	d Parameters				
		Top of Casing Elevation (a)	Depth to Water	Groundwater Elevation	Temperature	Specific Conductivity (field)	pH (field)	Dissolved Oxygen	Redox Potential	Tu
	Units	ft NAVD 88	ft BTOC	ft NAVD 88	C	umhos/cm	SU	mg/L	mV	
	MCL				NA	NA	6.5-6.8	NA	NA	
Well ID	Sample Date		Result	Result	Result	Result	Result	Result	Result	
	6/24/2016	8.14	3.45	4.69	25.62	1580	6.80	0.10	-71	T
	7/27/2016	8.14	5.30	2.84	26.42	1700	6.68	0.13	-67.4	
	8/26/2016	8.14	5.35	2.79	27.35	1570	6.74	0.10	-27.3	
	10/28/2016	9.34	6.78	2.56	25.64	1500	6.87	0.10	-183	
	11/10/2016	9.34	6.88	2.46	25.66	1540	6.89	0.13	-186	
	1/26/2017	9.34	6.93	2.41	24.27	1560	6.89	0.10	-182	
	4/13/2017	9.34	7.15	2.19	23.95	1540	6.93	0.10	-138	
BBS-CCR-2	6/28/2017	9.34	6.97	2.37	25.12	1485	6.87	0.24	-131	
	7/20/2017	9.34	5.06	4.28	25.74	1630	6.97	0.10	-154	
	8/16/2017	9.34	6.53	2.81	26.43	1560	6.92	0.25	-233	
	10/13/2017	9.34	6.88	2.46	26.46	1350	6.87	0.20	-188	
	4/13/2018	9.34	6.89	2.45	24.60	1360	6.86	0.20	-92	
	9/12/2018	9.34	6.23	3.11	26.74	1520	6.29	0.24	-38.8	
	3/14/2019	9.34	6.76	2.58	23.92	1422	6.74	0.10	-118	
	9/17/2019	9.34	6.58	2.76	26.13	1441	6.73	0.14	-56	
	6/24/2016	6.78	1.51	5.27	26.62	1580	6.42	0.54	-145	1
	7/27/2016	6.78	3.60	3.18	27.28	1740	6.19	0.10	-74.4	
	8/26/2016	6.78	3.48	3.30	27.07	1690	6.29	0.15	-155	
	10/28/2016	9.20	6.54	2.66	26.20	1640	6.42	0.10	-266	
	11/10/2016	9.20	6.77	2.43	26.10	1650	6.46	0.10	-239	
	1/26/2017	9.20	6.81	2.39	24.25	1510	6.42	0.11	-168	
	4/13/2017	9.20	7.13	2.07	24.27	1580	6.49	0.14	-114	
BBS-CCR-3	6/28/2017	9.20	6.64	2.56	26.15	1755	6.38	0.28	-125	
	7/20/2017	9.20	4.77	4.43	26.73	1750	6.36	0.17	-122	
	8/16/2017	9.20	6.04	3.16	26.86	1790	6.42	0.29	-206	
	10/13/2017	9.20	6.52	2.68	27.18	1750	6.44	0.37	-249	
	4/13/2018	9.20	6.63	2.57	24.06	1810	6.41	0.19	-101	
	9/12/2018	9.20	5.79	3.41	26.88	1690	6.41	0.52	-105	
	3/14/2019	9.20	6.27	2.93	23.74	1830	6.43	0.1	-192	
	9/17/2019	9.20	6.22	2.98	27.30	1802	6.33	0.2	-160	1

TABLE A-1 EAPP CCR GROUNDWATER MONITORING FIELD PARAMETERS

TECO Big Bend Station

NOTES:

(a) - Top of well casings revised in September 2016 once final aboveground completions were constructed. The additional PVC stickup was measured and added to the original surveyed top of casing elevation.

Abbreviations:

C - Celsius ft BTOC - feet below top of well casing mg/L - milligrams per liter SU - Standard units ft NAVD 88 - feet elevation in North American Vertical Datum 1988 umhos/cm - micromohs per centimeter mV - millivolts

urbidity(field)
NTU
NA
Result
4.9
7.16
3.31
3.73
7.1
4.93
3.43
4.71
4.56
3.22
3.03
2.96
3.43
8.5
2.49
11.5
8.04
0.35
5.20 1.19
1.10
4.22
4.22 0.94
0.54
0.47
2 39
3.79
3.47
10.1
9.29

Image: bold interm Image:					Appendix II	Parameters					Арре	endix IV Parar	neters		
Units mg/L mg/L <t< td=""><td></td><td></td><td>Boron</td><td>Calcium</td><td>Chloride</td><td>Fluoride</td><td>Sulfate</td><td>TDS</td><td>Antimony</td><td>Arsenic</td><td colspan="2">Barium Beryllium</td><td>Cadmium</td><td>Chromium</td><td>Cobalt</td></t<>			Boron	Calcium	Chloride	Fluoride	Sulfate	TDS	Antimony	Arsenic	Barium Beryllium		Cadmium	Chromium	Cobalt
Media Link Link <thlink< th=""> Link Link <t< td=""><td></td><td>Units</td><td>mg/L</td><td>mg/L</td><td>mg/L</td><td>mg/L</td><td>mg/L</td><td>mg/L</td><td colspan="2">ug/L ug/L</td><td colspan="2">ug/L ug/L</td><td colspan="2">ug/L ug/L</td><td>ug/L</td></t<></thlink<>		Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L ug/L		ug/L ug/L		ug/L ug/L		ug/L
Weil D Sample Dave Result Q		MCL	1.4**	NA	250	4***	250	500	6	10	2000	4	5	100	140**
6744205 59.1 791 1140 b 0.190 b 0.000 10 20.2 72.9 0.200 1 0.000 1 1.00 <th>Well ID</th> <th>Sample Date</th> <th>Result Q</th> <th>Result C</th> <th>Result Q</th>	Well ID	Sample Date	Result Q	Result C	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q
Part All 9.77 11.00 0.11 19.00 41.00 <t< td=""><td></td><td>6/24/2016</td><td>59.1</td><td>781</td><td>1140 J-</td><td>0.199</td><td>1440 J-</td><td>5050 J-</td><td>0.600 U</td><td>10.2</td><td>72.9</td><td>0.200 U</td><td>0.100 U</td><td>1.60 U</td><td>1.40 I</td></t<>		6/24/2016	59.1	781	1140 J-	0.199	1440 J-	5050 J-	0.600 U	10.2	72.9	0.200 U	0.100 U	1.60 U	1.40 I
Sold V V <td></td> <td>7/27/2016</td> <td>56.9</td> <td>737</td> <td>1120</td> <td>0.11</td> <td>1510</td> <td>4190 (-)</td> <td>0.600 U</td> <td>8.10</td> <td>68.2</td> <td>0.200 U</td> <td>0.100 U</td> <td>1.60 U</td> <td>1.33 I</td>		7/27/2016	56.9	737	1120	0.11	1510	4190 (-)	0.600 U	8.10	68.2	0.200 U	0.100 U	1.60 U	1.33 I
10/16/002 21.4 0.70 V 939 V 0.101 1.400 V 0.000 V 0.000 <th< td=""><td></td><td>8/26/2016</td><td>53.7 V</td><td>729</td><td>1030</td><td>0.18</td><td>1420</td><td>4290</td><td>1.// I</td><td>8.89</td><td>61.4</td><td>0.200 U</td><td>0.100 0</td><td>1.60 U</td><td>1.52 I</td></th<>		8/26/2016	53.7 V	729	1030	0.18	1420	4290	1.// I	8.89	61.4	0.200 U	0.100 0	1.60 U	1.52 I
1/1/2/02/2 8/2 9/2 0 0.010 0 0.010 0 0.010 0 0.000 0 0.010 0 0.000 0 0.010 0 0.000 0 0.010 0 0.000 0 0.010 0 0.000 0 0.010 0 0.		10/28/2016	51.4	675	939 V	0.194	1400	4120 J-	6.00 U	3.20 U	60.0	0.200 0	1.00 0	1.60 U	0.963
BBSCCR-W1 403 103 103 103 100 10	RRS-CCP-RW/1	1/26/2017	49.7	729	993 V	0.201	1440	4170 J-	0.600 U	8.49	61.2 E4.6	0.200 0	0.100 0	1.60 U	1.45 1
B8-CCR-W41 6/78/007 51.7 791 995 0.288 150 4400 0 0.786 55.4 0.200 0 0.324 1 2.25 1 1 1.71 0.70 0.71 0.7		1/20/2017	45.9	603	942 V	0.315	1520	4310 J	0.600 U	0.32 0 8.61	52.6	0.200 0	0.100 0	2.00 U	2.00 U
Procession 770/0007 470 740 743 743 743 743 743 743 743 743 743 743 743 743 743 743 743 743 743 743 744	BBS-CCB-BW/1	6/28/2017	43.0 51 7	781	995	0.298	1510	4000 J	0.600	7.68	55.0	0.200 U	0.108 1	2 29 1	171 I
9/15/2007 480 793 00 0 1320 480 0.000 0 660 55.6 0200 0 1.000 0 2.88 1 1.66 1 10/13/201 35.9 691 974 0.286 1380 0.000 0.800	BBS CCR BWI	7/20/2017	47.0	781	935 915 V	0.255	1470	4160	6.00 U	8.48	51.7	0.200 U	1.00 11	2.25	1.71
10132017 44.2 691 809 0.334 217 389 0.600 U 9.06 55.8 0.200 U 0.100 U 1.60 U 1.87 9/12/2018 33.2 664 727 0.816 1289 37.0 0.600 U 10.1 51.5 0.900 U 0.203 I 1.86 I.87 9/12/2019 33.4 663 669 0.37 I 1300 0.000 U 0.60 U 0.60 U 0.00		8/16/2017	48.0	743	793	0.01 U	1320	4340	0.600 U	6.60	55.6	0.200 U	0.100 U	2.10	1.66
No. 6.9 694 874 0.366 1380 4000 0.800 0 8.75 52.3 0.200 0 1.87 3.89 1.87 9/12/2018 33.4 653 664 7.27 0.518 1.390 3160 0.600 0 0.1 1.51 0.500 0 0.200 1 1.60 1 1.75 1 9/12/2019 33.4 653 649 0.537 1 1.800 3160 0.600 0 2.65 51.3 0.200 0 0.000 0 1.50 0 1.61 1.62 1.44 1.220 0.800 1 1.64 1.48 0.200 0 0.100 0 1.58 0.40 1.57 1.48 1.48 0.200 0 0.100 0 1.58 0.40 0.53 1.57 1.48 1.44 1.52 0.500 0 0.200 0 0.100 0 1.58 1.43 1.52 1.44 <t< td=""><td></td><td>10/13/2017</td><td>44.2</td><td>691</td><td>809</td><td>0.334</td><td>217</td><td>3890</td><td>0.600 U</td><td>9.06</td><td>55.8</td><td>0.200 U</td><td>0.100 U</td><td>1.60 U</td><td>1.86</td></t<>		10/13/2017	44.2	691	809	0.334	217	3890	0.600 U	9.06	55.8	0.200 U	0.100 U	1.60 U	1.86
9/12/2018 33.2 664 727 0.818 1290 3740 0.000 0 10.1 51.5 0.000 0 0.203 1 1.86 1.88 1.75 1 9/17/7019 33.5 619 622 0.34 1320 1360 2.00 U 7.81 43.9 2.00 U 0.000 U 0.000 U 1.60 U 2.14 6/24/2051 6.425 211 1.66 0.422 341 1.060 0.600 U 2.65 51.3 0.200 U 0.100 U 1.60 U 0.14 V 8/76/2016 3.70 V 2.71 1.16 0.422 2.74 980 0.600 U 2.15 1.40 0.100 U 1.60 U 0.133 1 112/20217 4.08 2.00 1.135 0.555 4.02 1.20 6.600 U 1.458 1.427 0.200 U 0.100		4/13/2018	36.9	694	874	0.346	1380	4000	0.600 U	8.76	52.3	0.200 U	0.145	3.90	1.87
Side Side Obs Side Obs Side Obs Side Side Obs Side Sid		9/12/2018	33.2	664	727	0.818	1290	3740	0.600 U	10.1	51.5	0.500 U	0.203	1.60	1.88 I
9/17/2019 33.5 619 622 0.34 1320 2.00 U 7.81 43.9 2.00 U 0.500 U 2.10 U 0.100 U 1.00 U 0.151 1 1 1.02 2.20 1.00 U 1.00 U 0.151 1 1.02 1.02 1.02 1.00 U 1.00 U 1.01 0.100 U 1.00 U 0.151 1 1.01 1.01 0.100 U 1.06 U 0.151 1 0.151 1 0.151 1 0.151 1 0.151 1 <		3/14/2019	33.4	653	649	0.537 J+	1380	3160	0.600 U	9.60	48.0	0.500 U	0.100 U	1.60 U	1.75 J
bit		9/17/2019	33.5	619	622	0.34	1320	3180	2.00 U	7.81	43.9	2.00 U	0.500 U	12.0 U	2.14
Base cent with a start of the star		6/24/2016	3.89	313	123	0.409	414	1230	0.600 U	2.65	51.3	0.200 U	0.100 U	1.60 U	1.00 U
Bits CCR-BY2 Bits O <tho< th=""> O O</tho<>		7/27/2016	4.25	271	116	0.432	341	1060	0.600 U	1.75 I	49.8	0.200 U	0.100 U	1.60 U	0.14
Index Image: Second state Im		8/26/2016	3.70 V	237	116	0.455	276	980	0.600 U	2.03	43.2	0.200 U	0.100 U	1.60 U	0.153 I
High High <th< td=""><td>10/28/2016</td><td>3.90</td><td>238 J-,</td><td>V 125 V</td><td>0.44</td><td>246</td><td>1010</td><td>0.600 U</td><td>1.62 I</td><td>46.3</td><td>0.200 U</td><td>0.100 U</td><td>1.60 U</td><td>0.151 I</td></th<>		10/28/2016	3.90	238 J-,	V 125 V	0.44	246	1010	0.600 U	1.62 I	46.3	0.200 U	0.100 U	1.60 U	0.151 I
BBS-CCR-BW2 1/6/2017 3.27 2.40 143 V 0.472 2.55 1140 0.600 U 0.709 I 38.8 0.200 U 0.100 U 0.136 I BBS-CCR-BW2 4/13/2017 4.54 J 200 J 135 0.559 402 1170 0.600 U 1.68 1 48.8 0.200 U 0.100 U 1.68 I 0.48.8 0.200 U 0.100 U 1.66 U 0.366 I 1.45 I 4.27 0.200 U 0.100 U 1.66 U 0.000 I 1.68 1.00 U 1.66 U 0.000 I 1.68 0.200 U 0.100 U 1.66 U 0.123 I 0.123 II 0.37 III III 0.37 III III 0.37 III IIII IIII IIII IIII IIIII IIIIIIIIIIIIIII <t< td=""><td>11/10/2016</td><td>3.75</td><td>243</td><td>129 V</td><td>0.464</td><td>255</td><td>966 J-</td><td>0.600 U</td><td>2.59</td><td>45.8</td><td>0.200 U</td><td>0.100 U</td><td>1.60 U</td><td>0.157 I</td></t<>		11/10/2016	3.75	243	129 V	0.464	255	966 J-	0.600 U	2.59	45.8	0.200 U	0.100 U	1.60 U	0.157 I
B8S-CCR-WQ 40.8 260 140 0.478 323 1120 0.600 U 1.47 0.200 U 0.100 U 1.60 U 2.00 U 0.100 U 1.60 U 0.010 U 1.60 U 0.020 U 0.010 U 1.60 U 0.400 U 1.60 U 0.600		1/26/2017	3.27	240	145 V	0.472	255	1140	0.600 U	0.709 I	38.8	0.200 U	0.100 U	1.60 U	0.136 I
B65-CCR-BV2 6/28/2017 4.54 j 290 j 135 0.599 402 1170 0.600 U 1.68 I 48.8 0.200 U 0.100 U 1.68 I 0.483 0.200 U 0.100 U 1.68 I 0.480 U 0.300 U 1.68 I 0.483 I 0.400 U 1.68 I 0.483 I 0.400 U 1.68 I 0.433 I 1.62 IIII 0.314 IIIII 0.338 IIIIIII 0.460 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		4/13/2017	4.08	260	140	0.478	323	1120	0.600 U	1.45 I	42.7	0.200 U	0.100 U	1.60 U	2.00 U
P/20/2017 4.57 278 V 123 V 0.312 14.7 1200 6.00 U 3.20 U 4.7.7 0.22 U 1.00 U 1.60 U 0.400 U 8/16/2017 4.39 287 117 0.352 462 1180 J 0.600 U 1.01 J 0.000 U 1.01 J 0.000 U 4.01 0.000 U 1.01 J 0.000 U 4.01 0.000 U 4.01 U 1.60 U 0.12 J 1.01 J 0.000 U 4.01 U 0.02 U 1.60 U 0.22 U 1.60 U 0.20 U 1.60 U 0.22 U 1.60 U 0.02 U 1.60 U 0.22 U 0.200 U 0.200 U 0.200 U 0.200 U 0.200 U 0.200 U	BBS-CCR-BW2	6/28/2017	4.54 J-	290 J	135	0.559	402	1170	0.600 U	1.68 I	48.8	0.200 U	0.100 U	1.68 I	0.0959 I
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		7/20/2017	4.57	278 \	123 V	0.319 J	41.7	1200	6.00 U	3.20 U	47.7	0.22 U	1.00 U	2.26 I	0.400 U
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		8/16/2017	4.39	287	117	0.352	462	1180 J	0.600 U	1.80 J	49.9	0.200 U	0.100 U	1.60 U	0.11 J
4/13/2018 2.93 297 83.2 0.437 458 1190 0.600 U 4.63 46.9 0.200 U 0.100 U 1.60 U 0.207 3/14/2019 2.64 V 344 148 0.338 I,V 638 1500 0.600 U 5.01 63.6 0.500 U 0.100 U 1.60 U 0.285 1 0.100 U 1.60 U 0.285 1 0.500 U 0.100 U 1.60 U 0.285 1 0.500 U 0.100 U 1.60 U 0.285 U 0.500 U		10/13/2017	4.08	321	84.9	0.513	632	1330	0.600 U	2.01	56.2	0.254 J	0.100 U	1.60 U	0.129 J
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		4/13/2018	2.93	297	83.2	0.457	458	1190	0.600 U	4.63	46.9	0.200 U	0.100 U	1.60 U	0.247
3/14/2019 2.28 344 141 0.495 U 538 1380 0.600 U 0.32 U 55.0 0.500 U 0.100 U 4.07 J 0.136 U 9/17/2019 2.83 367 118 0.378 630 1460 2.00 U 7.27 61.6 2.00 U 0.500		9/12/2018	2.64 V	344	148	0.338 I, V	638	1500	0.600 U	5.01	63.6	0.500 U	0.100 U	1.60 U	0.285 I
9/17/2019 2.83 367 118 0.378 630 1460 2.00 U 7.27 61.6 2.00 U 0.500 U 12.0 U 0.427 J 6/24/2016 14.4 541 619 0.211 1240 3060 J 0.600 U 8.74 122 0.200 U 0.100 U 1.60 U 1.00 U 0.600 U 8.74 122 0.200 U 0.100 U 1.60 U 0.457 J 7/27/2016 0.306 227 742 J 0.128 120 J 3140 1.60 U 8.74 111 0.200 U 0.100 U 1.60 U 0.485 1 10/28/2016 15.7 556 V 743 J 0.104 1230 J 3670 J 6.600 U 8.83 129 0.200 U 0.100 U 1.60 U <td></td> <td>3/14/2019</td> <td>2.28</td> <td>344</td> <td>141</td> <td>0.495 U</td> <td>538</td> <td>1380</td> <td>0.600 U</td> <td>0.32 U</td> <td>55.0</td> <td>0.500 U</td> <td>0.100 U</td> <td>4.07 J</td> <td>0.136 U</td>		3/14/2019	2.28	344	141	0.495 U	538	1380	0.600 U	0.32 U	55.0	0.500 U	0.100 U	4.07 J	0.136 U
6/24/2016 14.4 541 619 0.211 120 3060 J 0.600 U 8.74 122 0.200 U 0.100 U 1.60 U 1.00 U 7/27/2016 0.306 227 742 J 0.128 1320 J 3140 1.03 I 7.38 30.8 0.200 U 0.100 U 1.60 U 0.45 I 1.00 V 1.60 U 0.45 I 1.00 V 1.60 U 0.45 I 1.00 V 0.45 I 1.00 V 0.45 V 0.507 I 1.10/2016 16.2 606 817 V 0.0871 1290 3470 J 0.600 U 8.30 129 0.200 U 0.100 U 1.60 U 0.507 I 11/26/2017 16.4 555 124 0.17 443 3110 0.600 U 9.04		9/17/2019	2.83	367	118	0.378	630	1460	2.00 U	7.27	61.6	2.00 U	0.500 U	12.0 U	0.427 J
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		6/24/2016	14.4	541	619	0.211	1240	3060 J	0.600 U	8.74	122	0.200 U	0.100 U	1.60 U	1.00 U
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		7/27/2016	0.306	227	742 J-	0.128	1320 J-	3140	1.03 I	7.38	30.8	0.200 U	0.100 U	1.60 U	0.45 I
10/28/2016 15.7 556 V 743 J- 0.104 1230 J- 3170 J- 0.600 U 8.30 122 0.200 U 0.100 U 1.60 U 0.507 I 11/10/2016 16.2 606 817 V 0.0871 129 0.600 U 8.93 129 0.200 U 0.100 U 1.60 U 0.519 I 1/26/2017 15.5 J 579 J- 820 V 0.184 1310 J 0.600 U 10.53 116 I 2.00 U 0.100 U 1.60 U 0.519 I 4/13/2017 16.4 555 124 0.17 443 3110 J 0.600 U 10.53 113 0.200 U 0.100 U 1.60 U 0.484 I 7/20/2017 16.0 576 V 694 J-V 0.21 </td <td></td> <td>8/26/2016</td> <td>11.4</td> <td>556</td> <td>695</td> <td>0.454</td> <td>1240</td> <td>2980</td> <td>0.600 U</td> <td>7.94</td> <td>115</td> <td>0.200 U</td> <td>0.100 U</td> <td>1.60 U</td> <td>0.485</td>		8/26/2016	11.4	556	695	0.454	1240	2980	0.600 U	7.94	115	0.200 U	0.100 U	1.60 U	0.485
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		10/28/2016	15.7	556 \	743 J-	0.104	1230 J-	3170 J-	0.600 U	8.30	122	0.200 U	0.100 U	1.60 U	0.507 I
Index Index <th< td=""><td></td><td>11/10/2016</td><td>16.2</td><td>606</td><td>817 V</td><td>0.0871</td><td>1290</td><td>3470 J-</td><td>0.600 U</td><td>8.93</td><td>129</td><td>0.200 U</td><td>0.100 U</td><td>1.60 U</td><td>0.519 I</td></th<>		11/10/2016	16.2	606	817 V	0.0871	1290	3470 J-	0.600 U	8.93	129	0.200 U	0.100 U	1.60 U	0.519 I
4/13/2017 16.4 555 124 0.17 443 3110 J 0.600 U 116 I 2.00 U 0.100 U 1.60 U 0.484 I 6/28/2017 16.0 576 V 694 J-, V 0.157 J 1390 3400 J 3.00 U 10.3 112 0.200 U 0.160 U 0.484 I 8/16/2017 17.0 572 710 0.2 1240 2960 J 0.600 U 9.03 129 0.200 U 0.160 U 0.433 J 10/13/2017 19.9 596 714 <		1/26/2017	15.5 J-	579 J	· 820 V	0.184	1350	3670 J	0.602 1	9.04	115	0.200 U	0.100 U	1.60 U	0.489 1
BBS-CCR-1 6/28/2017 16.5 569 7/20 0.208 1120 3140 0.600 0 9.76 113 0.200 0 0.100 0 1.93 1 0.484 1 7/20/2017 16.0 576 V 694 J.,V 0.157 J 1390 3400 J 3.00 U 10.3 112 0.200 U 0.500 U 1.62 I 0.495 I 8/16/2017 17.0 572 710 0.2 1240 2960 J 0.600 U 9.33 122 0.200 U 0.160 U 0.473 J 10/13/2017 19.9 596 716 0.201 1230 3470 0.600 U 9.03 129 0.200 U 0.160 U 0.453 J 4/13/2018 19.6 577 714 0.21 1290 3230 0.600 U 9.84 114 0.500		4/13/2017	16.4	555	124	0.17	443	3110 J	0.600 0	10.53	116 1	2.00 0	0.100 0	1.60 U	2.00 0
7/20/2017 16.0 576 V 694 J-V 0.157 J 1390 3400 J 0.300 0 102 0.200 0 0.500 0 1.62 1 0.495 1 8/16/2017 17.0 572 710 0.2 1240 2960 J 0.600 U 9.33 122 0.200 U 0.100 U 1.60 U 0.473 J 10/13/2017 19.9 596 716 0.201 1230 3470 0.600 U 9.03 129 0.200 U 0.100 U 1.60 U 0.453 J 4/13/2018 19.6 577 714 0.21 1290 3230 0.600 U 8.44 117 0.200 U 0.100 U 1.60 U 0.522 9/12/2018 19.9 549 674 0.235 I,V 120 3250 0.600 U 9.8 114 0.500 U 0.100 U 0.506 I 0.546 J	BB2-CCK-1	6/28/2017	16.5	569	720	0.208	1120	3140	0.600 0	9.76	113	0.200 0	0.100 0	1.93 1	0.484 1
o/10/2017 17.0 572 710 0.2 1240 2960 J 0.600 0 9.33 122 0.200 0 0.100 0 1.60 0 0.473 J 10/13/2017 19.9 596 716 0.201 1230 3470 0.600 0 9.03 129 0.200 0 0.100 0 1.60 0 0.473 J 4/13/2018 19.6 577 714 0.21 1290 3230 0.600 0 8.44 117 0.200 0 0.100 0 1.60 0 0.522 9/12/2018 19.9 549 674 0.235 I,V 1200 3250 0.600 U 8.44 117 0.500 U 0.100 U 0.556 I 3/14/2019 18.4 518 664 0.415 U 1160 3000 0.600 U 10.0 111 2.00 U 0.500 U 1.60 U 0.546 J 9/17/2019 21.0 575		9/16/2017	17.0	5/0	710	0.12/ J	1390	3400 J	3.00 0	10.3	112	0.200 0	0.500 0	1.02 I	0.495
10/13/2017 13.5 556 716 0.201 1250 5470 0.600 0 9.05 125 0.200 0 0.100 0 1.60 0 0.453 J 4/13/2018 19.6 577 714 0.21 1290 3230 0.600 U 8.44 117 0.200 U 0.25 1.60 U 0.522 9/12/2018 19.9 549 674 0.235 I,V 1220 3250 0.600 U 9.8 114 0.500 U 0.100 U 0.556 I 3/14/2019 18.4 518 664 0.415 U 1160 3000 0.600 U 10.0 112 0.500 U 0.100 U 0.546 J 9/17/2019 21.0 575 766 0.195 1140 3250 2.00 U 6.82 111 2.00 U 0.500 U 12.0 U 0.518 U		0/10/2017	10.0	572	710	0.2	1240	2900 J		9.33	122	0.200 0	0.100 U	1.60 U	0.473 J
4/15/2018 15.0 577 714 0.21 1250 5250 0.600 0 6.44 117 0.200 0 0.25 1.60 1 0.522 9/12/2018 19.9 549 674 0.235 1,V 1220 3250 0.600 U 9.8 114 0.500 U 0.100 U 1.60 U 0.556 1 3/14/2019 18.4 518 664 0.415 U 1160 3000 0.600 U 10.0 112 0.500 U 0.100 U 1.60 U 0.546 J 9/17/2019 21.0 575 766 0.195 1140 3250 2.00 U 6.82 111 2.00 U 0.500 U 12.0 U 0.518 U		10/13/201/	19.9	590	710	0.201	1230	3470		9.05	117		0.100 0	1.60 U	0.455 J
3/14/2019 18.4 518 664 0.415 U 110 3000 0.600 U 111 0.500 U 0.100 U 0.546 U 0.546 J 9/17/2019 21.0 575 766 0.195 1140 3250 2.00 U 6.82 111 2.00 U 0.500 U 12.0 U 0.518 L		9/12/2018	19.0	5/1	674	0.21	1230	3250		9.8	114	0.200 0	0.25	1.60	0.522
9/17/2019 21.0 575 766 0.195 1140 3250 2.00 11 6.82 111 2.00 11 0.500 11 120 11 0.518 1		3/14/2010	18.4	518	664	0.415 11	1160	3000		10.0	117	0.500 0	0.100 11	1.60 U	0.550
		9/17/2013	21.0	575	766	0.195	1140	3250	2.00 11	6.82	111	2.00 11	0.500 11	12.0 11	0.518

		Appendix III Parameters										Appendix IV Parameters								
		Boron	Calcium	1	Chlori	de	Fluoride	Sulfate	TDS	Antimony Arsenic			Barium	Barium Beryllium		Chromium	Cobalt			
	Units	mg/L	mg/L		mg/	L	mg/L	mg/L	mg/L	ug/L		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L			
	MCL	1.4**	NA		250		4***	250	500	6		10	2000	4	5	100	140**			
Well ID	Sample Date	Result Q	Result	Q	Result	Q	Result Q	Result Q	Result Q	Result	Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q			
	6/24/2016	1.55	198		118		0.148	471	1170 J-	0.600	U	1.83 I	65.0	0.200 U	0.100 U	1.60 U	1.00 U			
	7/27/2016	2.81	193		140		0.183	542	1170	0.83	I	0.99 I	64.8	0.200 U	0.100 U	1.60 U	0.09 I			
	8/26/2016	2.86	192		124		0.15	484	1120	0.600	U	1.25	61.4	0.200 U	0.100 U	1.60 U	0.0776			
	10/28/2016	2.08	181	V	112	v	0.171	468	1130	0.600	U	1.16 I	60.6	0.200 U	0.100 U	1.60 U	0.107 I			
	11/10/2016	2.28	181		111	v	0.168	468	1110	0.600	U	1.37 I	62.4	0.200 U	0.100 U	1.60 U	0.105 I			
	1/26/2017	3.86	172		115	J+	0.248 J+	490 J-	1140	0.600	U	1.09 I	54.6	0.200 U	0.100 U	1.60 U	0.0902 I			
	4/13/2017	5.01	163		119		0.237	485 J-	1150	0.600	U	2.64	55.8	0.200 U	0.100 U	2.29 I	2.00 U			
BBS-CCR-2	6/28/2017	3.20	173		105		0.214	415 J-	1080	0.600	U	1.01 I	54.6	0.200 U	0.100 U	1.96 I	0.0875 I			
	7/20/2017	4.94	178	V	114	v	0.166 J	481	1140	0.600	U	0.974 I	54.6	0.423 U	0.100 U	3.11 I	0.0857 I			
	8/16/2017	4.32	171		113		0.155	459	1080	1.20	U	1.02 J	56.8	0.200 U	0.200 U	1.60 U	0.15 J			
	10/13/2017	0.888	169		70.9		0.182	432	1030	0.600	U	1.14	53.3	0.200 U	0.100 U	1.60 U	0.115 J			
	4/13/2018	0.966	183		74.8		0.238	436	1000	0.600	U	0.849	49.2	0.200 U	0.100 U	1.60 U	0.108			
	9/12/2018	0.177 J-, V	218		88.7		0.298 I,V	375	1060	0.600	U	1.34 I	65.2 J-	0.500 J-, U	0.100 U	1.60 J-, U	0.136 U			
	3/14/2019	0.279	208		77.2		0.394 U	445	1060	0.600	U	1.46 J	66.6	0.500 U	0.100 U	1.60 U	0.136 U			
	9/17/2019	0.199	212		79.5		0.183	419	1040	2.00	U	2.51	61.4	2.00 U	0.500 U	43.8 U	2.00 U			
	6/24/2016	0.662	187		88.9		0.313	474	1200	0.600	U	1.23 I	65.3	0.200 U	0.100 U	1.60 U	1.00 U			
	7/27/2016	13.2	196		140		0.262	516	1220	0.77	I.	0.54 I	67.6	0.200 U	0.100 U	1.60 U	0.09 I			
	8/26/2016	0.54 V	200		136		0.286	517	1210	0.600	U	0.603 I	63.6	0.272 I	0.100 U	1.60 U	0.125 I			
	10/28/2016	0.532	201	v	140	v	0.299	541	1220	0.600	U	0.623 I	66.3	0.200 U	0.100 U	1.60 U	0.124 I			
	11/10/2016	0.502	200		129	v	0.331	492	1220	0.600	U	0.765 I	63.0	0.200 U	0.100 U	1.60 U	0.117 I			
	1/26/2017	0.381	176		129	v	0.391	454	1200	0.600	U	0.32 U	56.2	0.200 U	0.100 U	1.60 U	0.0989 I			
	4/13/2017	0.385	176		124		0.415	443	1120	0.600	U	0.32 U	58.6	0.200 U	0.100 U	1.60 U	2.00 U			
BBS-CCR-3	6/28/2017	0.184	192		168		0.338	493	1280	0.600	U	0.525 I	61.8	0.200 U	0.100 U	3.12 I	0.119 I			
	7/20/2017	0.211	205	J-, V	158	v	0.23 J	506	1310	3.00	U	1.60 U	63.4	0.356 U	0.500 U	3.43 I	0.200 U			
	8/16/2017	0.266	187		156		0.338	484	1290	0.600	U	0.536 J	59.8	0.200 U	0.100 U	2.02 J	0.123 J			
	10/13/2017	0.373	190		153		0.333	503	1310	0.600	U	0.665 J	59.3	0.200 U	0.100 U	1.60 U	0.115 J			
	4/13/2018	0.180	206		168		0.372	506	1310	0.600	U	0.365	66.1	0.200 U	0.100 U	4.67	0.154			
	9/12/2018	0.398 V	191		132		0.309 I.V	469	1200	0.600	U	0.613 I	62.8	0.500 U	0.100 U	1.60 U	0.136			
	3/14/2019	0.259	207		161		0.513 J+	534	1350	0.600	U	0.365 J	69.5	0.500 U	0.100 U	5.29 J	0.207 J			
	9/17/2019	0.541	211		129		0.39	540	1300	2.00	U	2.00 U	64.3	2.00 U	0.500 U	12.0 U	2.00 U			

		Appendix IV Parameters													
		Lead		Lithiu	m	Mercu	ry	Molybdei	num	Radium 226/	228	Seleniu	ım	Thalliu	ım
	Units	ug/L		ug/l	-	ug/L		ug/L		pCi/L		ug/L		ug/L	-
	MCL	15		140*	*	2		35**		1		50		2	
Well ID	Sample Date	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
	6/24/2016	0.080	U	8.9	Ι	0.050	U	4.46	I	38.0		2.09		0.118	I
	7/27/2016	0.200	I	20	I	0.050	U	2.88	I	35.0		1.92	Ι	0.100	U
	8/26/2016	0.111	I	7.4	I	0.050	U	11.1	I	31.0		1.73	I	0.100	U
	10/28/2016	0.800	U	11	I	0.050	U	6.00	I.	32.3		2.00	U	1.00	U
	11/10/2016	0.102	I	10	I	0.050	U	6.58	I	29.9		2.51		0.100	U
	1/26/2017	0.113	I	18	I	0.050	U	7.16	I	32.5		0.2	U	0.100	U
	4/13/2017	0.129	Ι	39.7		0.050	U	15.6	I	39.7		1.62	Ι	0.100	U
BBS-CCR-BW1	6/28/2017	0.080	U	15	U	0.050	U	16.3	U	37.8		1.81	Ι	0.100	U
	7/20/2017	0.800	U	17	I	0.050	U	13.6	I	37.2		2.00	U	1.00	U
	8/16/2017	0.291	J	0.05	U	0.050	U	1.43	J	30.1		1.76	J	0.100	U
	10/13/2017	0.103	J	17	V	0.050	U	4.27	J	22.1		2.14	J	0.100	U
	4/13/2018	0.236		26		0.050	U	8.65		36.3		2.66		0.101	
	9/12/2018	0.141	I	17	I	0.050	U	22.5		23.6		1.83	I	0.126	I
	3/14/2019	0.234	J	19	J	0.2000	U	30.5		32.5		1.37	J	0.100	U
	9/17/2019	0.0895	J	23	J	0.800	U	21.8		29.9		3.09		0.500	U
	6/24/2016	0.080	U	3.8	I	0.050	U	2.4	I	4.8		0.722	I	0.100	U
	7/27/2016	0.080	U	9.1	I	0.050	U	1	U	5.1	J	0.76	I	0.100	U
	8/26/2016	0.080	U	2	I	0.050	U	7.57		4.0		0.577	I	0.100	U
	10/28/2016	0.080	U	3.8	I	0.050	U	1.42		4.8		0.489	I	0.100	U
	11/10/2016	0.080	U	1.7		0.050	U	1.00	U	8.0		0.485	1	0.100	<u> </u>
	1/26/2017	0.080	U	5.2	I	0.050	U	2.56		4.8	J	0.26	-	0.100	<u> </u>
	4/13/2017	0.080	U	3.4		0.050	U	9.65	1	4.5		0.539	-	0.100	U
BR2-CCK-BM2	6/28/2017	0.080	U	5.2	-	0.050	U	10.2	U	4.8		0.386	-	0.100	
	//20/2017	0.800	0	5.9		0.050	U	8.9		4.4		2.00	0	1.00	
	8/16/2017	0.101	1	0.05	0	0.050	0	4.08	1	4.9		0.42	1	0.100	
	10/13/2017	0.080	U	8.2	1,V	0.050	0	2.51	J	4.9		0.523	J	0.100	
	4/13/2018	0.112		9.9		0.050	0	3.28		4.7		0.000		0.100	
	9/12/2018	0.080	0	0.2		0.050	0	2.5	0	3.7		0.503	-	0.100	
	3/14/2019	2.00	0	8.2	1	0.5000	0	3.51	J	4.8		0.609	-	0.100	
	9/1//2019	2.00	0	90	0	0.800	0	4.90	J	4.7		1.0	,	0.300	
	0/24/2010 7/27/2016	0.080	0	0.3	-		0	100		33.0		0.090	-	0.100	
	8/26/2016	0.020		7/	1	0.050	0	8U 3 202		15.0		0.30		0.100	
	10/28/2016	0.000	11	12		0.050	11	05.5		13.0 42.6		0.365	1	0.100	
	11/10/2016	0.080	11	27 87	-	0.030	11	95.5 QQ /		42.0		1 0/		0.100	
	1/26/2017	0.080	11	1/	-	0.050	0	92.4		37.5		0.653		0.100	<u> </u>
	1/20/2017	0.000	1	10	-	0.050	0	124		25.9		0.033		0.100	
BBS-CCR-1	6/28/2017	0.0373		12		0.050	11	96 5		Δ1 Δ		0.756		0.100	
bbs cen i	7/20/2017	0.000	U	14	1.13	0.050	1	99.6		34.7		2.25	-	0.100	
	8/16/2017	0.080		0.05	.,	0.050		86.4		33.4		0.918	J	0.100	
	10/13/2017	0.080		15		0.050		82.5		35.6		0.99	, 1	0.100	<u> </u>
	4/13/2018	0.328		22	.,•	0.050		74.8		34.0		0.908	•	0.100	
	9/12/2018	0.080	U	16	I	0.050		73.4		34.7		0.721	I	0.100	
	3/14/2019	0.0800	U U	13	·]	0.2000	U	84.3		33.9		0.943	J	0.100	
	9/17/2019	2.00	Ŭ	18	J	0.800	U	83.8		30.4		2.51	-	0.500	

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		Appendix IV Parameters													
		Lead		Lithium		Mercury		Molybdenum		Radium 226/228		Selenium		Thallium	
	Units	ug/L		ug/L		ug/L		ug/L		pCi/L		ug/L		ug/L	
	MCL	15		140**		2		35**		1		50		2	
Well ID	Sample Date	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
BBS-CCR-2	6/24/2016	0.080	U	10	Ι	0.050	U	1.73	I	15.0		0.376	Ι	0.100	U
	7/27/2016	0.110	I	17	1	0.050	U	1	U	13.2		0.28	I	0.100	U
	8/26/2016	0.080	U	11	1	0.050	U	7.78		32.0		0.200	U	0.100	U
	10/28/2016	0.129	I	14	I.	0.050	U	1	U	14.9		0.333	I	0.100	U
	11/10/2016	0.0955	I	11	1	0.050	U	1.43	I	14.8		0.259	I	0.100	U
	1/26/2017	0.080	U	13	Ι	0.050	U	2.52	I	13.9		0.200	U	0.100	U
	4/13/2017	0.176	I	13	Ι	0.050	U	9.82	I	14.2		0.200	U	0.100	U
	6/28/2017	0.144	I	14	I	0.050	U	9.59	U	14.7		0.200	U	0.100	U
	7/20/2017	0.127	I	16	Ι	0.050	U	9.88	I	14.4		0.474	I	0.100	U
	8/16/2017	0.244	J	0.05	U	0.050	U	3.02	J	12.1		0.662	J	0.200	U
	10/13/2017	0.150	J	16	I,V	0.050	U	1.99	J	13.5		0.474	J	0.100	U
	4/13/2018	0.167		17		0.050	U	2.69		17.4		0.395		0.100	U
	9/12/2018	0.102	I.	13	Т	0.050	U	2.50	J-, U	15.3		0.509	U	0.100	U
	3/14/2019	0.106	J	10	J	0.2000	U	3.63	J-, U	15.8		0.509	U	0.100	U
	9/17/2019	2.00	U	14	J	0.800	U	4.55	J	16.2		0.778	J	0.500	U
BBS-CCR-3	6/24/2016	0.125	Ι	3.7	Ι	0.058	Ι	4.09	Ι	10.3		0.262	Ι	0.100	U
	7/27/2016	0.080	Ι	11	Ι	0.050	U	2.23	I	12.3		0.27	Ι	0.100	U
	8/26/2016	0.080	U	6.1	I	0.050	U	8.1		15.0		0.200	U	0.100	U
	10/28/2016	0.107	I.	8.2	1	0.050	U	3.63	I.	18.1		0.200	U	0.100	U
	11/10/2016	0.080	U	6.1	Ι	0.050	U	3.9	I	17.5		0.253	I	0.100	U
	1/26/2017	0.080	U	7.7	Ι	0.050	U	5.42	I	15.0		0.200	U	0.100	U
	4/13/2017	0.080	U	6.3	Т	0.050	U	11.7	1	14.4		0.200	U	0.100	U
	6/28/2017	0.080	U	5.2	Ι	0.050	U	11.9	U	17.7		0.200	U	0.100	U
	7/20/2017	0.400	U	10	Ι	0.050	U	10.6	Ι	20.3		1.00	U	0.500	U
	8/16/2017	0.080	U	0.05	U	0.050	U	3.14	J	19.6		0.200	U	0.100	U
	10/13/2017	0.080	U	11	I,V	0.050	U	3.82	J	20.0		0.285	J	0.100	U
	4/13/2018	0.0911		15		0.050	U	3.64		19.9		0.357		0.100	U
	9/12/2018	0.080	U	11	Ι	0.050	U	3.99	Ι	14.8		0.509	U	0.100	U
	3/14/2019	0.202	J	9.6	J	0.2000	U	7.69	J	19.0		0.526	J	0.100	U
	9/17/2019	2.00	U	13	J	0.800	U	12.7	J	17.7		0.983	J	0.500	U

JANUARY 2020

Abbreviations:

Q - Data qualifier mg/L - milligrams per liter ug/L - micrograms per liter pCI/L - picocuries per liter

Notes:

1. U: Laboratory qualifer - Indicates that the compound was not detected above the reporting limit.

2. I: Laboratory qualifier - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit; estimated value

3. J(-): Laboratory qualifier - The reported value is an estimated value.

4. J: Data validation qualifer - The analyte was postively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

5. UJ: Data validation qualifer - 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.

6. J-: Data validation qualifer - 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.

7. V: Analyte detected in the method blank.

8. Q: Laboratory qualifer- Re-analysis of sample beyond the accepted holding time.

9. J3: Laboratory qualifer - Estimated value; value may not be accurate. Spike recovery or RPD outside of criteria.

10. MCLs - EPA Maximum Contaminant Levels; primary enforceable standards shown unless otherwise noted. Secondary (non-enforceable) standards shown in italics.

11. ** Florida GCTLs per FDEP Chapter 62-777 of the Florida Administrative Code.

12. *** Secondary MCL for fluoride is 2 mg/L but not enforceable.

13. Detections are shown in **bold** text.

APPENDIX B

Laboratory Analytical Data Report – Fourth Detection Monitoring Event (March 2019)


5012 Causeway Blvd Tampa Fl. 33619 * Ph (813)630-7490 * Fax (813)630-7360 * DOH #E54272

 Big Bend Power Station
 Report Date:
 04/01/19 10:37

 Terry Eastley
 13031 Wyandott Rd
 4

 Apollo Beach, FL 33572
 4
 4

 tleastley@tecoenergy.com
 4
 4

 Work Order L19C024
 Project - CCR Wells Economizer Ash Pond

Case Narrative

5 sample(s) were received on 03/14/19 15:21.

There were no issues noted with the sample(s) associated with this workorder unless noted below.

EPA 6010

The recovery of the matrix spike and spike duplicate for Boron and Calcium could not be accurately determined due to the amount of target analyte in the sample matrix. The parent sample is flagged with a J qualifier.



5012 Causeway Blvd Tampa Fl. 33619 * Ph (813)630-7490 * Fax (813)630-7360 * DOH #E54272

Sample Information Client: Big Bend Power Station Lab Sample ID: L19C024-01 Sampled By: Robert Barthelette Sample Description: BBS-CCR-1 Date and Time Collected: 3/14/19 14:02 Sample Collection Method: Grab Date of Sample Receipt: 3/14/19 15:21 Laboratory Results **Sample Qualifier: Oualifier** Test Analysis Result Units MDL POL Code Dil Method Analyst Date & Time Parameter Tampa Electric Company, Laboratory Services **General Chemistry Parameters** Chloride 10 TMH 664 mg/L 1.00 5.00 EPA 300.0 3/27/19 14:58 Specific Conductance 4040 FDEP SOP FT 1200 3/14/19 14:02 100 100 1 RAB umhos/cm Dissolved Oxygen 0.100 U 1 FDEP SOP FT 1500 RAB 3/14/19 14:02 mg/L 0.100 0.100 mg/L Fluoride 0.415 0 100 0.500 I 10 EPA 300.0 TMH 3/27/19 14:58 pН 6.81 pH Units 1.00 1.00 1 FDEP SOP FT 1100 RAB 3/14/19 14:02 **REDOX** Potential 3/14/19 14:02 -66.0 mV -999 -999 1 SM 2580B RAB Total Dissolved Solids 3000 2 ERS 3/18/19 11:30 mg/L 20.0 20.0 SM 2540C Sulfate 1160 200 100 EPA 300.0 TMH 3/27/19 15:08 mg/L 50.0 Turbidity 1.74 NTU 0.100 1 FDEP SOP FT 1600 RAB 3/14/19 14:02 0.100 Total Mercury by SW846 Method 7470/7471 0.200 3/15/19 9:26 Mercury 0.200 0.800 U 1 EPA 7470A MCR ug/L **Total Recoverable Metals by 200 Series** 0.600 U 1 MCR 3/18/19 13:00 Antimony 0.600 2.00 EPA 200.8 ug/L Arsenic 10.0 1 EPA 200.8 MCR 3/18/19 13:00 0.320 2.00 ug/L Cadmium 0.100 ug/L 0.100 0 500 U 1 EPA 200.8 MCR 3/18/19 13:00 Cobalt 0.546 2.00 I 1 EPA 200.8 MCR 3/18/19 13:00 0.136 ug/L Lead 0.0800 0.0800 2.00 U 1 EPA 200.8 MCR 3/18/19 13:00 ug/L 3/18/19 13:00 Selenium 0.943 0.509 2.00 I 1 EPA 200.8 MCR ug/L Thallium 0.100 ug/L 0.100 0 500 U 1 EPA 200.8 MCR 3/18/19 13:00 **Total Recoverable Metals by SW846 Method 6010B** Barium 0.112 0.000500 0.0200 1 EPA 6010B RC 3/15/19 15:30 mg/L Beryllium 0.500 U 1 EPA 6010B RC 3/15/19 15:30 0.500 2.00 ug/L Boron 18.4 0.0100 0.0500 J-1 EPA 6010B RC 3/15/19 15:30 mg/L Calcium 518 mg/L 0.0300 1.00 I-1 EPA 6010B RC 3/18/19 9:35 Chromium 1.60 1.60 12.0 U 1 EPA 6010B RC 3/15/19 15:30 ug/L Molybdenum 84.3 1 EPA 6010B RC 3/15/19 15:30 ug/L 2.50 20.0 **KNL** Laboratory **Radium - 226** Rad - 226 33.2 pCi/L 0.3 0.3 1 EPA 903.0 KL1 3/21/19 12:18 Rad - 226 Counting Error +/-1.7 1 EPA 903.0 KL1 3/21/19 12:18 pCi/L Radium - 228 0.9 Rad - 228 U 3/28/19 12:22 pCi/L 0.9 0.9 1 EPA Ra-05 KL1 Rad - 228 Counting Error +/-0.5 1 KL1 3/28/19 12:22 pCi/L EPA Ra-05



5012 Causeway Blvd Tampa Fl. 33619 * Ph (813)630-7490 * Fax (813)630-7360 * DOH #E54272

Sample Information

		-							
Client:	Big Bend Power Station								
Lab Sample ID:	L19C024-01	Sampled By: Robert Barthelette							
Sample Description:	BBS-CCR-1					Date and	Time Collected:	3/14/19 1	4:02
Sample Collection Meth		Date of Sample Receipt: 3/14/19 15						:21	
		Labo	ratory F	Results					
Sample Qualifier:									
					Qualifier	•	Test		Analysis
Parameter	Result	Units	MDL	PQL	Code	Dil	Method	Analyst	Date & Time
Radium-226/228									
Rad-226/228	33.9	pCi/L	0.9	0.9		1	Calc	KL1	3/28/19 12:22
Rad-226/228 Counting Error	+/- 1.7	pCi/L				1	Calc	KL1	3/28/19 12:22
		Т	`estAmeric	a Pensac	ola				
<u>Metals (ICP)</u>									
Lithium	0.013	mg/L	0.0010	0.050	Ι	1	200.7 Rev 4.4 Z0	GESP	3/19/19 21:01



5012 Causeway Blvd Tampa Fl. 33619 * Ph (813)630-7490 * Fax (813)630-7360 * DOH #E54272

Sample Information

Client:	Big Bend Power Station		
Lab Sample ID:	L19C024-02	Sampled By: Robert B	arthelette
Sample Description:	BBS-CCR-2	Date and Time Collected:	3/14/19 13:35
Sample Collection Me	hod: Grab	Date of Sample Receipt:	3/14/19 15:21

Laboratory Results

Sample Qualifier:

					Qualifier		Test		Analysis
Parameter	Result	Units	MDL	PQL	Code	Dil	Method	Analyst	Date & Time
]	ampa Electri	ic Compan	y, Labo	ratory Ser	vices			
General Chemistry Paramete	rs								
Chloride	77.2	mg/L	1.00	5.00		10	EPA 300.0	TMH	3/27/19 15:38
Specific Conductance	1420	umhos/cm	100	100		1	FDEP SOP FT 1200	RAB	3/14/19 13:35
Dissolved Oxygen	0.100	mg/L	0.100	0.100	U	1	FDEP SOP FT 1500	RAB	3/14/19 13:35
Fluoride	0.394	mg/L	0.100	0.500	Ι	10	EPA 300.0	TMH	3/27/19 15:38
pH	6.74	pH Units	1.00	1.00		1	FDEP SOP FT 1100	RAB	3/14/19 13:35
REDOX Potential	-118	mV	-999	-999		1	SM 2580B	RAB	3/14/19 13:35
Total Dissolved Solids	1060	mg/L	10.0	10.0		1	SM 2540C	ERS	3/18/19 11:30
Sulfate	445	mg/L	5.00	20.0		10	EPA 300.0	TMH	3/27/19 15:38
Turbidity	8.50	NTU	0.100	0.100		1	FDEP SOP FT 1600	RAB	3/14/19 13:35
Total Mercury by SW846 Me	thod 7470/7471								
Mercury	0.200	ug/L	0.200	0.800	U	1	EPA 7470A	MCR	3/15/19 9:27
Total Recoverable Metals by 2	200 Series								
Antimony	0.600	ug/L	0.600	2.00	U	1	EPA 200.8	MCR	3/18/19 13:02
Arsenic	1.46	ug/L	0.320	2.00	Ι	1	EPA 200.8	MCR	3/18/19 13:02
Cadmium	0.100	ug/L	0.100	0.500	U	1	EPA 200.8	MCR	3/18/19 13:02
Cobalt	0.136	ug/L	0.136	2.00	U	1	EPA 200.8	MCR	3/18/19 13:02
Lead	0.106	ug/L	0.0800	2.00	Ι	1	EPA 200.8	MCR	3/18/19 13:02
Selenium	0.509	ug/L	0.509	2.00	U	1	EPA 200.8	MCR	3/18/19 13:02
Thallium	0.100	ug/L	0.100	0.500	U	1	EPA 200.8	MCR	3/18/19 13:02
Total Recoverable Metals by	SW846 Method	6010B							
Barium	0.0666	mg/L	0.000500	0.0200		1	EPA 6010B	RC	3/15/19 15:34
Beryllium	0.500	ug/L	0.500	2.00	U	1	EPA 6010B	RC	3/15/19 15:34
Boron	0.279	mg/L	0.0100	0.0500		1	EPA 6010B	RC	3/15/19 15:34
Calcium	208	mg/L	0.0300	1.00		1	EPA 6010B	RC	3/18/19 9:38
Chromium	1.60	ug/L	1.60	12.0	U	1	EPA 6010B	RC	3/15/19 15:34
Molybdenum	3.63	ug/L	2.50	20.0	Ι	1	EPA 6010B	RC	3/15/19 15:34
			KNL Lab	oratory					
<u> Radium - 226</u>									
Rad - 226	15.4	pCi/L	0.5	0.5		1	EPA 903.0	KL1	3/21/19 12:18
Rad - 226 Counting Error +/-	1.2	pCi/L				1	EPA 903.0	KL1	3/21/19 12:18
<u>Radium - 228</u>									
Rad - 228	0.6	pCi/L	0.6	0.6	U	1	EPA Ra-05	KL1	3/28/19 12:22
Rad - 228 Counting Error +/-	0.5	pCi/L				1	EPA Ra-05	KL1	3/28/19 12:22



5012 Causeway Blvd Tampa Fl. 33619 * Ph (813)630-7490 * Fax (813)630-7360 * DOH #E54272

Sample Information

<u>Cliant</u>	D'- D J D Station									
Client:	Big Bend Power Station									
Lab Sample ID:	L19C024-02		Sampled By: Robert Barthelette							
Sample Description:	BBS-CCR-2		Date and Time Collected: 3/14/19 13:35							
Sample Collection Meth		Date of Sample Receipt: 3/14						4/19 15:21		
		Labo	ratory F	Results						
Sample Qualifier:										
					Qualifier	r	Test		Analysis	
Parameter	Result	Units	MDL	PQL	Code	Dil	Method	Analyst	Date & Time	
Radium-226/228										
Rad-226/228	15.8	pCi/L	0.6	0.6		1	Calc	KL1	3/28/19 12:22	
Rad-226/228 Counting Error	+/- 1.2	pCi/L				1	Calc	KL1	3/28/19 12:22	
		Т	estAmeric	a Pensac	ola					
Metals (ICP)										
Lithium	0.010	mg/L	0.0010	0.050	Ι	1	200.7 Rev 4.4 Z01	GESP	3/19/19 21:04	



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Sample Information

Client:	Big Bend Power Station	
Lab Sample ID:	L19C024-03	Sampled By: Robert Barthelette
Sample Description:	BBS-CCR-3	Date and Time Collected: 3/14/19 13:04
Sample Collection Met	hod: Grab	Date of Sample Receipt: 3/14/19 15:21

Laboratory Results

Sample Qualifier:

					Qualifier		Test		Analysis
Parameter	Result	Units	MDL	PQL	Code	Dil	Method	Analyst	Date & Time
]	Fampa Electr	ic Compan	y, Laboi	ratory Ser	vices			
General Chemistry Paramete	ers								
Chloride	161	mg/L	1.00	5.00		10	EPA 300.0	TMH	3/27/19 15:59
Specific Conductance	1830	umhos/cm	100	100		1	FDEP SOP FT 1200	RAB	3/14/19 13:04
Dissolved Oxygen	0.100	mg/L	0.100	0.100	U	1	FDEP SOP FT 1500	RAB	3/14/19 13:04
Fluoride	0.513	mg/L	0.100	0.500		10	EPA 300.0	TMH	3/27/19 15:59
pH	6.43	pH Units	1.00	1.00		1	FDEP SOP FT 1100	RAB	3/14/19 13:04
REDOX Potential	-192	mV	-999	-999		1	SM 2580B	RAB	3/14/19 13:04
Total Dissolved Solids	1350	mg/L	10.0	10.0		1	SM 2540C	ERS	3/18/19 11:30
Sulfate	534	mg/L	5.00	20.0		10	EPA 300.0	TMH	3/27/19 15:59
Turbidity	10.1	NTU	0.100	0.100		1	FDEP SOP FT 1600	RAB	3/14/19 13:04
Total Mercury by SW846 Me	thod 7470/7471								
Mercury	0.200	ug/L	0.200	0.800	U	1	EPA 7470A	MCR	3/15/19 9:28
Total Recoverable Metals by 2	200 Series								
Antimony	0.600	ug/L	0.600	2.00	U	1	EPA 200.8	MCR	3/18/19 13:04
Arsenic	0.365	ug/L	0.320	2.00	Ι	1	EPA 200.8	MCR	3/18/19 13:04
Cadmium	0.100	ug/L	0.100	0.500	U	1	EPA 200.8	MCR	3/18/19 13:04
Cobalt	0.207	ug/L	0.136	2.00	Ι	1	EPA 200.8	MCR	3/18/19 13:04
Lead	0.202	ug/L	0.0800	2.00	Ι	1	EPA 200.8	MCR	3/18/19 13:04
Selenium	0.526	ug/L	0.509	2.00	Ι	1	EPA 200.8	MCR	3/18/19 13:04
Thallium	0.100	ug/L	0.100	0.500	U	1	EPA 200.8	MCR	3/18/19 13:04
Total Recoverable Metals by	SW846 Method	6010B							
Barium	0.0695	mg/L	0.000500	0.0200		1	EPA 6010B	RC	3/15/19 15:39
Beryllium	0.500	ug/L	0.500	2.00	U	1	EPA 6010B	RC	3/15/19 15:39
Boron	0.259	mg/L	0.0100	0.0500		1	EPA 6010B	RC	3/15/19 15:39
Calcium	207	mg/L	0.0300	1.00		1	EPA 6010B	RC	3/18/19 9:41
Chromium	5.29	ug/L	1.60	12.0	Ι	1	EPA 6010B	RC	3/15/19 15:39
Molybdenum	7.69	ug/L	2.50	20.0	Ι	1	EPA 6010B	RC	3/15/19 15:39
			KNL Lab	oratory					
<u> Radium - 226</u>									
Rad - 226	18.8	pCi/L	0.7	0.7		1	EPA 903.0	KL1	3/22/19 11:46
Rad - 226 Counting Error +/-	1.8	pCi/L				1	EPA 903.0	KL1	3/22/19 11:46
<u>Radium - 228</u>									
Rad - 228	0.6	pCi/L	0.6	0.6	U	1	EPA Ra-05	KL1	3/28/19 12:22
Rad - 228 Counting Error +/-	0.5	pCi/L				1	EPA Ra-05	KL1	3/28/19 12:22



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Sample Information

		-							
Client:	Big Bend Power Station								
Lab Sample ID:	L19C024-03					Sampled I	By: Robert Ba	arthelette	
Sample Description:	BBS-CCR-3					Date and	Time Collected:	3/14/19 1	3:04
Sample Collection Meth		Date of Sample Receipt: 3/14/1						19 15:21	
		Labo	ratory F	Results					
Sample Qualifier:									
					Qualifier	r	Test		Analysis
Parameter	Result	Units	MDL	PQL	Code	Dil	Method	Analyst	Date & Time
Radium-226/228									
Rad-226/228	19.0	pCi/L	0.7	0.7		1	Calc	KL1	3/28/19 12:22
Rad-226/228 Counting Error	· +/- 1.8	pCi/L				1	Calc	KL1	3/28/19 12:22
		Т	estAmeric	a Pensac	ola				
<u>Metals (ICP)</u>									
Lithium	0.0096	mg/L	0.0010	0.050	Ι	1	200.7 Rev 4.4 Z0	1 GESP	3/19/19 21:08



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Sample Information

Client:	Big Bend Power Station	
Lab Sample ID:	L19C024-04	Sampled By: Robert Barthelette
Sample Description:	BBS-CCR-BW1	Date and Time Collected: 3/14/19 12:33
Sample Collection Met	hod: Grab	Date of Sample Receipt: 3/14/19 15:21

Laboratory Results

Sample Qualifier:

					Qualifier		Test		Analysis
Parameter	Result	Units	MDL	PQL	Code	Dil	Method	Analyst	Date & Time
	1	fampa Electri	ic Compan	y, Labor	atory Ser	vices			
General Chemistry Parameter	ſS								
Chloride	649	mg/L	1.00	5.00		10	EPA 300.0	TMH	3/26/19 19:30
Specific Conductance	4220	umhos/cm	100	100		1	FDEP SOP FT 1200	RAB	3/14/19 12:33
Dissolved Oxygen	0.140	mg/L	0.100	0.100		1	FDEP SOP FT 1500	RAB	3/14/19 12:33
Fluoride	0.537	mg/L	0.100	0.500		10	EPA 300.0	TMH	3/26/19 19:30
pH	6.49	pH Units	1.00	1.00		1	FDEP SOP FT 1100	RAB	3/14/19 12:33
REDOX Potential	3.00	mV	-999	-999		1	SM 2580B	RAB	3/14/19 12:33
Total Dissolved Solids	3160	mg/L	40.0	40.0		4	SM 2540C	ERS	3/18/19 11:30
Sulfate	1380	mg/L	50.0	200		100	EPA 300.0	TMH	3/26/19 19:40
Turbidity	3.64	NTU	0.100	0.100		1	FDEP SOP FT 1600	RAB	3/14/19 12:33
Total Mercury by SW846 Met	hod 7470/7471								
Mercury	0.200	ug/L	0.200	0.800	U	1	EPA 7470A	MCR	3/15/19 9:29
Total Recoverable Metals by 2	00 Series								
Antimony	0.600	ug/L	0.600	2.00	U	1	EPA 200.8	MCR	3/18/19 15:06
Arsenic	9.60	ug/L	0.320	2.00		1	EPA 200.8	MCR	3/18/19 15:06
Cadmium	0.100	ug/L	0.100	0.500	U	1	EPA 200.8	MCR	3/18/19 15:06
Cobalt	1.75	ug/L	0.136	2.00	Ι	1	EPA 200.8	MCR	3/18/19 15:06
Lead	0.234	ug/L	0.0800	2.00	Ι	1	EPA 200.8	MCR	3/18/19 15:06
Selenium	1.37	ug/L	0.509	2.00	Ι	1	EPA 200.8	MCR	3/18/19 15:06
Thallium	0.100	ug/L	0.100	0.500	U	1	EPA 200.8	MCR	3/18/19 15:06
Total Recoverable Metals by S	W846 Method	6010B							
Barium	0.0480	mg/L	0.000500	0.0200		1	EPA 6010B	RC	3/15/19 15:43
Beryllium	0.500	ug/L	0.500	2.00	U	1	EPA 6010B	RC	3/15/19 15:43
Boron	33.4	mg/L	0.0100	0.0500		1	EPA 6010B	RC	3/15/19 15:43
Calcium	653	mg/L	0.0300	1.00		1	EPA 6010B	RC	3/18/19 9:44
Chromium	1.60	ug/L	1.60	12.0	U	1	EPA 6010B	RC	3/15/19 15:43
Molybdenum	30.5	ug/L	2.50	20.0		1	EPA 6010B	RC	3/15/19 15:43
			KNL Lab	oratory					
<u>Radium - 226</u>									
Rad - 226	29.5	pCi/L	0.5	0.5		1	EPA 903.0	KL1	3/22/19 11:46
Rad - 226 Counting Error +/-	1.8	pCi/L				1	EPA 903.0	KL1	3/22/19 11:46
<u> Radium - 228</u>									
Rad - 228	3.0	pCi/L	0.6	0.6		1	EPA Ra-05	KL1	3/28/19 12:22
Rad - 228 Counting Error +/-	0.6	pCi/L				1	EPA Ra-05	KL1	3/28/19 12:22



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Sample Information

		-							
Client:	Big Bend Power Station								
Lab Sample ID:	L19C024-04					Sampled I	By: Robert Ba	rthelette	
Sample Description:	BBS-CCR-BW1					Date and	Time Collected:	3/14/19 1	2:33
Sample Collection Meth		Date of Sample Receipt: 3/14/						4/19 15:21	
		Labo	ratory F	Results					
Sample Qualifier:									
					Qualifier		Test		Analysis
Parameter	Result	Units	MDL	PQL	Code	Dil	Method	Analyst	Date & Time
Radium-226/228									
Rad-226/228	32.5	pCi/L	0.6	0.6		1	Calc	KL1	3/28/19 12:22
Rad-226/228 Counting Error	+/- 1.8	pCi/L				1	Calc	KL1	3/28/19 12:22
		Т	estAmeric	a Pensac	ola				
Metals (ICP)									
Lithium	0.019	mg/L	0.0010	0.050	Ι	1	200.7 Rev 4.4 Z01	GESP	3/19/19 21:12



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Sample Information

Client:	Big Bend Power Station	
Lab Sample ID:	L19C024-05	Sampled By: Robert Barthelette
Sample Description:	BBS-CCR-BW2	Date and Time Collected: 3/14/19 12:02
Sample Collection Met	hod: Grab	Date of Sample Receipt: 3/14/19 15:21

Laboratory Results

Sample Qualifier:

					Qualifier		Test		Analysis
Parameter	Result	Units	MDL	PQL	Code	Dil	Method	Analyst	Date & Time
]	fampa Electri	ic Compan	y, Labor	atory Ser	vices			
General Chemistry Paramete	ers								
Chloride	141	mg/L	1.00	5.00		10	EPA 300.0	TMH	3/26/19 19:51
Specific Conductance	1930	umhos/cm	100	100		1	FDEP SOP FT 1200	RAB	3/14/19 12:02
Dissolved Oxygen	0.110	mg/L	0.100	0.100		1	FDEP SOP FT 1500	RAB	3/14/19 12:02
Fluoride	0.495	mg/L	0.100	0.500	Ι	10	EPA 300.0	TMH	3/26/19 19:51
pH	6.56	pH Units	1.00	1.00		1	FDEP SOP FT 1100	RAB	3/14/19 12:02
REDOX Potential	-12.0	mV	-999	-999		1	SM 2580B	RAB	3/14/19 12:02
Total Dissolved Solids	1380	mg/L	10.0	10.0		1	SM 2540C	ERS	3/18/19 11:30
Sulfate	538	mg/L	5.00	20.0		10	EPA 300.0	TMH	3/26/19 19:51
Turbidity	16.8	NTU	0.100	0.100		1	FDEP SOP FT 1600	RAB	3/14/19 12:02
Total Mercury by SW846 Me	thod 7470/7471								
Mercury	0.200	ug/L	0.200	0.800	U	1	EPA 7470A	MCR	3/15/19 9:33
Total Recoverable Metals by	200 Series								
Antimony	0.600	ug/L	0.600	2.00	U	1	EPA 200.8	MCR	3/18/19 15:09
Arsenic	0.320	ug/L	0.320	2.00	U	1	EPA 200.8	MCR	3/18/19 15:09
Cadmium	0.100	ug/L	0.100	0.500	U	1	EPA 200.8	MCR	3/18/19 15:09
Cobalt	0.136	ug/L	0.136	2.00	U	1	EPA 200.8	MCR	3/18/19 15:09
Lead	0.0800	ug/L	0.0800	2.00	U	1	EPA 200.8	MCR	3/18/19 15:09
Selenium	0.609	ug/L	0.509	2.00	Ι	1	EPA 200.8	MCR	3/18/19 15:09
Thallium	0.100	ug/L	0.100	0.500	U	1	EPA 200.8	MCR	3/18/19 15:09
Total Recoverable Metals by	SW846 Method	6010B							
Barium	0.0550	mg/L	0.000500	0.0200		1	EPA 6010B	RC	3/15/19 15:47
Beryllium	0.500	ug/L	0.500	2.00	U	1	EPA 6010B	RC	3/15/19 15:47
Boron	2.28	mg/L	0.0100	0.0500		1	EPA 6010B	RC	3/15/19 15:47
Calcium	344	mg/L	0.0300	1.00		1	EPA 6010B	RC	3/18/19 9:47
Chromium	4.07	ug/L	1.60	12.0	Ι	1	EPA 6010B	RC	3/15/19 15:47
Molybdenum	3.51	ug/L	2.50	20.0	Ι	1	EPA 6010B	RC	3/15/19 15:47
			KNL Lab	oratory					
<u>Radium - 226</u>									
Rad - 226	4.8	pCi/L	0.5	0.5		1	EPA 903.0	KL1	3/22/19 11:46
Rad - 226 Counting Error +/-	0.8	pCi/L				1	EPA 903.0	KL1	3/22/19 11:46
<u>Radium - 228</u>									
Rad - 228	0.6	pCi/L	0.6	0.6	U	1	EPA Ra-05	KL1	3/28/19 12:22
Rad - 228 Counting Error +/-	0.4	pCi/L				1	EPA Ra-05	KL1	3/28/19 12:22



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			Samp	le Inforr	nation	l				
Client: Lab Sample ID:	Big B L19C0	end Power Station				S	Sampled	By: Robert Bart	helette	
Sample Description:	BBS-0	CCR-BW2					- Date and	l Time Collected:	3/14/19 1	2:02
Sample Collection Me	ethod:	Grab				Da	ate of Sai	nple Receipt: 3	5/14/19 15	:21
			Labo	ratory R	Results					
Sample Qualifier:										
Parameter		Result	Units	MDL	PQL	Qualifier Code	Dil	Test Method	Analyst	Analysis Date & Time
Radium-226/228										
Rad-226/228		4.8	pCi/L	0.6	0.6		1	Calc	KL1	3/28/19 12:22
Rad-226/228 Counting Err	ror +/-	0.8	pCi/L				1	Calc	KL1	3/28/19 12:22
			Т	estAmerica	a Pensac	ola				
<u>Metals (ICP)</u> Lithium		0.0082	mg/L	0.0010	0.050	Ι	1	200.7 Rev 4.4 Z01	GESP	3/19/19 21:15
			Co	omments	5					
U Indicates that	at the com	pound was analyzed fo	r but not detect	ted.						
J- The reported	d value is	an estimated value, see	the case narrat	ive for specif	ics.					
I Estimated v	alue									
I The reported	d value is	between the laboratory	method detecti	ion limit and	the labora	tory practica	l quantita	tion limit.		
Subcontract Laborato	ries:									
KNL Laboratory			E84025							
TestAmerica Pensacola			E81010							



Total Recoverable Metals by SW846 Method 6010B - Quality Control

					C 11	C		0/ D		מתת	
Analyte	Result	MDL	PQL	Units	Spike Level	Result	%Rec	%Rec	RPD	Limit	Qualifier
Batch 19C0106 - EPA 6010B											
Blank (19C0106-BLK1)					Prepared &	Analyzed:	03/15/19				
Barium	0.000500	0.000500	0.0200	mg/L							U
Beryllium	0.500	0.500	2.00	ug/L							U
Boron	0.0100	0.0100	0.0500	mg/L							U
Calcium	0.0300	0.0300	1.00	mg/L							U
Chromium	1.60	1.60	12.0	ug/L							U
Molybdenum	2.50	2.50	20.0	ug/L							U
LCS (19C0106-BS1)					Prepared &	Analyzed:	03/15/19				
Barium	1.06	0.000500	0.0200	mg/L	1.0000		106	80-120			
Beryllium	1080	0.500	2.00	ug/L	1000.0		108	80-120			
Boron	1.09	0.0100	0.0500	mg/L	1.0000		109	80-120			
Chromium	1070	1.60	12.0	ug/L	1000.0		107	80-120			
Molybdenum	1080	2.50	20.0	ug/L	1000.0		108	80-120			
Matrix Spike (19C0106-MS1)		Sourc	e: L19C0	24-01	Prepared &	Analyzed:	03/15/19				
Barium	1.11	0.000500	0.0200	mg/L	1.0000	0.112	100	75-125			
Beryllium	1020	0.500	2.00	ug/L	1000.0	U	102	75-125			
Boron	19.0	0.0100	0.0500	mg/L	1.0000	18.4	57.1	75-125			J-
Chromium	1020	1.60	12.0	ug/L	1000.0	U	102	75-125			
Molybdenum	1140	2.50	20.0	ug/L	1000.0	84.3	105	75-125			
Matrix Spike Dup (19C0106-MSD1)		Sourc	e: L19C0	24-01	Prepared &	Analyzed:	03/15/19				
Barium	1.14	0.000500	0.0200	mg/L	1.0000	0.112	103	75-125	2.45	20	
Beryllium	1040	0.500	2.00	ug/L	1000.0	U	104	75-125	1.97	20	
Boron	19.6	0.0100	0.0500	mg/L	1.0000	18.4	118	75-125	3.14	20	
Chromium	1050	1.60	12.0	ug/L	1000.0	U	105	75-125	2.46	20	
Molybdenum	1170	2.50	20.0	ug/L	1000.0	84.3	109	75-125	2.80	20	



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Total Mercury by SW846 Method 7470/7471 - Quality Control

Analyte	Result	MDL	POL	Units	Spike Level	Source Result	%Rec	%Rec Limits	RPD	RPD Limit	Qualifier
7 maryte	Result	MDL	TQL	Clifts	Level	Result	701000	Ellints	КIÐ	Linit	Quanner
Batch 19C0109 - EPA 7470A											
Blank (19C0109-BLK1)					Prepared &	Analyzed:	03/15/19				
Mercury	0.200	0.200	0.800	ug/L							U
LCS (19C0109-BS1)					Prepared &	Analyzed:	03/15/19				
Mercury	1.99	0.200	0.800	ug/L	2.0000		99.6	80-120			
Matrix Spike (19C0109-MS1)		Sour	ce: L19C02	4-05	Prepared &	Analyzed:	03/15/19				
Matrix Spike (19C0109-MS1) Mercury	1.93	Sour 0.200	ce: L19C02 0.800	4-05 ug/L	Prepared & 2.0000	Analyzed: U	03/15/19 96.4	75-125			
Matrix Spike (19C0109-MS1) Mercury Matrix Spike (19C0109-MS2)	1.93	Sour 0.200 Sour	ce: L19C02 0.800 ce: L19C06	4-05 ug/L 5-01	Prepared & 2.0000 Prepared &	Analyzed: U Analyzed:	03/15/19 96.4 03/15/19	75-125			
Matrix Spike (19C0109-MS1) Mercury Matrix Spike (19C0109-MS2) Mercury	1.93	Sour 0.200 Sour 0.200	ce: L19C02 0.800 ce: L19C06 0.800	4-05 ug/L 5-01 ug/L	Prepared & 2.0000 Prepared & 2.0000	Analyzed: U Analyzed: U	03/15/19 96.4 03/15/19 93.0	75-125			
Matrix Spike (19C0109-MS1) Mercury Matrix Spike (19C0109-MS2) Mercury Matrix Spike Dup (19C0109-MSD1)	1.93	Sour 0.200 Sour 0.200 Sour 0.200	ce: L19C02 0.800 ce: L19C06 0.800 ce: L19C02	4-05 ug/L 5-01 ug/L 4-05	Prepared & 2.0000 Prepared & 2.0000 Prepared &	Analyzed: U Analyzed: U Analyzed:	03/15/19 96.4 03/15/19 93.0 03/15/19	75-125			
Matrix Spike (19C0109-MS1) Mercury Matrix Spike (19C0109-MS2) Mercury Matrix Spike Dup (19C0109-MSD1) Mercury	1.93 1.86 1.90	Sour 0.200 Sour 0.200 Sour 0.200 Sour 0.200	ce: L19C02 0.800 ce: L19C06 0.800 ce: L19C02 0.800	4-05 ug/L 5-01 ug/L 4-05 ug/L	Prepared & 2.0000 Prepared & 2.0000 Prepared & 2.0000 Prepared & 2.0000	Analyzed: U Analyzed: U Analyzed: U	03/15/19 96.4 03/15/19 93.0 03/15/19 95.0	75-125	1.57	20	
Matrix Spike (19C0109-MS1) Mercury Matrix Spike (19C0109-MS2) Mercury Matrix Spike Dup (19C0109-MSD1) Mercury Matrix Spike Dup (19C0109-MSD2)	1.93 1.86 1.90	Sour 0.200 Sour 0.200 Sour 0.200 Sour 0.200 Sour 0.200 Sour 0.200	<pre>ce: L19C02 0.800 ce: L19C06 0.800 ce: L19C02 0.800 ce: L19C02 0.800 ce: L19C06</pre>	4-05 ug/L 5-01 ug/L 4-05 ug/L 5-01	Prepared & 2.0000 Prepared & 2.0000 Prepared & 2.0000 Prepared &	Analyzed: U Analyzed: U Analyzed: U Analyzed:	03/15/19 96.4 03/15/19 93.0 03/15/19 95.0 03/15/19	75-125 75-125 75-125	1.57	20	



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Total Recoverable Metals by 200 Series - Quality Control

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%Rec	%Rec Limits	RPD	RPD Limit	Qualifier
Batch 19C0102 - EPA 200 8											``
Blank (19C0102-BLK1)					Prepared: 0)3/15/19 Ar	nalyzed: 03	/18/19			
Antimony	0.600	0.600	2.00	ug/L	1						U
Arsenic	0.320	0.320	2.00	ug/L							U
Cadmium	0.100	0.100	0.500	ug/L							U
Cobalt	0.136	0.136	2.00	ug/L							U
Lead	0.0800	0.0800	2.00	ug/L							U
Selenium	0.509	0.509	2.00	ug/L							U
Thallium	0.100	0.100	0.500	ug/L							U
LCS (19C0102-BS1)					Prepared: 0)3/15/19 Ar	nalyzed: 03	/18/19			
Antimony	0.100 0.100 0.500 ug/L Prepared: 03/15/19 Analyzed: 03/18/19 112 0.600 2.00 ug/L 100.00 112 85-115 101 0.320 2.00 ug/L 100.00 101 85-115										
Arsenic	101	0.320	2.00	ug/L	100.00		101	85-115			
Cadmium	100	0.100	0.500	ug/L	100.00		100	85-115			
Cobalt	111	0.136	2.00	ug/L	100.00		111	85-115			
Lead	94.5	0.0800	2.00	ug/L	100.00		94.5	85-115			
Selenium	105	0.509	2.00	ug/L	100.00		105	85-115			
Thallium	96.6	0.100	0.500	ug/L	100.00		96.6	85-115			
Matrix Spike (19C0102-MS1)		Sour	ce: L19C02	24-04	Prepared: 0)3/15/19 Ar	nalyzed: 03	/18/19			
Antimony	110	0.600	2.00	ug/L	100.00	U	110	70-130			
Arsenic	96.0	0.320	2.00	ug/L	100.00	9.60	86.4	70-130			
Cadmium	75.8	0.100	0.500	ug/L	100.00	U	75.8	70-130			
Cobalt	91.9	0.136	2.00	ug/L	100.00	1.75	90.1	70-130			
Lead	81.4	0.0800	2.00	ug/L	100.00	0.234	81.2	70-130			
Selenium	90.8	0.509	2.00	ug/L	100.00	1.37	89.4	70-130			
Thallium	85.4	0.100	0.500	ug/L	100.00	U	85.4	70-130			
Matrix Spike (19C0102-MS2)		Sour	ce: L19C06	5-01	Prepared: 0)3/15/19 Ar	nalyzed: 03	/18/19			
Antimony	112	0.600	2.00	ug/L	100.00	2.24	110	70-130			
Arsenic	101	0.320	2.00	ug/L	100.00	6.23	94.5	70-130			
Cadmium	81.1	0.100	0.500	ug/L	100.00	U	81.1	70-130			
Cobalt	96.7	0.136	2.00	ug/L	100.00	0.616	96.1	70-130			
Lead	82.8	0.0800	2.00	ug/L	100.00	0.970	81.8	70-130			
Selenium	96.0	0.509	2.00	ug/L	100.00	1.66	94.4	70-130			
Thallium	84.6	0.100	0.500	ug/L	100.00	U	84.6	70-130			



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Total Recoverable Metals by 200 Series - Quality Control

					Spike	Source		%Rec		RPD	
Analyte	Result	MDL	PQL	Units	Level	Result	%Rec	Limits	RPD	Limit	Qualifier
Batch 19C0102 - EPA 200.8											
Matrix Spike Dup (19C0102-MSD1)		Sour	ce: L19C02	24-04	Prepared: 0)3/15/19 Ai	nalyzed: 03	/18/19			
Antimony	110	0.600	2.00	ug/L	100.00	U	110	70-130	0.132	20	
Arsenic	98.5	0.320	2.00	ug/L	100.00	9.60	88.9	70-130	2.57	20	
Cadmium	78.1	0.100	0.500	ug/L	100.00	U	78.1	70-130	3.05	20	
Cobalt	93.9	0.136	2.00	ug/L	100.00	1.75	92.1	70-130	2.12	20	
Lead	82.3	0.0800	2.00	ug/L	100.00	0.234	82.1	70-130	1.09	20	
Selenium	94.4	0.509	2.00	ug/L	100.00	1.37	93.0	70-130	3.86	20	
Thallium	85.3	0.100	0.500	ug/L	100.00	U	85.3	70-130	0.0916	20	
Matrix Spike Dup (19C0102-MSD2)		Sour	ce: L19C06	5-01	Prepared: 0)3/15/19 Ai	nalyzed: 03	/18/19			
Antimony	114	0.600	2.00	ug/L	100.00	2.24	112	70-130	1.52	20	
Arsenic	99.5	0.320	2.00	ug/L	100.00	6.23	93.3	70-130	1.22	20	
Cadmium	80.8	0.100	0.500	ug/L	100.00	U	80.8	70-130	0.462	20	
Cobalt	93.3	0.136	2.00	ug/L	100.00	0.616	92.7	70-130	3.57	20	
Lead	83.7	0.0800	2.00	ug/L	100.00	0.970	82.7	70-130	1.03	20	
Selenium	94.3	0.509	2.00	ug/L	100.00	1.66	92.6	70-130	1.85	20	
Thallium	85.3	0.100	0.500	ug/L	100.00	U	85.3	70-130	0.824	20	



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General Chemistry Parameters - Quality Control

ource Result %Rec alyzed: 03/18/19 alyzed: 03/18/19	%Rec Limits	RPD	RPD Limit	Qualifier
esult %Rec alyzed: 03/18/19 alyzed: 03/18/19	Limits	RPD	Limit	Qualifier
alyzed: 03/18/19 alyzed: 03/18/19				
alyzed: 03/18/19 alyzed: 03/18/19				
alyzed: 03/18/19				
alyzed: 03/18/19				U
99.8	80-120			
alyzed: 03/18/19				
3000		0.870	10	
alyzed: 03/18/19				
1060		1.12	10	
alyzed: 03/27/19				
				U
				Ι
				U
alyzed: 03/27/19				
102	90-110			
99.0	90-110			
105	90-110			
alyzed: 03/27/19				
664 98.6	90-110			
U 96.7	90-110			
1160 103	90-110			
	alyzed: 03/18/19 99.8 alyzed: 03/18/19 3000 alyzed: 03/18/19 1060 alyzed: 03/27/19 alyzed: 03/27/19 102 99.0 105 alyzed: 03/27/19 664 98.6 U 96.7 1160 103	alyzed: 03/18/19 99.8 80-120 alyzed: 03/18/19 3000 alyzed: 03/18/19 1060 alyzed: 03/27/19 alyzed: 03/27/19 102 90-110 99.0 90-110 105 90-110 alyzed: 03/27/19 664 98.6 90-110 105 90-110 105 90-110 105 90-110 105 90-110 1060 103	alyzed: $03/18/19$ 99.8 $80-120$ alyzed: $03/18/19$ 0.870 alyzed: $03/18/19$ 1.12 alyzed: $03/27/19$ alyzed: $03/27/19$ 102 $90-110$ 99.0 $90-110$ 99.0 $90-110$ 99.0 $90-110$ 102 $90-110$ alyzed: $03/27/19$ 664 98.6 $90-110$ U 96.7 $90-110$ U 96.7 $90-110$ 10 alyzed: $03/27/19$	alyzed: $03/18/19$ 99.8 $80-120$ alyzed: $03/18/19$ 3000 0.870 10 alyzed: $03/18/19$ 1.12 10 alyzed: $03/27/19$ 1.12 10 alyzed: $03/27/19$ 102 $90-110$ 99.0 $90-110$ 105 $90-110$ 105 $90-110$ 105 $90-110$ 104 98.6 $90-110$ 100 100 96.7 $90-110$ 100 100 103 $90-110$ 100



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General Chemistry Parameters - Quality Control

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%Rec	%Rec Limits	RPD	RPD Limit	Qualifier
Batch 19C0184 - EPA 300.0											
Matrix Spike (19C0184-MS2)		Sour	ce: L19C05	53-05	Prepared &	Analyzed:	03/26/19				
Chloride	22.9	0.100	0.500	mg/L	5.0000	18.8	83.3	90-110			J-
Fluoride	5.66	0.0100	0.0500	mg/L	5.0000	0.875	95.8	90-110			
Sulfate	6.71	0.500	2.00	mg/L	5.0000	1.75	99.1	90-110			
Matrix Spike Dup (19C0184-MSD1)		Sour	ce: L19C02	24-01	Prepared &	Analyzed:	03/27/19				
Chloride	1170	10.0	50.0	mg/L	500.00	664	101	90-110	1.25	20	
Fluoride	490	1.00	5.00	mg/L	500.00	U	98.1	90-110	1.41	20	
Sulfate	1700	50.0	200	mg/L	500.00	1160	108	90-110	1.66	20	
Matrix Spike Dup (19C0184-MSD2)		Sour	ce: L19C05	53-05	Prepared &	Analyzed:	03/26/19				
Chloride	23.0	0.100	0.500	mg/L	5.0000	18.8	84.7	90-110	0.304	20	J-
Fluoride	5.67	0.0100	0.0500	mg/L	5.0000	0.875	95.9	90-110	0.168	20	
Sulfate	6.72	0.500	2.00	mg/L	5.0000	1.75	99.4	90-110	0.226	20	



5012 Causeway Blvd Tampa Fl. 33619 * Ph (813)630-7490 * Fax (813)630-7360 * DOH #E54272

Metals (ICP) - Quality Control

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%Rec	%Rec Limits	RPD	RPD Limit	Qualifier
Batch 433799 - 200.7 Rev 4.4 Z01											
Blank (433931-84)					Prepared &	Analyzed:	03/19/19				
Lithium	0.0010	0.0010	0.050	mg/L				-			U
LCS (433931-85)					Prepared &	Analyzed:	03/19/19				
Lithium	0.983	0.0010	0.050	mg/L	1.00		98	85-115			

Tampa Electric Company, Laboratory Services

Peggy Penner, Manager, Laboratory Services

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

				09'8	20.0	1422	23.92	\$7.9	= SƏNIB/	Stablillety /	ZL'O afun	d of suoliso	13:14	A steldmod spin
ON E	¿6uign (318AIS	07 > 0 IN 901											13:28
Sel L	Degicareg	318AIS	07 5185 54 00											:pug egu
S/Ed	:6uign (318AT2	G -/+ 56 0000	09.8	0.02	1422	23'92	\$7.9	06'9	2.37	0.32	009	13:28	13:13
dd	:dund	STABLE	Z.0 -4+354mal	78.7	0.03	1455	23.88	\$1.9	06'9	5'09	15.0	089	13:56	thet's start:
80WJW	Level Meter:	JIBATS	Z:0 -/+:ud	81.8	0.04	1424	23.87	¢7.6	6.92	1.74	1.74	009	13:54	Ar
Edpl. 1able	Equipment ID	saters	Purge Criteria	(UTU) (NTU)	00 (war)	(SOHMU) DOOD	D" qmaT	(ns) Hq	Water Depth (n)	(leg) .loV letoT	(le2) amuloV	(nim/tm) stsR	emiT	urge Meth:
11 - 1 -	ZL'0	90.0	0	22.84	0.0026	2.41	91.0	80.2F	92'9	21.84	16.84	01	5	BBS-CCK-5
	(je5) ounjon jdbg j	(lasi) Aointue = Ceir	(je5) + sunjoA . dung	+ ((u) suguri suguri	X (United) (capacity X	(je5) Adiume I Mei	= (je6) Appede;	Water Column X C	Mater Water (ft)	ita) Dectu - Meil	britake Depth (ft)	Screen (ft)	QmoO lmsiQ	# II9W
		1		Þ/.1	80.0	4040	54.09	18.9	= sanje/	Stablility V	ZL'O afun	Gallons to P	13:43	A steldmod agru
ON ET	2.6uian i	SIABLE	07 > 010 '901											13:22
SAT L	najeoipari	SIABLE	00 - 20		-			1						inge End:
S/Ed	:6uign [STABLE	G -/+ % DU00	+ <u></u>	80.0 1	1 4040	54.09	1 18.9	7.44	5.12	0.32	i 009 l	13:55	13:45
dd	:dwnd	318AT2	1emp*C+/- 0.2	89.1	0.02	4033	24.04	18.9	5Þ.T	08.1	0.33	950	13:53	inge Start:
80WJW	Level Meter:	STABLE	5'0 -/+:ud	3.13	0.02	4047	54.06	\$8.9	\$\$.T	74.1	1.47	950	13:61	AF
Edpt. Table	Equipment ID	Suteta	Purge Criteria	(UTU) (NTU)	DO (mg/L)	(SOHMu) broo	D° qmsT	(ns) Hq	(#) rtiged tetw	(lsg) .loV lsioT	Volume (gal)	(nim\tm) eteR	emiT	:ute Meth:
1121	ZL'O	90.0	0	53.3	0.0026	14.2	91.0	90'SI	12.7	22.32	17.32	10	5	BBS-CCR-1
			(105)	200	(20065)	(105)		00	(11)	- Cur)	Depth (ft)	(tt) levnetni	Diam/ Comp	# II9W
	emuloV =	= emulav	+ emilion +		x Apeders)	Volume	= ((e5) Appedec)	= Column X	Maler to	Depth -	intake	Screen		1
					900'0	1: 1/4 =0.0026, 3/8" =	files Gallonsin	Tubing Inside Diam. Ca		\$9'0= 91'0 =	: "2 :(11 \2noilse)	Well Capacities		noitemtotal gaign
01	0.3	ç	Z.0	80WdW	7	1		1 1	1			1	J/gm01=10 Im00	05/(oidTsV) Im2 :bis 0
(vm) xobeR	(y6w) OQ	Conduct(%)	Hq	Therm ID	OI sbibol/stebol	GI .bni ronsiz	DO 3 Fillow ID	CI OIUT EN	Titrator ID	emiT	CC Besult mg/l		(I.TTE A93)	illite Info (QC Check)
				09/	91:91	48.00			21.23	16.44	01.85	C 053445	U1	DEP FT 1600, Units: N
				Barom. Pres			99:/	9/'t	6.23	4,28	57.4	053441	ZOWL	ster ID:
01/.8	08.8	55.2	12:32	80WdW	emiT	CCA	emiT	ICA	kange	Acceptability	aulev bis	OI brebnet2	noit	indity Meter Calibra
946.8	8,53	53'3	09:/	Meter ID:	ZLIGL	9600L	61:8	10138			00001	C 053919C	SOHM	EP FT 1200, Units: uN
iteo Value mg/	Kem gribeas	n duei	emiT	DO Meter Cal					81:8	0001	0001	V6129Z0 7	80WdW	ster ID:
		~		C 0554818 A	emiT	CCA	emiT	ICA	emiT	Cal	anjeA pis	Cl bisbrist	'q	inductivity Meter Call
				Zobell Sol ID:		P	assed ADD / ADI S	A checked box indicate	8:05	00'7	7	C 0541280		US :sti
534'8	533.0	52.8	51:51	WPM08	1	vm01 -/+ xobsA) (J/g	ue.o -/+ OO) (%9 -/+	DC: (bH +I- 0.2) (Couq +	8:05	10.04	10	r 053838D		0EP FT 1100
534'0	534'0	55.4	19:7	Meter ID:	71:81	00'2			8:02	10.7	L	r 052325C	80M9M	ster ID:
vm suleV osfT	ит епібеея	O° qmeT	emiT	Redox Cal	amiT	CCA	amiT	ICA	amiT	Cal	Buffer Value	Buffer ID		Meter Calibration
	s pH of <2	of beilinev sew eld	mes out tent soleci	hori xod bexted A	ר ח	5	> Hq of CONH Im 2	mu24.0 diversed with 0.45um.	1L bottles (diss. rad	C 0533555C ►			S> Hq of CONH Im	t :(letem) setttod im 0
		15	< Hq of HOAN gf (r	250 ml bottles (Cyan	r n			S> Hq of H2SO4 to pH <2	40 ml Vial (TOC): 0	0 7			2> Hq of 50NH Im 2	c :(aletem) aelttod Im 0
		Acet. to pH >12	aniZ/HOAN ImS (9)	billu2)selttod Im 002	n 1			> Hd of #OSCH Im L :(S50ml bottles (nuts	L 023922C			VO3 to pH <2	H Im 2 :(sbsr) sellfod
e.s qmaT	Di sang		Preservation	1	CI san9			noitevation	0	Pres ID			noiteviasar	4
Time 15:21	ON T SOL			SSE		SSE		SSE	0315801D	SSE	02213010	SSE	0115801D	S
Sample Reciept	Samples On Ice		(90)) Isiv AOV Im04 (8)	(DA	(5) 1L amber glass (1	4) 100ml coliform bottle		(99) 250ml plastic (PP)	(66) (oitselq im002 (S)		(99) outseld JT
1	Г				D	D	5	N 5 N		1	I.		E	L19C024-02 A
OL	0				E		5	N 5 N			1	1.2	E	L19C024-01 A
Total Containers	(1) .ssiD sbeR Jr	(S) study im 005	(8) IsiV Im04	Z50ml Nuts (3)	(S) sitM Im008	(S) abilitula (R)	(t) sbeA Jt	(5) attM Im02S	(L) SINN 7L	250ml Inorg (3)	(S) gront Im002	(t) gront Jt	550ml Cyan (3)	# SWI7
		WILD	AELLOW		811-	5.8	0.0	1422	53'6	<i>L</i> .9		13:32	BBS-CCR-2	L19C024-02 A
		ANONE	CLEAR		99-	L'1	1.0	4040	24.1	8.8		14:05	BBS-CCR-1	L19C024-01 A
TEVEL	emiT	W-SODOR-W	\$COLOR-W	SO3-TR	BEDOX	TURB-N-F	DO	COND-F	LEWP-C	Hd	1/6w			
IGVD	N	Odor	Color	(J\gm) stillug	(vm) xobeA	Turbidity(NTU)	7/6W OO	(SOHMU)bnoD	D° qm9T	(UR) Hq	LE2	əmiT	Loction Code	# SWIT
ED.	alsitini O	RAB (TEC	Initials	bliM & Wild	Partly Clou	Weather:			File Name:	61/4/19	:ete:	pu	aB giB	:01

ON -	i fillion i l		07 . 0111 0101		-				= sanje	V vtildst2	urge 0.32	Gallons to P	3,	I A əfəlqmoD əpru
Sel [Degicated	-	07 STREW 00		-				-			-		uðe rug:
5/9d	:6uian (c -/+ % puoo								-	-		
dd	:dund		Temp ⁶ C+/- 0.2		4	-					-	-		:het2 egn
80MJW	Level Meter:		5.0 -\+:fg						-					
Edpt. Table	Equipment ID	Status	Purge Criteria	Turbidity (NTU)	(1/6m) OQ	(SOHMU) bnoO	0° qm9T	(UR) Hq	(it) Mater Depth (it)	(leg) .loV letoT	Volume (sal)	(nimlim) steR	amiT	:rtseM epiu
	25.0	90.0	0	100	0.0026	2.88	91.0	18.00		81	14	01	5	0
	tqp3 t (gal) (gal)	Achime (gal =	+ (isg) emuloy	+ ((4) 50097	X (fileg))	(Baj) Annon A Mei	CabacyA (Baj) =	= Water x Column (ش)	Depth to (n)	(u) Debu - Mai	Depth (tt)	Screen (ft)	Diam/ Comp	# IIPM
	2			01.01	0.02	1834	23.74	6.43	= sənje	V viiliidet2	ZL'O afun	d of shollso	12:44	A etelqmoD etel
ON D	5pniduT	STABLE	Turb. NTU < 20											15:23
Say 12	Dedicated	3J8AT2	0Z >'Ves % 00	1.										:pug əbj
S/3d	:eniduT	STABLE	Cond-%-+/- 5	01.01	0.02	1834	53.74	6.43	92.9	90.1	0.22	450	15:53	12:43
dd	Pump:	BJBATS	Temp*C+/- 0.2	00.11	0.03	1845	53.75	6.45	97.5	48.0	12.0	400	12:51	:that? spin
80MJW	Level Meter:	3J8AT2	5:0 -/+:ud	11.30	90.0	1847	23.83	09'9	92.9	0.63	6.63	400	15:49	Ar
Edpt. Table	Cl Inemqiup3	sutets	Purge Criteria	(UTU) (Inbiditu)	(J@m) 00	(SOHMU) bnoO	O° qmeT	(ns) Hq	Water Depth (it)	(leg) JoV letoT	Volume (gal)	(nim\lm) atsR	fime	urge Meth:
A.	21.0	90'0	0	24.23	0.0026	17.2	91.0	96'91	72.9	23.23	18.23	10	5	BBS-CCR-3
	igal) (gal) (gal)	(0st) Aojumo Cali	+ euniov dang	+ ((1) 60001	X griduT)	BeW r 9mploV (160)	Capacity (gal) =	= Water x Column X	Depth to Water (II)	(µ) Deby - Mei	Depth (tt)	Screen (ft)	amo' Comp	# II9W
			_		900	: 1/4 =0.0026 3/8 =0.0	(filenolleS callonsift).	msiO sbizni gniduT		= 0'19 4 = 0'92	= "'S :(f) \anolise)	Well Capacities		noitemolal gaign
01	0'3	G	0.2	80M9M	٢	L L	٦	٢					J/pm01=I0 Im00)č/(oirtTsV) Imč :bJ2 :
(vm) xoba8	((10m) 00	Conduct 1 %)	Ho	Cl madT	Cli abibol/atsbol	OI pol doneta	DO 3 Billow ID	OI OIQI EN	Titrator ID	Time	OC Result may		(1.77£ A93) (illite Into (GC Check
				092	91-91	00 87	0011	0.11	21.23	26.44	48.10	L 023442	L III	CP FT 1600, Units: N
017.0	00.0	7.77	00:01	200M divi	amir	100	99-Z	92.9	e og abuesi	V 38	SL P ADIRA DIS	CI OS3441	TOMT	ter ID.
0+2.0	CC.0	0.00	00:7	Weter ID:	71:01	C6001	61'0	10120			00001	0010070	SORM	CP F1 1200, Onits: 0
theo Value mg	Keading mg/	n dwei	9miT	DO Meter Cal	07.37	30007	01-0	00707	81:8	0001	0001	W616070 7	RUMAM	
		00 - 1	-	r 052418B	emiT	CCA	emiT	ICA	amiT	CSI	auleV bis	CI bisbriet2	10011011	nductivity Meter Ca
	-	-		CI IOS IIPQOZ			cates ICV / CCV passed	A checked box indi	8:02	*	7	0541280		INS :sti
534'6	533'0	52.8	91:91	WPM08		(vm0t -/+ xobsA) (J\g	mɛ.0 -/+ OO) (%2 -/+ bn	QC: (pH +/- 0.2) (Co	8:05	10	01	053838D		EP FT 1100
534'8	534.0	52.4	13:7	Meter ID:	71:81	00'2			8:02	L	L	05232350	WPM08	ster ID:
vm sulsV osrtT	vm gnibesR	D° qm9T	Time	Redox Cal	emiT	CCV	emiT	ICA	emiT	Cal	Buffer Value	Butter ID		Meter Calibration
	s pH of <2	of beilinev asw eld	mss off that the sam	A checked box indi	٦ D	1 2	s> Hq of SONH Im 8, mu	24.0 diliw benefin :(sbe	1L bottles (diss. n	- 053355C	1		S> Hq of 500H lm	t :(letem) settlod (m 0
	ר ם	S	r< Hq of HOAN pr (r	S50 ml bottles (Cyan		1	<٢	Hq of \$OSSH Im 8.0	40 ml Vial (TOC):		1		2 ml HNO3 to pH <2	:(aletem) seittod im 0
	ר 🗆	St< Hq of Jeo/	A oniX/HOAN ImS (et	500 ml bottles(Sulfid		1	<۲	Hq oJ \$O25H Im I :(s)	S50ml bottles (nu	C 053355C ▲			S> Hq of 50N	H Im 2 :(sbb) selffod
6.2 qm9T	CI sang		Preservation		Di sarq	6		Preservation	-	Cl sang	-		Preservation	
15:21 amiT	ON D SOY N			SSE		SSE		SSE	0315801D	SSE	0221301C	SSE	0115801D	S
Sample Recient	sol nO estames	-	(50	 Isiv AOV (m04 (a) 	(5	(A) seelo tedme Jt (G)	elthe	od motilos (m00t (b)		 250ml plastic (PP) 	(99)	2) 500ml plastic		1L plastic (PP)
S											-			G 00-17000
Total Containers	(t) .221 Diss. (1)	(S) stuly im 005	(6) IsiV Im04	SSOmi Nuts (3)	(S) stitM Im002	(S) ebiliu2 Im005	(1) spear (1)	(5) stim imoss	(L) SAW 1L	(5) gront Imotg (3)	(2) 50001 10005	(1) (1) (1)	S20WI CASU (3)	# SWI7
		ANONE	AELLOW		261-	1.01	0.0	1834	23.7	6.4		13:04	88S-CCR-3	L19C024-03 B
LEVEL	emiT	W-HODOS	\$COLOR-W	91-50S	REDOX	TURB-N-F	DO	COND-E	1EMP-C	Hd	1/6w			
040	N	1000	10100	Suffice (ma/L)	(vm) xobeH		DO WOL	COURINWUCS	i ciuto o	bu (oc) ud	1 71	AUUL	EDCOUDIN CODE	# CIMIT

QAS	DN .	Odor	Color	Sulfite (mg/L)	(vm) xobeA	Turbidity(NTU)	DO W ⁸ /L	(SOHMu)bno3	D° qm9T	(US) Hq	EE5	amiT	Loction Code	# SWI7
TEVEL	emiT	\$0008-W	SCOLOR-W	SO3-TR	REDOX	RURB-N-F	DO	COND-F	LEMP-C	Hd	1/6w			
		WIFD	YELLOW		3	3.6	1.0	4552	6.72	<u>5.</u> 9		15:33	BBS-CCR-BW-1	L19C024-04 A
		NONE	LT. YELLOW		-15	8.81	1.0	1929	7.4.7	9.9		15:05	BBS-CCR-BW-2	L19C024-05 A
Total Containers	(1) .seid sbiss. (1)	(S) stuly im 008	40ml Vial (6)	(5) studi Muts (3)	(S) slitM lim008	500ml Sulfide (2)	(1) speA J1	(c) slim im025	(I) slim 11	(c) front (mod)	(S) gront imood		S20ml Cyan (3)	# SWI7
01				0	Г	n	2 12	5			L.		Г	L19C024-04 A
		П			Г	П	5	5	П		k		Г	C18C054-02 V
Sample Reciept	Samples On Ice	1 - 1	(90	 Isiv AOV Im0^b (8) 	(9	A) are glass (A	eg	(4) 100ml colitorm bot	1	(3) 250ml plastic (PP	(69)	silveliq im002	(z)	(99) oitselq Jt (t)
15:31 emil	N D Say IN	1		SSE		SSE		SSE	0315801D	SSE	0521301C	S	0115801D ES	SSE
1 6'Z dwa	DI send		Preservation	11	DI sang			Preservation		CI sang			notrevation	4
		SI< Hq of Jao	A Shi XHOAN ImS (st	500 ml bottles(Sulfic			<5	Hq of \$OSSH Im 1 :(s	tun) selltod ImOSS	L 023925C A			403 to pH <2	1L bottles (rads): 5 ml HP
		2	t < Hq of HOAN pt (250 ml bottles (Cyar			Z	> Hq of \$O25H im 8.0	(DOT) IsiV Im 04				2> Hq of 50 HH <2	500 ml bottles (metals): 5
	2> to Hq s	of beilinev sew eld	imes out tent soteo	A checked box ind		2	> Hd of EONH Im 5 'm	uch.0 difw benefit :(sb	rt bottles (diss. ra	053355C	1		S> Hq of EONH Im	250 ml bottles (metal): 1
Vm eulsV oenT	vm gnibesЯ	D° qmeT	emiT	Redox Cal	əmiT	ADD CCA	əmiT	ICA	emiT	Cal	Buffer Value	Buffer ID		pH Meter Calibration
534'0	534.0	55.4	19:2	Meter ID:	11:51	00.7			8:02	L	L	0292920	WPM08 L	:Cl neter ID:
534.9	533.0	55.8	91:91	80M9M	-	(vm01 -/+ xobeA) (J)(p)	m£.0 -/+ OO) (%2 -/+ b	QC: (pH +/- 0.2) (Con	20:8	01	01	0538380	1	FDEP FT 1100
		1		CI IOS IIPOZ	-		ares ICA / CCA bassed	A checked box indic	8:05	Þ	Þ	0851920	7	Units: SU
		Of amoT		0324188	amil	CCV	emal	ICA	emil	160	anjav bis	CI piepues	S	Conductivity Meter Call
NEM SUIS VOSIT	5 5 8 Nom process	0.3.3 usub c	2-60	DO MEREL Cal	01-31	30001	01-8	86101	01.0	0001	00001	901050		merel ILI:
012.8	08.8	0.02	35.21		71.01	0001	61.0	00101	enneg n	E delacer à	00001	Ci pichagi	a com	Turbisho Motor California
01.120	00'0	7'77	00'01	Barom Pres	QU=1	400	995:2	92.4	2.23	4.28	SL'7	053441	LW07 L	Meter ID:
		1		092	91:31	48.00	-		21.23	26.44	48.10	053445	בח ר	FOEP FT 1600, Units: N
(vm) xobeA	(I/om) OG	Conduct.(%)	Ho	CI medT	OI abiboliatebol	Starch Ind ID	DO 3 Pillow ID	OI OI OI UT BN	Clindenti T	Time	DC Result mon		(EPA 377.1)	Sulfite Into (OC Check)
01	0'3	9	2.0	MPM08	r r	r I	1	۲ ۱	01100000		1. fur the second		J\gm01=10 1m0	QC Std: 5ml (NaThio)/50
					900	: 1/4_ =0.0026 3/8_ =0	(#/snolls2 seitissqs3	.msiQ abianl poiduT		29.0= "4 81.0 =	"2 :(1) (suolle6)	II Capacities	θW	Purging Information
	amuloV	Aojnue =	+ emuloy	+ (upuen buigni	x Appeden)	1 Weil	Cabacity (gal) = Well	x nmuloD =	Depth to Water	Osbay - Mell	existral	Screen		
2	000	000	Last:	UUF .	(ming)	1053	010	(11)	0.0	G FF	(ii) rided	(II) leviali	Diam' Comp	# IIBM
-INAT INAT	75.0	90:0	0	001	9700'0	7.44	91.0	/7.'GL	\$0.62	5.44	29:3	01	7	L-MR-HOD-SER
500 1 1003	Cl triangiupa	suters	Purge Criteria	(UTU) (ΝΤυ)	(Jugar) 00	(SOHMU) DROD	0° qmai	(ns) Hd	(it) Alater Depth (it)	(leg) .loV letoT	(je5) amilov	(mimilim) etc.	S amil	Furge meth:
AVLMOS	Level Meter	318AIS	7'0 -/+:Jourg	86'/	SL'O	4502	G/17	67.9	// 67	54.5	543	1300	\$7.71	Ar
ESP	:dund	AJBAIS	7.0 ++% pu03	45.4	21.0	0615	08.12	00.0	78'67	51.4	0/:0	1330	97:71	יוופפ אנות:
	:policipe(218815	00 ×185 % 00	2.64	¢1.0	G775	69.77	67.9	C9'67	68.9	0/:0	0701	97.71	+1:71
NO NO	Tubino?	A JAATS	Turb, NTU < 20					-				-	-	10-58
	. 6			3'64	41.0	4552	52,89	679	= sanje	V vtilidet2	CC.O agun	Illons to P	12:15 6	A stelqmoD sprug
	Jap3 1 emuloV)ie0 Provine	AmuloV -	e (gnidu)	X priduT)	HeW 1	(Sepecty (Cal) =	X adbeit X	Depth to	- How	adetal	asers?		
	(je6)	(Jed)	((ref)	((4)	('wję5)	(je6)		(ų)	(11)	(u)	Depth (ft)	(II) lievielin	Diam/ Comp	# II9W
	ZL'0	90.0	0	54.64	9700.0	5.59	91.0	91.91	89.7	23.84	62.81	01	7	RBS-CCK-RM-5
Edbr: 1906	Equipment ID	Status	Purge Criteria	(ΝΤυβίαλ (ΝΤυ)	DO (wayr)	(SOHWA) BROOM	D' qme1	(ns) Hq	Water Depth (ft)	Total Vol. (gal)	(let) amuloV	(nimVin) ate	A amiT	Purge Meth.
	Level Metel:	SIGAT2	70 Junit	07'61	60'0	6761	59.42	10.0	99.1	/0.9	10.0	01.5	95:11	AI
DE/6	Tubipo:	218VIS	3.0 -\+ 3.000	01.01	80.0	1000	10.22	93.9	98.7	07.0	12.0	000	00.11	Huge start:
Say N	.enitab i heteoihe()	318412	DO % Sat.< 20	00:01	11:0	6761	01:67	00:0	00.1	Ch'0	17:0	005	20:11	Port annual
ON D	SoniduT	3J8AT2	Turb. NTU < 20											11:25
				08.91	11.0	6261	24.70	95.9	= sanje,	V vtilidst2	Sr.0 agru	d of anolli	10:53 6	A steldmoD sprug
										. (Incom	Comments:

GROUNDWATER WELL SAMPLING EQUIPMENT CALIBRATION

	PIS	I, Conc.	Std. Spike Vo	ວເມກ	elame2 leO	Calc. Std. Conc.	DPD Check				DPD Check		
								Initial Calibrati	Vol Vetilication ICV		llsD auounitnoD	DO notification CC	۸۵ ۲۸
10 ³ DbD Check must read	%01 -/+ pe	O% of the C	bis bateluole	aguo	silqülum ,notestr	the by 2.4.		Glycene check shou	C 1/6m 01.0 > bear blu	-70			
80M9M	0	S.0	9	1	0'3	01	2.0	Criterion	Comparator ID:	+	Reagent ID:	<u>ः</u> १	
herm ID	d	Hq	% Joubroo		Nem OO	мш хорэЯ	270	Colibration	Ferrous Iron				
0524188	2			1				092		· · · · · · · · · · · · · · · · · · ·	-		
Dell Sol ID:					1			Barom. Pres			-		
MPM08	12	51:5	52.8		533.0	534.9	base	80M9M	12:32	55.2	08.8	017.8	eseq
eter ID:	2	19:7	22.4	1	534.0	534.9	Pass	Meter ID:	09:2	53.3	8.53	8.546	eseq
								FDEP FT 1500					
leD xobs	91.	Smit	O ^o gma1		vm gnibesЯ	vm suleV oshT	lieg / sseg	DO: Meter Cal	amiT	D° qmeT	ក្រព្វា ពួកទេនភ	fipm euleV cenT	IER (SEES
C Std: 5ml (NaThio)/500m	nor=10 im	_/ენლე							[1]	1	1		
(AssAC CD) otal stitle	(TE A93)	(i 22i			ໄຊຫ ກັບຂອກ ວິລ	Time	ClinotethT	OI DIAT 50	DO 3 Fillow ID	OL DOI HONERS	CI ebibol/etsbol		
UTN :shinU ,0081 TH 990	n	1	053445	8	48.10	76.44	21'53				48.00	12:10	sseg
eter ID:	MT	LOW.	053441	8	4.75	4.28	2.23	97.4	9S:L	sseg			
olisidity Meter Calibratio	uo	1	Il biebneis	(ouleV bic	Ynidetgeoor	Range	ADD	amī	Red/seed	CCA	5mT	lieghazeg
DEP FT 1200, Units: uMH	SOH	1	0533180	8	10000	-		10138	61:8	Pass	S6001	12:15	Fass
:Cl hete	MPI	PM08 I	A014850 1	8	1000	1000	81:8				-		
onductivity Meter Calib.	3		If blabnets		Suc Value	ISJ.	€ime	ICA	əmit	NET/sset	CCA	эші	He-Tissey
	ICA	CV Check L	C 053163L	8	10.7			£0'L	S0:8	Pass			
US :stir		1	0541280		4.00	4.00	8:02	ICA.	эщіТ	ke4/sse4	li xod baxaana A	eed VOO I VOI seteolor	pass
DEP FT 1100		1	053838D	8	10.04	10.04	8:02			(2 0 -/+ Hq) 0 Q	00) (%6 4+ broo)	/= xobaA) (J'gm8.0 -/+ ប	(AUDC -)
:Cl 1eter	WPI	PM08	T 052325G	2	10.7	10.7	8:02				00'2	11:51	SSEA
Meter Calibration			Ol rettud	0.00	Suffer Value	leD	emaT				CCA	eun	812-1/\$SE-1

:... Glycene ID: L A checked box needer teagent expiration date has been verified. DPD ID:L 3 100 0.1 Meter ID: 4600 CIO2 D. Pass/Fail Standard Methods, (IIBm) (im) emuloV (jw) (i/ɓɯ) (ingri) Giycene Check Chlorine Dioxide (mg/l) amIT (I)6w) PassiFall эшіТ lethod 10126.

COMMENTS: CL2 Std. ID: L

FACILITY NAME:	Big Bend					SITE LOCATION:		Apollo	Beach, FL.		
WELL NO:	NO: BBS-CCR-1 SAMPLE ID: L19C024-01 A DATE: 3/14/19 PURGING DATA										
					PURGI	NG DATA					
WELL DIAMETER (inches		TUBING DIAMETER (inc	thes) 1/4	WELL SCR DEPTH 12.32	feet to	AL (NGVD) 22.32 (feet)	STATIC DEPTH TO WATER (feet	7.27	PURGE PUMP T OR BAILER:	PP PP	
WELL VOLUME PURGE	it.	1 WELL VOLU	ME = (TOTAL WE	LL DEPTH - STATIC C	EPTH TO WATE	R) X WELL GAPAC	ятγ				
(only intoir it applicable)		_	= (feet -		feet) x		gallons/foot		gallons
EQUIPMENT VOLU (only fillout if application)	ME PURGE: ible)	1 EQ	UIPMENT VOL	= PUMP VOLUM 0	iE + (TUBING	0.0026 gall	TUBING LENGTH	+ FLOW CE	+ 0.06	gallons =	0.12 gallons
INITIAL PUMP OR DEPTH IN WELL (f	TUBING set): 17.32	Canton -	FINAL PUMP DEPTH IN W	OR TUBING ELL (feet): 17	.32	PURGING INITIATED AT:	13:42 E	RGING DED AT:	13:55	TOTAL VOLUN PURGED (gallo	AE ons): 2.12
TIME	VOLUME PURGED (GALLONS)	CUMUL VOLUME PURGED (GALLONS)	PURGE RATE (GPM)	DEPTH TO WATER (FEET)	pH (slandard units)	TEMP. (°C)	COND. (µmhos/cm OF(US/cm)	DISSOLVED OXYGEN circle(mg/l@r % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
13:51	1.47	1.47	0.16	7.44	6.84	24.06	4047	0.02	3.13	CLEAR	NONE
13:53	0.33	1.80	0.17	7.45	6.81	24.04	4033	0.02	1.68	CLEAR	NONE
13:55	0.32	2.12	0.16	7.44	6.81	24.09	4040	0.08	1.74	CLEAR	NONE
WELL CAPACITY (Ga	lians Per Foot} 0	.75" = 0.02;	1"=0.04;	1.25" = 0.05; 2" =	= 0.16; 3**=	0.37; 4" = 0		6° = 1,47;	12" = 5,88		
TUBING INSIDE DIA.	CAPACITY (Gal./Ft.)	1/8" = 0.00005;	3/16" = 0.0014	1/4" = 0.0026;	5/16" = 0.004 SAMPL	3/8" = 0.006; ING DATA	1/2" = 0.010	5/8" =	0.016		
SAMPLED BY (PR	NT) / AFFILIATIC	DN:	TECO	SAMPLER (S) SI	GNATHES	accer	1 5	APLING TATED AT	13:55	SAMPLING ENDED AT: 1	4:02
PUMP OR TUBING	ati 17.3		1200	SAMPLE PUMP	L per minute):	~~~	613 T	BING	E: PE	/S	
				FIELD-FILTERED		N FILT	ER SIZE:	μm	DUPLICATE:	YFINF	1
FIELD DEGONTAN	SAMPLE CON	TAINER		Filtration Equipm		ESERVATION		INT		SAL	MPLING
	SPECIFICA	MATERIAL	1	PRESERVATIVE	То	TAL VOL.	FINAL	ANALYS	IS AND/OR	EQU	IPMENT
SAMPLE ID CODE	CONTAINERS	CODE	VOLUME	USED	ADDED I	N FIELD (ml) (1)	pH		THOD		
@lno-500	1	PE	500ml	NONE	N	IONE	N/A	Inor	ganics		PP
@Met-250	2	PE	250ml	HNO3		1ml	<2	M	etals		PP
@Rad-1L	2	PE	1L	HNO3	1	5ml	<2	Radio	logicals		PP
REMARKS:						_					_
(1) Sample bo	tiles pre-pres	erved at lab	oratory pric	or to sample c	ollection.	unmoulance o	= Silicope: T-	Tallon: Or O	ther (Sneci6A		
SAMPLING/PURGIN	G AG = Amber G	PP = After Peris	taltic Pump: B	= Bailer; BP = Bla	dder Pump; Es	SP = Electric Subn	nirsable Pump; PF	= Peristallic Pu	mp		
EQUIPMENT CODE	S: R	FPP = Reverse	Flow Peristaltic	Pump; SM = Straw	Method (tubin	g Gravity Drain);	VT = Vacuum Tra	; O = Other (Sp	becify)		
NOTES:	1. The above d	o not constitu	ite all of the l	nformation requ	ierd by Chap	oter 62-160, F.A	C.		CTION 3		

2. <u>STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)</u> pH: ± 0.2 units Temperature: ± 0.2 °C Specific Conductance: ± 5% Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater) Turbidity: all readings ≤ 20 NTU; optionally ± 5 NTU or 10% (whichever is greater)

BITE Big Bend						SITE LOCATION:		Apollo	Apollo Beach, FL.		
WELL NO:	B	3S-CCR-2	2		SAMPLE ID:	L19C	024-02 A	2007200	DATE:	3/14/19	
Destation of the					PURG	NG DATA					
WELL DIAMETER (inche:	5)	TUBING DIAMETER (inc	thes) 1/4	DEPTH 11.84	feet to	21.84 (feet)	STATIC DEPTH TO WATER (feel)	6.76	PURGE PUMP T OR BAILER:	PP PP	
WELL VOLUME P (only fillout if applic	URGE: able)	1 WELL VO	LUME = (TOT	AL WELL DEPTH -	STATIC DEP	PTH TO WATER)	X WELL CAP	PACITY	gallons/foot		gallons
EQUIPMENT VOL (only fillout if applic	UME PURGE: able)	1 EQ	JIPMENT VOL	. = PUMP VOLUME	E + (TUBING	CAPACITY X 1	TUBING LENGT	(H) + FLOW CE			112
INITIAL PUMP OR DEPTH IN WELL (TUBING		FINAL PUMP DEPTH IN W	OR TUBING ELL (feet): 16	gallons + (PURGING INITIATED AT:	13:13	PURGING ENDED AT:	13:28	TOTAL VOLUME PURGED (gallon	s): 2.37
TIME	VOLUME PURGED (GALLONS)	CUMUL. VOLUME PURGED (GALLONS)	PURGE RATE (GPM)	DEPTH TO WATER (FEET)	pH (standard units)	TEMP: (°C)	COND. (µmhos/cm OR US/cm)	DISSOLVED OXYGEN circle mg/l ar % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
13:24	1.74	1.74	0.16	6.92	6.74	23.87	1424	0.04	5.18	YELLOW	MILD
13:26	0.31	2.05	0.16	6.90	6.74	23.88	1422	0.03	7.37	YELLOW	MILD
13:28	0.32	2.37	0.16	6.90	6.74	23.92	1422	0.02	8.50	YELLOW	MILD
WELL CAPACITY (G	allons Per Foot). C	.75" = 0.02;	1'' = 0,04;	1.25" = 0.06; 2" =	0 16; 3"=	= 0,37; 4" = 0.	65: 5''= 1.	.0 6" = 1.47;	12" = 5.88		
TUBING INSIDE DIA.	CAPACITY (Gal./FL): 1/8" = 0.00006;	3/16" = 0.0014	1/4** = 0.0026;	5/16" = 0.004	3/8" = 0.006;	1/2" = 0.01	0 5/8** =	0.016		-
SAMPLED BY (PR	RINT) / AFFILIATIO	DN:	TECO	SAMPLER (S) SIC	1200	Der		S MPLING	13:28	SAMPLING ENDED AT:	13:3:
PUMP OR TUBING	3 (eet): 16.8			SAMPLE PUMP	per minute)	~	593	T BING	E: PE	/S	
			_	FIELD-FILTERED		N FILT	ER SIZE:	μm	DUPLICATE	YDNØ	
FIELD DECONTAN	SAMPLE CON	TAINER		Filtration Equipme	SAMPLE PR	ESERVATION		INT	ENDED	SAMP	LING
SAMPLE ID CODE	SPECIFICA # CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TO ADDED I	TAL VOL. N FIELD (ml) (1)	FINAL pH	ANALYS ME	IS AND/OR THOD	EQUIP	PMENT
@Inc-500	1	PE	500ml	NONE	P	NONE	N/A	Inor	ganics	Р	P
@Met-250	2	PE	250ml	HNO3		1ml	<2	M	etals	P	P
@Rad-1L	2	PE	1L	HNO3		5ml	<2	Radio	ologicals	Р	P
						_				-	
											_
								_			
REMARKS:					a la						
REMARKS: (1) Sample bo	ottles pre-pres	erved at lab	oratory pric	or to sample co	ection.		0 - 0		0-01-01	acifu)	
REMARKS: (1) Sample bc MATERIAL CODE SAMPLING/PURGIO	ottles pre-pres	erved at lab r Glass; CC PP = After Peris PPP = Reverse	oratory pric = Clear Glass taltic Pump; B Flow Peristallic	Dr to sample co FE = Polyeth Bailer, BP = Blad Pyma: SM = Straw	ollection. ylene; Pi der Pump; E: Method (tubin	P = Polypropylene SP = Electric Subm g Gravity Drain):	e; S = Silico nirsable Pump; F VT = Vacuum Ti	ne: T = Teflor PP = Peristaltic Pu rap; O = Other (Se	n; O= Olher (Spe mp secify)	acify)	

pH: ±0.2 units Temperature: ±0.2 °C Specific Conductance: ±5% Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2

optionally, ± 0.2 mg/L or ± 10% (whichever is greater) Turbidity: all readings ≤ 20 NTU; optionally ± 5 NTU or 10% (whichever is greater)

SITE NAME:	re Big Bend					SITE LOCATION:		Apollo	Apollo Beach, FL.			
WELL NO:	VELL NO: BBS-CCR-3					L19C	024-03 B		DATE:	3/14/19		
					PURG	NG DATA						
WELL DIAMETER (inches)	TUBING DIAMETER (inc	ches) 1/4	WELL SCREEN IN DEPTH 13.23	TERVAL feet to	23.23 (feet)	STATIC DEPT TO WATER (fe	H et): 6.27	PURGE PUMP T OR BAILER:	PP		
WELL VOLUME PI	JRGE:	1 WELL VO	LUME = (TOT	AL WELL DEPTH -	STATIC DEF	TH TO WATER)	X WELL CAP	ACITY				
(only mout if applic	abiey		=(feet -		feet) x		gallons/foo	1 =	gallons	
EQUIPMENT VOLU (only fillout if applic	JME PURGE: able)	1 EQI	UIPMENT VOL	= PUMP VOLUME	e + (TUBING	0.0026 gall	UBING LENGT	H) + FLOWCE 24.23 fee	LL VOLUME	gallons =	0.12 gallons	
INITIAL PUMP OR	TUBING		FINAL PUMP	OR TUBING	22	PURGING	12:43	RGING	12.53	TOTAL VOLUM	E 1.06	
TIME	VOLUME PURGED (GALLONS)	CUMUL. VOLUME PURGED (GALLONS)	PURGE RATE (GPM)	DEPTH TO WATER (FEET)	pH (standard units)	темр. (°С)	COND. (µmhos/cm) OR(µS/cm)	DISSOLVED OXYGEN circle mg/l or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)	
12:49	0.63	0.63	0.11	6.76	6.50	23.83	1847	0.05	11.30	YELLOW	NONE	
12:51	0.21	0.84	0.11	6.75	6.45	23.75	1842	0.03	11.00	YELLOW	NONE	
12:53	0.22	1.06	0.11	6.76	6.43	23.74	1834	0.02	10.10	YELLOW	NONE	
									1011 - 5 00			
WELL CAPACITY (G: TUBING INSIDE DIA.	CAPACITY (Gal./F)	0,75" = 0.02; ;.); 1/8" = 0.00005;	1" = 0.04; 3/16" = 0.0014	1.25" = 0.06; 2" = 0 ; 1/4" = 0.0026;	5/16" = 0.004	3/8" = 0.006;	1/2" = 0.010	5/8" = (12 = 5.66			
SAMPLED BY (PR	INT) / AFFILIATI	ON: 3	TECO	SAMPLER (S) SIG	SAMPL	ING DATA	S	MPLING IATED AT: 12	:53	SAMPLING ENDED AT: 13	3:04	
PUMP OR TUBING	eet) 18.2	,	1200	SAMPLE PUMP	per minute):	~	407	BING TERIAL CODE	PE	/S		
FIELD DECONTAN	INATION:	Y D N M	1	FIELD-FILTERED:			ER SIZE:	μm	DUPLICATE:	YOND		
	SAMPLE CON	TAINER	-	T IN BUOIT CAUPTION	SAMPLE PRI	ESERVATION	1	INTE	NDED	SAM	PLING	
SAMPLE ID CODE	# CONTAINERS	MATERIAL	VOLUME	PRESERVATIVE USED	TO ADDED I	TAL VOL. N FIELD (ml) (I)	FINAL pH	ANALYSI MET	S AND/OR HOD	EQUIPMENT		
@Ino-500	1	PE	500ml	NONE	N	IONE	N/A	Inorg	anics	F	P	
@Met-250	2	PF	250ml	HNO3		1ml	<2	Me	tals	F	p	
@Rad-1L	2	PE	1L	HNO3		5ml	<2	Radiol	ogicals	F	р	
Q, 1002 12	1						1.1.1			1		
					-	-						
REMARKS:		nound at lab	oratory net	or to comple or	llection			1000				
MATERIAL CODE	AG = Ambe	r Glass: CG	= Clear Glass	PE = Polyethy	lene; Pl	P = Polypropylene	; S = Silicon	e: T = Teflon:	O= Other (Spe	cify)		
SAMPLING/PURGIN	IG /	APP = After Peris	taltic Pump; B Flow Peristaltic	= Bailer; BP = Blado Pump; SM = Straw I	der Pump; Es Method (tubin	SP = Electric Subm g Gravity Drain):	irsable Pump; P VT = Vacuum Tra	P = Peristaltic Pur	p cify)			
NOTES	1 The about of	la not constitu	to all of the i	nformation require	rd by Char	ter 62-160 E A	C.					

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3) pH: ± 0.2 units Temperature: ± 0.2 °C Specific Conductance: ± 5% Dissolved Oxygen: all readings s 20% saturation (see Table FS 2200-2);

optionally, ± 0.2 mg/L or ± 10% (whichever is greater) Turbidity: all readings ≤ 20 NTU; optionally ± 5 NTU or 10% (whichever is greater)

WELL NO:	TE Big Bend					SITE LOCATION:		Apollo	Beach, FL.	terri all'	
	ELL NO: BBS-CCR-BW-1 ELL ELL TUBING AMETER (inches) 1/4				SAMPLE ID:	L19C	024-04 A	10	DATE:	3/14/19	
					PURGI	NG DATA					
WELL DIAMETER (inche	s)	TUBING DIAMETER (inc	hes) 1/4	WELL SCREEN IN DEPTH 34.30	ITERVAL feet to	44.30 (feet)	STATIC DEPTI TO WATER (fe	et): 29.03	PURGE PUMP T OR BAILER:	ESP	
WELL VOLUME P (only fillout if applic	URGE: :able)	1 WELL VO	LUME = (TOT	AL WELL DEPTH -	STATIC DEF	TH TO WATER)	X WELL CAP	ACITY	gallons/foc	ot =	gallons
EQUIPMENT VOL (only fillout if applic	UME PURGE: cable)	1 EQU	JIPMENT VOL	= PUMP VOLUM	E + (TUBING	CAPACITY X T	UBING LENGT	+ FLOW CE	ELL VOLUME	allons =	0.32 gallons
INITIAL PUMP OR DEPTH IN WELL (TUBING feet): 39.30		FINAL PUMP DEPTH IN W	POR TUBING (ELL (feet): 39	.30	PURGING INITIATED AT:	12:14	NDED AT:	12:28	TOTAL VOLUM PURGED (gallor	E hs): 4.8
TIME	VOLUME PURGED (GALLONS)	VOLUME PURGED (GALLONS)	PURGE RATE (GPM)	DEPTH TO WATER (FEET)	pH (slandard units)	TEMP. (°C)	COND. (µmhos/cm OR µS/cm)	DISSOLVED OXYGEN circle(mg/l) or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
12:24	3.43	3.43	0.34	29.77	6.49	27.75	4205	0.15	7.98	YELLOW	MILD
12:26	0.70	4.13	0.35	29.82	6.50	27.80	4190	0.12	4.34	YELLOW	MILD
12:28	0.70	4.83	0.35	29.85	6.49	27.89	4225	0.14	3.64	YELLOW	MILD
WELL CAPACITY (TUBING INSIDE DI	Gallons Per Foot); A. CAPACITY (Gal	0.75** = 0.02; /F1.): 1/8** = 0.00	1'' = 0. 1006; 3/16''	04; 1,25" = 0, = 0,0014; 1/4" =	06; 2" = 0.0026; SAMPI	0.16; 3" = 0. 5/16" = 0.004; ING DATA		5; 5" 1/2" = 0.	= 1.02; 6'' = ' 010; 5/a	1.47; 12" = " = 0.016	5.88
SAMPLED BY (PF	RINT / AFFILIATIO	ON:	_	SAMPLER (S) SI	MRON S	Durg		MPLING		SAMPLING	
1	RAE	3	TECC			V		1	2:28	12	:33
PUMP OR TUBING	3 (feet): 39.3	1		SAMPLE PUMP FLOW RATE (mL	per minute):	1:	317	BING	E: P	E	
FIELD DECONTA	MINATION:			FIELD-FILTERED	TYPE	N I FILT	ER SIZE:	hw	DUPLICATE:	YUND	1
	SAMPLE CON	ITAINER		i haadon equipme	SAMPLE PRI	ESERVATION		INT	ENDED	SAM	PLING
SAMPLE ID CODE	# CONTAINERS	MATERIAL	VOLUME	PRESERVATIVE USED	TO ADDED I	TAL VOL. N FIELD (ml) ())	FINAL pH	ANALYS	BIS AND/OR THOD	EQUI	PMENT
	1	PE	500ml	NONE	N						
@Ino-500						IONE	N/A	Inor	ganics	E	SP
@Ino-500 @Met-250	2	PE	250ml	HNO3		IONE 1ml	N/A	Inor	ganics etals	E	SP
@Ino-500 @Met-250 @Rad-1L	2 2	PE	250ml 1L	HNO3 HNO3		10NE 1ml 5ml	N/A <2 <2	Inor M Radio	ganics etals ologicals	E	SP SP SP
@Ino-500 @Met-250 @Rad-1L	2 2	PE	250mi 1L	HNO3 HNO3		1ml 5ml	N/A <2 <2 <2	Inor M Radio	ganics etals plogicals	E	SP SP SP
@Ino-500 @Met-250 @Rad-1L REMARKS: (1) Sample bo	2 2	PE PE	250ml 1L oratory priv	HNO3 HNO3	pllection.	1ml 5ml	N/A	M Radio	ganics etals plogicals	E	SP SP SP
@Ino-500 @Rad-1L @Rad-1L REMARKS: (1) Sample boo	2 2 bttles pre-pres	PE PE served at lab	250ml 1L oratory priv	HNO3 HNO3 HNO3	pliection.	1ml 5ml P = Polypropylence	N/A	M Radio	etals ologicals n; O= Other (Spa	E	SP SP SP

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212) SECTION 3)

pH: ± 0.2 units Temperature: ± 0.2 °C Specific Conductance: ± 5% Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2);

optionally, ± 0.2 mg/L or ± 10% (whichever is greater) Turbidity: all readings ≤ 20 NTU; optionally ± 5 NTU or 10% (whichever is greater)

SITE NAME:	TE Big Bend ELL NO: BBS-CCR-BW-2					SITE LOCATION:		Apollo	Apollo Beach, FL.			
WELL NO:	ELL NO: BBS-CCR-BW-2 ELL NO: BBS-CCR-BW-2 ELL NO: TUBING DIAMETER (inches) AMETER (inches) 1/4 DEPTH ELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL NOTAL WELL				SAMPLE ID:	L19C	024-05 A	26 <u>1</u> 93294	DATE:	3/14/19		
					PURGI	NG DATA			1			
WELL DIAMETER (inches	5)	TUBING DIAMETER (inc	thes) 1/4	DEPTH 13.64	feet to	23.34 (feet)	STATIC DEPT TO WATER (fr	H Bol): 7.68	PURGE PUMP T OR BAILER:	PP PP		
WELL VOLUME P	URGE: able)	1 WELL VO	LUME = (TOT	AL WELL DEPTH -	STATIC DEP	TH TO WATER	X WELL CAP	PAGITY	aallaasilaa		calloos	
EQUIPMENT VOLI (only fillout if applic	UME PURGE:	1 EQU	JIPMENT VOL	. = PUMP VOLUM	E + (TUBING	CAPACITY X	TUBING LENGT	ዝባ + FLOW CE	LL VOLUME		ganona	
INITIAL PUMP OR	TUBING		=(0 OR TUBING	gallons + (0.0026 gall	ons/foot X	24.64 fee	et)+ 0.06	gallons = (TOTAL VOLUMI	0.12 gallons	
DEPTH IN WELL (I	feet): 18.49	CONOL.	DEPTH IN W	ELL (feet): 18	.49	INITIATED AT:	10:52	DISSOLVED	11:52	PURGED (gallor	ns): 6.49	
TIME	VOLUME PURGED (GALLONS)	VOLUME PURGED (GALLONS)	PURGE RATE (GPM)	TO WATER (FEET)	pH (standard units)	TEMP. (°C)	(µmhos/cm OR µS/cm)	OXYGEN (circle(mg/l))r % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)	
11:48	6.07	6.07	0.11	7.88	6.57	24.64	1929	0.09	19.40	LT. YELLOW	NONE	
11:50	0.21	6.28	0.11	7.86	6.57	24.67	1933	0.08	18.10	LT. YELLOW	NONE	
11:52	0.21	6.49	0.11	7.86	6.56	24.70	1929	0.11	16.80	LT, YELLOW	NONE	
-												
					_							
WELL CAPACITY (I TUBING INSIDE DI/ SAMPLED BY (PR	Gallons Per Fool): A. CAPACITY (Gal. UNT) / AFFILIATIC	0.75" = 0.02; /FL): 1/8" = 0.00	1" = 0.1 0006; 3/16"	04: 1.25" = 0. = 0.0014: 1/4" =	06: 2" = 0.0026: SAMPL	0.16; 3" = 0 5/16" = 0.004; ING DATA	.37; 4" = 3/8" = 0.006;	1 5; 5" = <u>1/2" = 0.0</u> MPLING MPLING MIATED AT:	1.02; 6" = 10; 5/8	1.47; 12" = : " = 0.016 SAMPLING ENDED AT:	5.88	
	RAB		TECO			V		11	:52	12	:02	
PUMP OR TUBING DEPTH IN WELL (feet): 18.5	1.	_	FLOW RATE (mL	per minute):		403	TERIAL CODE	: PE	/S	_	
FIELD DECONTAN	INATION:			FIELD-FILTERED Filtration Equipme	nt Type	N 🗹 🖓	ER SIZE:	μm	DUPLICATE:	Y 🗌 N 🗹		
C. LANSING	SAMPLE CON SPECIFICA	TAINER TION			SAMPLE PR	ESERVATION	1	INTE	NDED	SAM	PLING	
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TO ADDED I	TAL VOL. N FIELD (ml) (1)	FINAL pH	MET	HOD	CC	DDE	
	-		-				ini -	1000			20	
@Ino-500	1	PE	500ml	NONE	N	IONE	N/A	Inorg	Janics	F	γ ρ	
						4-4			tolo			
@Met-250	2	PE	250ml	HNO3		1mi 5ml	<2	Radio	onicale	F	p	
@Rad-1L	2	PE	11.	HNOS	1	onn	-2	Raulo	ogicais	-		
1					1							
		<u></u>			-			-				
								ar 5, b				
REMARKS: (1) Sample bo	ttles pre-pres	erved at lab	oratory pric	or to sample co	ollection.							
MATERIAL CODE	S: AG = Amber	Glass; CG PP = After Peris	altic Pump: B	PE = Polyeth = Bailer, BP = Blad	ylene; PI Ider Pump; ES	P = Polypropylene SP = Electric Subm	e; S = Silicor hirsable Pump; P	ne; T = Tellon P = Peristaltic Pun au, O = Olber (Sec	O= Olher (Spe	ecify)		
NOTES	a: R	o pot constitu	te all of the i	normation requi	erd by Char	g Gravity Drain); oter 62-160 F A	.C.	ap, 0 = Otter (Sp)	icity)			
	2. STABILIZATION	CRITERIA FOR	R RANGE OF V	ARIATION OF LAST	THREE CONS	SECUTIVE READI	NGS (SEE FS 22	1 SECTION 3)				

pH: ± 0.2 units Temperature: ± 0.2 °C Specific Conductance: ± 5% Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2);

optionally, ± 0.2 mg/L or ± 10% (whichever is greater) Turbidity: all readings ≤ 20 NTU; optionally ± 5 NTU or 10% (which wer is greater)



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Tampa 6712 Benjamin Road Suite 100 Tampa, FL 33634 Tel: (813)885-7427

TestAmerica Job ID: 660-93234-1 Client Project/Site: L19C024

For:

Tampa Electric Company 5012 Causeway Boulevard Tampa, Florida 33619



Authorized for release by: 3/21/2019 7:33:06 AM

Keaton Conner, Project Manager I (813)885-7427 keaton.conner@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
660-93234-1	L19C024-01	Water	03/14/19 14:02	03/15/19 09:50
660-93234-2	L19C024-02	Water	03/14/19 13:35	03/15/19 09:50
660-93234-3	L19C024-03	Water	03/14/19 13:04	03/15/19 09:50
660-93234-4	L19C024-04	Water	03/14/19 12:33	03/15/19 09:50
660-93234-5	L19C024-05	Water	03/14/19 12:02	03/15/19 09:50

Qualifiers

Metals

Metals		Λ
Qualifier	Qualifier Description	-
Ι	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.	5
U	Indicates that the compound was analyzed for but not detected.	J

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.	
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis	
%R	Percent Recovery	
CFL	Contains Free Liquid	
CNF	Contains No Free Liquid	
DER	Duplicate Error Ratio (normalized absolute difference)	
Dil Fac	Dilution Factor	
DL	Detection Limit (DoD/DOE)	
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample	
DLC	Decision Level Concentration (Radiochemistry)	
EDL	Estimated Detection Limit (Dioxin)	
LOD	Limit of Detection (DoD/DOE)	
LOQ	Limit of Quantitation (DoD/DOE)	1
MDA	Minimum Detectable Activity (Radiochemistry)	
MDC	Minimum Detectable Concentration (Radiochemistry)	
MDL	Method Detection Limit	
ML	Minimum Level (Dioxin)	
NC	Not Calculated	
ND	Not Detected at the reporting limit (or MDL or EDL if shown)	
PQL	Practical Quantitation Limit	
QC	Quality Control	
RER	Relative Error Ratio (Radiochemistry)	
RL	Reporting Limit or Requested Limit (Radiochemistry)	
RPD	Relative Percent Difference, a measure of the relative difference between two points	
TEF	Toxicity Equivalent Factor (Dioxin)	

٩ TEQ Toxicity Equivalent Quotient (Dioxin)

Job ID: 660-93234-1

Laboratory: TestAmerica Tampa

Narrative

CASE NARRATIVE Client: Tampa Electric Company Project: L19C024

Report Number: 660-93234-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT

The samples were received on 03/15/2019; the samples arrived in good condition, properly preserved and on ice. The temperature of the cooler at receipt was 3.2° C.

TOTAL METALS (ICP)

Samples L19C024-01 (660-93234-1), L19C024-02 (660-93234-2), L19C024-03 (660-93234-3), L19C024-04 (660-93234-4) and L19C024-05 (660-93234-5) were analyzed for total metals (ICP) in accordance with EPA Method 200.7. The samples were prepared and analyzed on 03/19/2019.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

TestAmerica Job ID: 660-93234-1

Client Sample ID: L19C024-01							mple ID: 66	0-93234-1
Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac D	Method	Prep Type
Lithium	0.013	I	0.050	0.0010	mg/L	1	200.7 Rev 4.4	Total/NA
Client Sample ID: L19C024	-02					Lab Sa	mple ID: 66	0-93234-2
Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac D	Method	Prep Type
Lithium	0.010	I	0.050	0.0010	mg/L	1	200.7 Rev 4.4	Total/NA
Client Sample ID: L19C024	-03					Lab Sa	mple ID: 66	0-93234-3
Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac D	Method	Ргер Туре
Lithium	0.0096	<u> </u>	0.050	0.0010	mg/L	1	200.7 Rev 4.4	Total/NA
Client Sample ID: L19C024	-04					Lab Sa	mple ID: 66	0-93234-4
Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac D	Method	Prep Type
Lithium	0.019	I	0.050	0.0010	mg/L	1	200.7 Rev 4.4	Total/NA
Client Sample ID: L19C024	-05					Lab Sa	mple ID: 66	0-93234-5
Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac D	Method	Ргер Туре
Lithium	0.0082	I	0.050	0.0010	mg/L	1	200.7 Rev 4.4	Total/NA

Client Sample Results

Client: Tampa Electric Company Project/Site: L19C024

6 7

Client Sample ID: L19C024-01							ab Sample	D: 660-93	3234-1
Date Collected: 03/14/19 14:02 Date Received: 03/15/19 09:50							•	Matrix	: Water
Method: 200.7 Rev 4.4 - Metals (I	CP)								
Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	0.013	I	0.050	0.0010	mg/L		03/19/19 10:39	03/19/19 21:01	1
Client Sample ID: L19C024-0 Date Collected: 03/14/19 13:35)2					L	ab Sample.	D: 660-93	234-2 Water
Date Received: 03/15/19 09:50								matrix	
Method: 200.7 Rev 4.4 - Metals (I	CP)								
Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	0.010	I	0.050	0.0010	mg/L		03/19/19 10:39	03/19/19 21:04	1
Client Sample ID: L19C024-0)3					L	ab Sample	D: 660-93	3234-3
Date Collected: 03/14/19 13:04 Date Received: 03/15/19 09:50								Matrix	: Water
Method: 200.7 Rev 4.4 - Metals (I	CP)								
Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	0.0096	I	0.050	0.0010	mg/L		03/19/19 10:39	03/19/19 21:08	1
Client Sample ID: L19C024-0)4					L	ab Sample	e ID: 660-93	3234-4
Date Collected: 03/14/19 12:33 Date Received: 03/15/19 09:50								Matrix	: Water
Method: 200.7 Rev 4.4 - Metals (I	CP)								
Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	0.019	1	0.050	0.0010	mg/L		03/19/19 10:39	03/19/19 21:12	1
Client Sample ID: L19C024-0)5					L	ab Sample	D: 660-93	3234-5
Date Collected: 03/14/19 12:02								Matrix	: Water
Date Received: 03/15/19 09:50									
Method: 200.7 Rev 4.4 - Metals (I	CP)					-			
	Result	Qualifier	PQL		Unit	D	Prepared	Analyzed	Dil Fac
Lithium	0.0082	1	0.050	0.0010	mg/L		03/19/19 10:39	03/19/19 21:15	1

Method:	200.7	Rev	4.4 -	Metals	(ICP)	
---------	-------	-----	-------	--------	-------	--

Lab Sample ID: MB 400-43 Matrix: Water Analysis Batch: 433931	3799/1-A						Clie	ent Sam	ple ID: Me Prep Typ Prep Ba	ethod I e: Tot tch: 43	Blank al/NA 33799
		MB MB									
Analyte	Re	sult Qual	ifier	PQL	MDL Unit		D P	repared	Analyz	ed	Dil Fac
Lithium	0.0	0010 U		0.050 0	.0010 mg/L		03/1	9/19 10:3	9 03/19/19 2	20:26	1
Lab Sample ID: LCS 400-4 Matrix: Water	33799/2-A					Clie	ent Sa	mple ID	: Lab Con Prep Typ	trol Sa e: Tot	mple al/NA
Analysis Batch: 433931			Spike						Prep Ba	tch: 43	33799
Analyta			Spike	Booul	6 Cualifiar	Unit	_	% Baa	%Rec.		
				0.083			D		25 115		
			1.00	0.90)	mg/∟		90	00-110		
Lab Sample ID: 400-16738	3-B-1-B MS						С	lient Sa	mple ID: N	latrix :	Spike
Matrix: Water									Pren Tvn	e: Tot	al/NA
Analysis Batch: 433931									Pren Ba	tch 4	33799
	Sample	Sample	Spike	MS	S MS				%Rec.		
Analyte	Result	Qualifier	Added	Resul	t Qualifier	Unit	D	%Rec	Limits		
Lithium	0.0032	Ι	1.00	0.991	<u> </u>	mg/L		99	70 - 130		
Lab Sample ID: 400-167383	3-B-1-C MS	D				Client	Samp	le ID: M	atrix Spik	e Dup	licate
Matrix: Water									Prep Typ	e: Tot	al/NA
Amelia Detale 400004									Prep Ba	tch: 43	2200
Analysis Batch: 433931											00/33
Analysis Batch: 433931	Sample	Sample	Spike	MSE	MSD				%Rec.		RPD
Analysis Batch: 433931 Analyte	Sample Result	Sample Qualifier	Spike Added	MSE Resul) MSD t Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit

Metals

Prep Batch: 433799

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-93234-1	L19C024-01	Total/NA	Water	200.7	
660-93234-2	L19C024-02	Total/NA	Water	200.7	
660-93234-3	L19C024-03	Total/NA	Water	200.7	
660-93234-4	L19C024-04	Total/NA	Water	200.7	
660-93234-5	L19C024-05	Total/NA	Water	200.7	
MB 400-433799/1-A	Method Blank	Total/NA	Water	200.7	
LCS 400-433799/2-A	Lab Control Sample	Total/NA	Water	200.7	
400-167383-B-1-B MS	Matrix Spike	Total/NA	Water	200.7	
400-167383-B-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	200.7	
Analysis Batch: 43393	31				
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-93234-1	L19C024-01	Total/NA	Water	200.7 Rev 4.4	433799
660-93234-2	L19C024-02	Total/NA	Water	200.7 Rev 4.4	433799
660-93234-3	L19C024-03	Total/NA	Water	200.7 Rev 4.4	433799
660-93234-4	L19C024-04	Total/NA	Water	200.7 Rev 4.4	433799
660-93234-5	L19C024-05	Total/NA	Water	200.7 Rev 4.4	433799
MB 400-433799/1-A	Method Blank	Total/NA	Water	200.7 Rev 4.4	433799
LCS 400-433799/2-A	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	433799
400-167383-B-1-B MS	Matrix Spike	Total/NA	Water	200.7 Rev 4.4	433799
400-167383-B-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	200.7 Rev 4.4	433799
10

Lab Sample ID: 660-93234-3 Matrix: Water

Lab Sample ID: 660-93234-4

Lab Sample ID: 660-93234-5

Matrix: Water

Matrix: Water

Matrix: Water

Client Sam	ple ID: L19 d: 03/14/19 1	C024-01 4:02					L	ab Sample	ID: 660 Ma)-93234-1 trix: Water
Date Receive	d: 03/15/19 0	9:50								
	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			50 mL	50 mL	433799	03/19/19 10:39	KWN	TAL PEN
Total/NA	Analysis	200.7 Rev 4.4		1			433931	03/19/19 21:01	GESP	TAL PEN
	Instrumer	nt ID: 6500 ICP Duc)							
Client Sam	ple ID: I 19	C024-02						ab Sample	ID: 660)-93234-2

Client Sample ID: L19C024-02 Date Collected: 03/14/19 13:35 Date Received: 03/15/19 09:50

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			50 mL	50 mL	433799	03/19/19 10:39	KWN	TAL PEN
Total/NA	Analysis	200.7 Rev 4.4		1			433931	03/19/19 21:04	GESP	TAL PEN
	Instrumen	t ID: 6500 ICP Duo								

Client Sample ID: L19C024-03 Date Collected: 03/14/19 13:04 Date Received: 03/15/19 09:50

Ргер Туре	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			50 mL	50 mL	433799	03/19/19 10:39	KWN	TAL PEN
Total/NA	Analysis	200.7 Rev 4.4		1			433931	03/19/19 21:08	GESP	TAL PEN
	Instrumen	t ID: 6500 ICP Duo								

Client Sample ID: L19C024-04 Date Collected: 03/14/19 12:33 Date Received: 03/15/19 09:50

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			50 mL	50 mL	433799	03/19/19 10:39	KWN	TAL PEN
Total/NA	Analysis	200.7 Rev 4.4		1			433931	03/19/19 21:12	GESP	TAL PEN
	Instrumen	t ID: 6500 ICP Duo								

Client Sample ID: L19C024-05 Date Collected: 03/14/19 12:02 Date Received: 03/15/19 09:50

_	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			50 mL	50 mL	433799	03/19/19 10:39	KWN	TAL PEN
Total/NA	Analysis	200.7 Rev 4.4		1			433931	03/19/19 21:15	GESP	TAL PEN
	Instrumen	t ID: 6500 ICP Duo								

Laboratory References:

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

Laboratory: TestAmerica Tampa

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Florida	NELAP	4	E84282	06-30-19

Laboratory: TestAmerica Pensacola

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Florida	NELAP	4	E81010	06-30-19

Client: Tampa Electric Company Project/Site: L19C024

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	TAL PEN
200.7	Preparation. Total Metals	EPA	TAL PEN

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL PEN = TestAmerica Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

TestAmerica Tampa

	SUBC	ONTRACT ORDER						
	Tampa Electric (Company, Laboratory Ser	vices					
		L19C024						
SENDING LABORATORY:		RECEIVING LABOR	RATO RY:					
Tampa Electric Company, Laborat	tory Services	TestAmerica Laborat	ories, Inc Tampa					
5012 Causeway Blvd		6712 Benjamin Rd.,	Suite 100					
Tampa, FL 33619		Tampa, FL 33634						
Phone: (813) 630-7490		27						
Fax: (813) 630-7360		Fax: -						
Project Manager. Peggy Penner								
Due Date: 03/28/19 16:00	(
Analysis	Expires		Laboratory ID	Comments				
Sample ID: L19C024-01 BBS-	-CCR-1	Water	1					
Sampled: 03/14/19 14:02								
Lithium, Total EPA 6010	09/10/19 14	:02						
Containers Supplied:								
Poly HNO3 - 250mL (A)								
Sample ID: L19C024-02 BBS-	-CCR-2	Water						
Sampled: 03/14/19 13:35					- 1			
Lithium, Total EPA 6010	09/10/19 13	:35			_			
Containers Supplied:								
Poly HNO3 - 250mL (A)								
Sample ID: L19C024-03 BBS-	·CCR-3	Water						
Sampled: 03/14/19 13:04					_			
Lithium, Total EPA 6010	09/10/19 13	:04						
Containers Supplied:								
Poly HNO3 - 250mL (A)								
Sample ID: L19C024-04 BBS-	CCR-BW1	Water						
Sampled: 03/14/19 12:33								
Lithium, Total EPA 6010	09/10/19 12	1:33						
Containers Supplied:								
Poly HNO3 - 250mL (A)								
Sample ID: L19C024-05 BBS-	CCR-BW2	Water						
Sampled: 03/14/19 12:02								
Lithium, Total EPA 6010	09/10/19 12	::02						
Containers Supplied:								
Poly HNO3 - 250mL (A)								



9:50 19 3 Received By Date & Time Released By Time Date & Date & Time -09 Released By Received By Date & Time 3.2 Cu Page 3 of 3

Page 13 of 16

TestAmerica Tampa 6712 Benjamin Road Suite 100

Chain of Custody Record



THE LEADER IN ENVIRONMENTAL TESTING

σ 4 τυ

TestAmerica

Tampa,	FL	33634		
Phone (8	13)	885-7427	Fax (813)	885-7049

Client Information (Sub Contract Lab)	Sampler			Lab P Cont	M: her, Kei	aton		PM: nner, Keaton				Carrier Tracking No(s):			COC No: 660-112252.1		
ilient Contact:	Phone:			E-Mai	l:	conner@testamericainc.com					ate of Origin	6	-	P	Page:		
Shipping Receiving		_		Keat	Accredit	creditations Required (See note):								age i or i			
FestAmerica Laboratories, Inc.			-		NELA	ELAP - Florida; NELAP - Texas							6	60-93234-1			
Address: 3355 McLemore Drive	Due Date Requester 3/22/2019	d:				Analysis Requested							P	reservation Code:	s:		
Jity: Pensacola State, Zip:	TAT Requested (day	ys):					Π					Π			A - HCL B - NaOH C - Zn Acetate D - Nitric Acid	M - Hexane N - None O - AsNaO2 P - Na2O4S	
FL, 32514 Phone:	PO#:													E - NaHSO4 F - MeOH G - Amchlor	E - NaHSO4 F - MeOH G - Ameblor	Q - Na2SO3 R - Na2S2O3 S - H2SO4	
850-474-1001(Tel) 850-478-2671(Fax)	WO #)#			9										H - Ascorbic Acid	T - TSP Dodecahydrate	
zman.	NOW				No)						11			2	J - DI Water	V - MCAA	
Project Name:	Project #: 66004821	Project # 66004821 SSOW#:			e or ium									alne	L-EDA	Z - other (specify)	
Site	SSOW#:				mple D (Ye	TLIMI								cont	Other:		
		Sample	Sample Type (C=comp,	Matrix (W=water, S=solid, O=weste/oil,	eld Filtered Sa Inform MS/MSI	0.7/200.7 P_TO								ital Number of	1		
Sample Identification - Client ID (Lab ID)	Sample Date	Time	G=grab)	BT=Tissue, A=Alr	LE a	3		-					-	Ĕ	Special Ins	tructions/Note:	
100024 01 (660 02224 1)	2/1 4/10	14:02	Fiesdiva	Water	m			-	-					A			
190024-02 (660-93234-2)	3/14/19	Eastern 13:35		Water	+	1x		-		++	++			1			
1100024.03 (660.02224.3)	2/14/10	Eastern 13:04	-	Water	H	1.		-		+							
L19C024-04 (660-93234-4)	3/14/19	Eastern 12:33		Water	++			-		+	++			1	1		
L19C024-05 (660-93234-5)	3/14/19	Eastern 12:02		Water	Ħ	X		-				-	11 14	1			
		Eastern	-		Ħ	T		-						1	1		
			0.000		T												
										-	- 1						
									-				1.0				
Note: Since laboratory accreditations are subject to change, TestAmeric currently maintain accreditation in the State of Origin listed above for an Laboratories, Inc. attention immediately. If all requested accreditations in	a Laboratories, Inc. places the alysis/tests/matrix being analy are current to date, return the	ownership of zed, the samp signed Chain (method, analyt les must be shi of Custody atte	e & accreditati pped back to t sting to said co	on compl he TestA mplicanc	liance meric ce to 1	e upon ou ca laborat TestAmer	t subcont ory or oth ica Labor	ract laboration instruction instruction instruction in the second s	tories. Th ons will be	is sample s provided.	hipment is Any chang	forwarded i ges to accre	under editatio	chain-of-custody. If to status should be b	the laboratory does not rought to TestAmerica	
Possible Hazard Identification			-		s	amp	le Disp	osal (A fee ma	y be as	sessed	f sampl	es are re	taine	ed longer than 1	month)	
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Delive	rable Rank:	2		s	peci	ial Instru	In Clie	QC Real	Jiremen	isposal B ts:	y Lab		Arch	live For	Months	
Emply Vit Delingationed by	10000	Date	-		Tim						Interior	d of Shier	nant	_			
Relinguished by:	Date/Time:	Date:		Company	Lame	B.	eceived b	/	-	_	MOUN		time: 1	-		Company 27	
Relinquished by:	Date/Time:	h 15,1	1019	719 714 Company	mpA	R	eceived b	y:		_		Bate	Time:	1	921-	Company	
Relinquished by:	Date/Time:			Company		R	eceived b	y:			Date/Time:					Company	
Custody Seals Intart: Custody Seal No						C	coler Ten	perature	(s) ^a C and	Other Re	marks:	10	0	1	a d	1	
A Ves A No						Ĭ	awar i di	-porature	and and		1	2.0	C	Th	1X		

13

3/21/2019

Client: Tampa Electric Company

Login Number: 93234 List Number: 1 Creator: Redding, Charles S

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Job Number: 660-93234-1

List Source: TestAmerica Tampa

Client: Tampa Electric Company

Login Number: 93234 List Number: 2 Creator: Perez, Trina M

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.0°C IR-8
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Job Number: 660-93234-1

List Source: TestAmerica Pensacola

List Creation: 03/16/19 11:25 AM



Report Date: March 29, 2019

TECO	Field Custody:	Client
5012 Causeway Blvd.	Client/Field ID:	L19C024-01
Tampa, FL 33619		BBS-CCR-1
	Sample Collection:	03-14-19/1402
Attn: Peggy Penner	Lab ID No:	19.3119
	Lab Custody Date:	03-15-19/0940
	Sample description:	Water

CERTIFICATE OF ANALYSIS

Parameter	Units	Res	ults	Analysis Date	Method	Detection Limit
Combined Radium (Radium-226 + Radium 228)	pCi/l	33.9	± 1.7	Calc	Calc	0.9
Radium-226	pCi/l	33.2	± 1.7	3-21-19/1218	EPA 903.0	0.3
Radium-228	pCi/l	0.7	± 0.5	3-28-19/1222	EPA Ra-05	0.9

Alpha Standard: Th-230

James W. Hages

James W. Hayes Laboratory Manager

Test results meet all requirements of the NELAC standards. Statement of estimated uncertainty available upon request. Test results refer only to sample(s) listed. Contact person: Jim Hayes (813) 229-2879.

Page 1 of 1



Report Date: March 29, 2019

TECO	Field Custody:	Client
5012 Causeway Blvd.	Client/Field ID:	L19C024-02
Tampa, FL 33619		BBS-CCR-2
	Sample Collection:	03-14-19/1335
Attn: Peggy Penner	Lab ID No:	19.3120
	Lab Custody Date:	03-15-19/0940
	Sample description:	Water

CERTIFICATE OF ANALYSIS

La Assessment		11.2.1	Analysis			Detection		
Parameter	Units	Res	ults	Date	Method	Limit		
Combined Radium (Radium-226 + Radium 228)	pCi/l	15.8	± 1.2	Calc	Calc	0.6		
Radium-226	pCi/l	15.4	± 1.2	3-21-19/1218	EPA 903.0	0.5		
Radium-228	pCi/l	0.4	± 0.5	3-28-19/1222	EPA Ra-05	0.6		

Weeks homae

Thomas J. Weeks Laboratory Manager

Test results meet all requirements of the NELAC standards. Statement of estimated uncertainty available upon request. Test results refer only to sample(s) listed. Contact person: Thomas Weeks (813) 229-2879.

Page 1 of 1



Report Date: March 29, 2019

TECO	Field Custody:	Client
5012 Causeway Blvd.	Client/Field ID:	L19C024-03
Tampa, FL 33619		BBS-CCR-3
	Sample Collection:	03-14-19/1304
Attn: Peggy Penner	Lab ID No:	19.3121
	Lab Custody Date:	03-15-19/0940
	Sample description:	Water

CERTIFICATE OF ANALYSIS

2		Analysis			Detection		
Parameter	Units	Rea	sults	Date	Method	Limit	
Combined Radium (Radium-226 + Radium 228)	pCi/l	19.0	± 1.8	Calc	Calc	0.7	
Radium-226	pCi/l	18.8	± 1.8	3-22-19/1146	EPA 903.0	0.7	
Radium-228	pCi/l	0.2	± 0.5	3-28-19/1222	EPA Ra-05	0.6	

Weeks homae

Thomas J. Weeks Laboratory Manager

Test results meet all requirements of the NELAC standards. Statement of estimated uncertainty available upon request. Test results refer only to sample(s) listed. Contact person: Thomas Weeks (813) 229-2879.

Page 1 of 1



Report Date: March 29, 2019

TECO 5012 Causeway Blvd. Tampa, FL 33619

Attn: Peggy Penner

Field Custody: Client Client/Field ID: L19C024-04 BBS-CCR-BW1 Sample Collection: 03-14-19/1233 Lab ID No: 19.3122 Lab Custody Date: 03-15-19/0940 Sample description: Water

CERTIFICATE OF ANALYSIS

Parameter	Units	Res	ults	Analysis Date	Method	Detection Limit
Combined Radium (Radium-226 + Radium 228)	pCi/l	32.5	± 1.8	Calc	Calc	0.6
Radium-226	pCi/l	29.5	± 1.8	3-22-19/1146	EPA 903.0	0.5
Radium-228	pCi/l	3.0	± 0.6	3-28-19/1222	EPA Ra-05	0.6

Week homae

Thomas J. Weeks Laboratory Manager

Test results meet all requirements of the NELAC standards. Statement of estimated uncertainty available upon request. Test results refer only to sample(s) listed. Contact person: Thomas Weeks (813) 229-2879.

Page 1 of 1



Report Date: March 29, 2019

TECO 5012 Causeway Blvd. Tampa, FL 33619

Attn: Peggy Penner

Field Custody: Client Client/Field ID: L19C024-05 BBS-CCR-BW2 Sample Collection: 03-14-19/1202 Lab ID No: 19.3123 Lab Custody Date: 03-15-19/0940 Sample description: Water

CERTIFICATE OF ANALYSIS

Paramotor	Unite	Posults	Analysis	Method	Detection
Combined Radium (Radium-226 + Radium 228)	pCi/l	4.8 ± 0.8	Calc	Calc	0.6
Radium-226	pCi/l	4.8 ± 0.8	3-22-19/1146	EPA 903.0	0.5
Radium-228	pCi/l	0.0 ± 0.4	3-28-19/1222	EPA Ra-05	0.6

Weeks homal

Thomas J. Weeks Laboratory Manager

Test results meet all requirements of the NELAC standards. Statement of estimated uncertainty available upon request. Test results refer only to sample(s) listed. Contact person: Thomas Weeks (813) 229-2879.

Page 1 of 1

SUBCONTRACT ORDER

Tampa Electric Company, Laboratory Service:

L19C024

SENDING LABORATORY:

Tampa Electric Company, Laboratory Services 5012 Causeway Blvd Tampa, FL 33619 Phone: (813) 630-7490 Fax: (813) 630-7360 Project Manager: Peggy Penner

RECEIVING LABORATC RY:

KNL Laboratory Services 3202 N. Florida Ave. Tampa, FL 33603 Phone :(813) 229-2879 Fax: -

03/28/19 16:00 **Due Date:**

Analysis	Expires		Laboratory ID Comments
Sample ID: L19C024-01 BBS-CCR Sampled: 03/14/19 14:02	-1	Water	19.3119
Radium 226+228, Total	09/10/19 14:02		Level 2 Data requred
Radium 228 Ra-05	09/10/19 14:02		Level 2 Data requred
Radium 226 EPA 903.0	09/10/19 14:02		Level 2 Data requred
Containers Supplied:			
RAD Poly HNO3 - 1000mL (C)	RAD Poly HNO3 - 1000	DmL (D)	
Sample ID: L19C024-02 BBS-CCR Sampled: 03/14/19 13:35	-2	Water	19.3120
Radium 226 EPA 903.0	09/10/19 13:35		Level 2 Data requied
Radium 226+228, Total	09/10/19 13:35		Level 2 Data requred
Radium 228 Ra-05	09/10/19 13:35		Level 2 Data requred
Containers Supplied: RAD Poly HNO3 - 1000mL (C)	RAD Poly HNO3 - 1000)mL (D)	
Sample ID: L19C024-03 BBS-CCR Sampled: 03/14/19 13:04	-3	Water	19.3121
Radium 228 Ra-05	09/10/19 13:04		I vel 2 Data requred
Radium 226+228, Total	09/10/19 13:04		Level 2 Data requred
Radium 226 EPA 903.0	09/10/19 13:04		Level 2 Data requred
Containers Supplied: RAD Poly HNO3 - 1000mL (C)	RAD Poly HNO3 - 100	0mL (D)	
Sample ID: L19C024-04 BBS-CCR	-BW1	Water	19 3177
Sampled: 03/14/19 12:33			11.9122
Radium 226 EPA 903.0	09/10/19 12:33		I evel 2 Data requred
Radium 226+228, Total	09/10/19 12:33		Level 2 Data requred
Radium 228 Ra-05	09/10/19 12:33		! evel 2 Data requied
Containers Supplied:			
RAD Poly HNO3 - 1000mL (C)	RAD Poly HNO3 - 100	0mL (D)	
Released By	3-14-19 S Date & Time Re 3-15-19	Ceived By	Jann 3-14-19 Date & Time 3-15-19 CG4/U
Réleased By	Date & Time Re	ceived By	Date & Time

SUBCONTRACT ORDER

Tampa Electric Company, Laboratory Services

L19C024

Analysis	Expires	Laboratory ID Comments
Sample ID: L19C024-05 BBS-CCF Sampled: 03/14/19 12:02	-BW2	Water 19.3123
Radium 228 Ra-05	09/10/19 12:02	Level 2 Data requred
Radium 226 EPA 903.0	09/10/19 12:02	Level 2 Data requred
Radium 226+228, Total	09/10/19 12:02	Level 2 Data requred
Containers Supplied:		
RAD Poly HNO3 - 1000mL (C)	RAD Poly HNO3 - 1000mL ((D)

ABalleat	3-14-19	En Mann	3-14-19
Released By	Date & Time	Received By	Date & Time
- Enalla Jaman	3-15-19	HAL #	3-15-19 0940
Released By	Date & Time /	Received By	Date & Time

APPENDIX C

Laboratory Analytical Data Report – Fifth Detection Monitoring Event (September 2019)



5012 Causeway Blvd Tampa Fl. 33619 * Ph (813)630-7490 * Fax (813)630-7360 * DOH #E54272

 Big Bend Power Station
 Report Date:
 10/04/19 13:59

 Terry Eastley
 13031 Wyandott Rd
 10/04/19 13:59

 Apollo Beach, FL 33572
 10/04/19 13:59

 tleastley@tecoenergy.com
 10/04/19 13:59

 Work Order L19I017
 Project - CCR Wells Economizer Ash Pond

Case Narrative

5 sample(s) were received on 09/17/19 14:00.

There were no issues noted with the sample(s) associated with this workorder unless noted below.

EPA 6010

The recovery of the matrix spike and spike duplicate for Calcium could not be accurately determined due to the amount of target analyte in the sample matrix. The parent sample BBS-CCR-BW-2 is flagged with a J qualifier.



Rad - 226 Counting Error +/-

Tampa Electric Laboratory Services

5012 Causeway Blvd Tampa Fl. 33619 * Ph (813)630-7490 * Fax (813)630-7360 * DOH #E54272

Sample Information Client: Big Bend Power Station Lab Sample ID: L19I017-01 Sampled By: Robert Barthelette Sample Description: BBS-CCR-1 Date and Time Collected: 9/17/19 11:15 Sample Collection Method: Grab Date of Sample Receipt: 9/17/19 14:00 Laboratory Results **Sample Qualifier: Oualifier** Test Analysis Result Units MDL POL Code Dil Method Analyst Date & Time Parameter Tampa Electric Company, Laboratory Services **General Chemistry Parameters** Chloride 20 ERS 766 mg/L 8.00 20.0 EPA 300.0 9/23/19 17:55 Specific Conductance 4270 FDEP SOP FT 1200 9/17/19 11:15 100 100 1 RAB umhos/cm Dissolved Oxygen 0.150 1 FDEP SOP FT 1500 9/17/19 11:15 mg/L 0.100 0.100 RAB mg/L 9/23/19 17:45 Fluoride 0.195 0.0100 0.0500 1 EPA 300.0 ERS pН 6.82 pH Units 1.00 1.00 1 FDEP SOP FT 1100 RAB 9/17/19 11:15 **REDOX** Potential 9/17/19 11:15 -66.0 тV -999 -999 1 SM 2580B RAB Total Dissolved Solids 4 TMH 9/19/19 11:50 3250 mg/L 40.0 40.0 SM 2540C Sulfate 1140 40.0 20 EPA 300.0 ERS 9/23/19 17:55 mg/L 10.0 Turbidity 2.73 NTU 0.100 0.100 1 FDEP SOP FT 1600 RAB 9/17/19 11:15 Total Mercury by SW846 Method 7470/7471 0.200 9/19/19 10:03 Mercury 0.200 0.800 U 1 EPA 7470A MCR ug/L **Total Recoverable Metals by 200 Series** 0.600 U 1 MCR 9/19/19 11:24 Antimony 0.600 2.00 EPA 200.8 ug/L Arsenic 6.82 1 EPA 200.8 MCR 9/19/19 11:24 0.320 2.00 ug/L Cadmium 0.100 ug/L 0.100 0 500 U 1 EPA 200.8 MCR 9/19/19 11:24 Cobalt 0.518 2.00 I 1 EPA 200.8 9/19/19 11:24 ug/L 0.136 MCR Lead 0.0800 ug/L 0.0800 2.00 U 1 EPA 200.8 MCR 9/19/19 11:24 9/19/19 11:24 Selenium 2.51 ug/L 0.509 2.00 1 EPA 200.8 MCR Thallium 0.100 ug/L 0.100 0 500 U 1 EPA 200.8 MCR 9/19/19 11:24 **Total Recoverable Metals by SW846 Method 6010B** Barium 0.111 RLC 9/18/19 14:04 1 EPA 6010B mg/L 0.000500 0.0200 Beryllium 0.500 U 1 EPA 6010B RLC 9/18/19 14:04 0 500 2.00 ug/L Boron 21.0 mg/L 0.0100 0.0500 1 EPA 6010B RLC 9/18/19 14:04 9/19/19 11:44 Calcium 575000 ug/L 30.0 1000 V 1 EPA 6010B RLC Chromium 1.60 1.60 12.0 U 1 EPA 6010B RLC 9/18/19 14:04 ug/L Molybdenum 83.8 1 EPA 6010B RLC 9/18/19 14:04 ug/L 2.50 20.0 **Eurofins TestAmerica, Tampa** Metals (ICP) Lithium 0.018 0.011 0.050 1 200.7 Rev 4.4 Z01 GESP 10/1/19 19:32 mg/L I **KNL Laboratory** Radium - 226 Rad - 226 28.3 EPA 903.0 9/27/19 14:35 pCi/L 0.6 0.6 1 KL1

Laboratory Services certifies that the test result in this report meet all requirements of the latest promulgated TNI standards, unless indicated otherwise in the body of the report. Unless otherwise noted, all methods followed are per the most current published version of 40 CFR Part 136, Table B. Results reported on this report pertain to the above referenced sample only.

pCi/L

2.2

1

EPA 903.0

KL1

9/27/19 14:35



5012 Causeway Blvd Tampa Fl. 33619 * Ph (813)630-7490 * Fax (813)630-7360 * DOH #E54272

Sample Information

Client:	Big Bend Power Station		
Lab Sample ID:	L19I017-01	Sampled By: R	obert Barthelette
Sample Description:	BBS-CCR-1	Date and Time Col	lected: 9/17/19 11:15
Sample Collection Me	thod: Grab	Date of Sample Recei	ipt: 9/17/19 14:00

Laboratory Results

Sample	Qualifier:
--------	-------------------

• -									
Parameter	Result	Units	MDL	POL	Qualifier Code	Dil	Test Method	Analyst	Analysis Date & Time
Radium - 228								2	
Rad - 228	2.1	pCi/L	0.6	0.6		1	EPA Ra-05	KL1	10/1/19 9:45
Rad - 228 Counting Error +/-	0.5	pCi/L				1	EPA Ra-05	KL1	10/1/19 9:45
Radium-226/228									
Rad-226/228	30.4	pCi/L	0.6	0.6		1	Calc	KL1	10/1/19 9:45
Rad-226/228 Counting Error +/-	2.2	pCi/L				1	Calc	KL1	10/1/19 9:45



5012 Causeway Blvd Tampa Fl. 33619 * Ph (813)630-7490 * Fax (813)630-7360 * DOH #E54272

Sample Information

Client:	Big Bend Power Station		
Lab Sample ID:	L19I017-02	Sampled By: Rob	ert Barthelette
Sample Description:	BBS-CCR-2	Date and Time Collect	oted: 9/17/19 11:44
Sample Collection Me	hod: Grab	Date of Sample Receipt	: 9/17/19 14:00

Laboratory Results

Sample Qualifier:

					Qualifier		Test		Analysis
Parameter	Result	Units	MDL	PQL	Code	Dil	Method	Analyst	Date & Time
]	fampa Electri	ic Compan	y, Labo	ratory Ser	vices			
General Chemistry Paramete	ers								
Chloride	79.5	mg/L	0.400	1.00		1	EPA 300.0	ERS	9/23/19 18:25
Specific Conductance	1440	umhos/cm	100	100		1	FDEP SOP FT 1200	RAB	9/17/19 11:44
Dissolved Oxygen	0.140	mg/L	0.100	0.100		1	FDEP SOP FT 1500	RAB	9/17/19 11:44
Fluoride	0.183	mg/L	0.0100	0.0500		1	EPA 300.0	ERS	9/23/19 18:25
pH	6.73	pH Units	1.00	1.00		1	FDEP SOP FT 1100	RAB	9/17/19 11:44
REDOX Potential	-56.0	mV	-999	-999		1	SM 2580B	RAB	9/17/19 11:44
Total Dissolved Solids	1040	mg/L	10.0	10.0		1	SM 2540C	TMH	9/19/19 11:50
Sulfate	419	mg/L	5.00	20.0		10	EPA 300.0	ERS	9/23/19 18:36
Turbidity	2.49	NTU	0.100	0.100		1	FDEP SOP FT 1600	RAB	9/17/19 11:44
Total Mercury by SW846 Me	thod 7470/7471								
Mercury	0.200	ug/L	0.200	0.800	U	1	EPA 7470A	MCR	9/19/19 10:04
Total Recoverable Metals by	200 Series								
Antimony	0.600	ug/L	0.600	2.00	U	1	EPA 200.8	MCR	9/19/19 11:27
Arsenic	2.51	ug/L	0.320	2.00		1	EPA 200.8	MCR	9/19/19 11:27
Cadmium	0.100	ug/L	0.100	0.500	U	1	EPA 200.8	MCR	9/19/19 11:27
Cobalt	0.136	ug/L	0.136	2.00	U	1	EPA 200.8	MCR	9/19/19 11:27
Lead	0.0800	ug/L	0.0800	2.00	U	1	EPA 200.8	MCR	9/19/19 11:27
Selenium	0.778	ug/L	0.509	2.00	Ι	1	EPA 200.8	MCR	9/19/19 11:27
Thallium	0.100	ug/L	0.100	0.500	U	1	EPA 200.8	MCR	9/19/19 11:27
Total Recoverable Metals by	SW846 Method	6010B							
Barium	0.0614	mg/L	0.000500	0.0200		1	EPA 6010B	RLC	9/18/19 14:08
Beryllium	0.500	ug/L	0.500	2.00	U	1	EPA 6010B	RLC	9/18/19 14:08
Boron	0.199	mg/L	0.0100	0.0500		1	EPA 6010B	RLC	9/18/19 14:08
Calcium	212000	ug/L	30.0	1000	V	1	EPA 6010B	RLC	9/19/19 11:47
Chromium	43.8	ug/L	1.60	12.0		1	EPA 6010B	RLC	9/18/19 14:08
Molybdenum	4.55	ug/L	2.50	20.0	Ι	1	EPA 6010B	RLC	9/18/19 14:08
		Euro	fins TestAr	nerica, T	Гатра				
Metals (ICP)									
Lithium	0.014	mg/L	0.011	0.050	Ι	1	200.7 Rev 4.4 Z01	GESP	10/1/19 19:36
			KNL Lab	oratory					
Radium - 226									
Rad - 226	16.0	pCi/L	0.5	0.5		1	EPA 903.0	KL1	9/27/19 14:35
Rad - 226 Counting Error +/-	1.7	pCi/L				1	EPA 903.0	KL1	9/27/19 14:35



5012 Causeway Blvd Tampa Fl. 33619 * Ph (813)630-7490 * Fax (813)630-7360 * DOH #E54272

Sample Information

Client:	Big Bend Power Station			
Lab Sample ID:	L19I017-02	Sampled By:	Robert B	arthelette
Sample Description:	BBS-CCR-2	Date and Time C	Collected:	9/17/19 11:44
Sample Collection Me	thod: Grab	Date of Sample Re	eceipt:	9/17/19 14:00

Laboratory Results

Sample	e Qua	lifier:
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Davamatan	Decult	Unite	MDI	BOI	Qualifier	Dil	Test	Analyst	Analysis Data & Tima
rarameter	Kesult	Units	MDL	rųl	Coue	DII	Methoa	Analyst	Date & Time
<u>Radium - 228</u>									
Rad - 228	0.6	pCi/L	0.6	0.6	U	1	EPA Ra-05	KL1	10/1/19 9:45
Rad - 228 Counting Error +/-	0.4	pCi/L				1	EPA Ra-05	KL1	10/1/19 9:45
Radium-226/228									
Rad-226/228	16.2	pCi/L	0.6	0.6		1	Calc	KL1	10/1/19 9:45
Rad-226/228 Counting Error +/-	1.7	pCi/L				1	Calc	KL1	10/1/19 9:45



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Sample Information

Client:	Big Bend Power Station		
Lab Sample ID:	L19I017-03	Sampled By: Robert B	Barthelette
Sample Description:	BBS-CCR-3	Date and Time Collected:	9/17/19 12:24
Sample Collection Me	hod: Grab	Date of Sample Receipt:	9/17/19 14:00

Laboratory Results

Sample Qualifier:

					Qualifier		Test		Analysis
Parameter	Result	Units	MDL	PQL	Code	Dil	Method	Analyst	Date & Time
]	fampa Electri	ic Compan	y, Labo	ratory Ser	vices			
General Chemistry Paramete	ers								
Chloride	129	mg/L	4.00	10.0		10	EPA 300.0	ERS	9/23/19 18:56
Specific Conductance	1800	umhos/cm	100	100		1	FDEP SOP FT 1200	RAB	9/17/19 12:24
Dissolved Oxygen	0.200	mg/L	0.100	0.100		1	FDEP SOP FT 1500	RAB	9/17/19 12:24
Fluoride	0.390	mg/L	0.0100	0.0500		1	EPA 300.0	ERS	9/23/19 18:46
pH	6.33	pH Units	1.00	1.00		1	FDEP SOP FT 1100	RAB	9/17/19 12:24
REDOX Potential	-160	mV	-999	-999		1	SM 2580B	RAB	9/17/19 12:24
Total Dissolved Solids	1300	mg/L	10.0	10.0		1	SM 2540C	TMH	9/19/19 11:50
Sulfate	540	mg/L	5.00	20.0		10	EPA 300.0	ERS	9/23/19 18:56
Turbidity	9.29	NTU	0.100	0.100		1	FDEP SOP FT 1600	RAB	9/17/19 12:24
Total Mercury by SW846 Me	thod 7470/7471								
Mercury	0.200	ug/L	0.200	0.800	U	1	EPA 7470A	MCR	9/19/19 10:05
Total Recoverable Metals by	200 Series								
Antimony	0.600	ug/L	0.600	2.00	U	1	EPA 200.8	MCR	9/19/19 11:31
Arsenic	0.320	ug/L	0.320	2.00	U	1	EPA 200.8	MCR	9/19/19 11:31
Cadmium	0.100	ug/L	0.100	0.500	U	1	EPA 200.8	MCR	9/19/19 11:31
Cobalt	0.136	ug/L	0.136	2.00	U	1	EPA 200.8	MCR	9/19/19 11:31
Lead	0.0800	ug/L	0.0800	2.00	U	1	EPA 200.8	MCR	9/19/19 11:31
Selenium	0.983	ug/L	0.509	2.00	Ι	1	EPA 200.8	MCR	9/19/19 11:31
Thallium	0.100	ug/L	0.100	0.500	U	1	EPA 200.8	MCR	9/19/19 11:31
Total Recoverable Metals by	SW846 Method	6010B							
Barium	0.0643	mg/L	0.000500	0.0200		1	EPA 6010B	RLC	9/18/19 14:13
Beryllium	0.500	ug/L	0.500	2.00	U	1	EPA 6010B	RLC	9/18/19 14:13
Boron	0.541	mg/L	0.0100	0.0500		1	EPA 6010B	RLC	9/18/19 14:13
Calcium	211000	ug/L	30.0	1000	V	1	EPA 6010B	RLC	9/19/19 11:54
Chromium	1.60	ug/L	1.60	12.0	U	1	EPA 6010B	RLC	9/18/19 14:13
Molybdenum	12.7	ug/L	2.50	20.0	Ι	1	EPA 6010B	RLC	9/18/19 14:13
		Euro	fins TestAr	nerica, T	Fampa				
Metals (ICP)									
Lithium	0.013	mg/L	0.011	0.050	Ι	1	200.7 Rev 4.4 Z01	GESP	10/1/19 19:51
			KNL Lab	oratory					
Radium - 226									
Rad - 226	15.6	pCi/L	0.4	0.4		1	EPA 903.0	KL1	9/30/19 13:44
Rad - 226 Counting Error +/-	1.3	pCi/L				1	EPA 903.0	KL1	9/30/19 13:44



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Sample Information

Client:	Big Bend Power Station		
Lab Sample ID:	L19I017-03	Sampled By: Robert Barthelette	
Sample Description:	BBS-CCR-3	Date and Time Collected: 9/17/19	12:24
Sample Collection Me	thod: Grab	Date of Sample Receipt: 9/17/19 14	4:00

Laboratory Results

Sample	e Qua	lifier:
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					Qualifier		Test		Analysis
Parameter	Result	Units	MDL	PQL	Code	Dil	Method	Analyst	Date & Time
<u>Radium - 228</u>									
Rad - 228	2.1	pCi/L	0.6	0.6		1	EPA Ra-05	KL1	10/1/19 9:45
Rad - 228 Counting Error +/-	0.5	pCi/L				1	EPA Ra-05	KL1	10/1/19 9:45
Radium-226/228									
Rad-226/228	17.7	pCi/L	0.6	0.6		1	Calc	KL1	10/1/19 9:45
Rad-226/228 Counting Error +/-	1.3	pCi/L				1	Calc	KL1	10/1/19 9:45



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Sample Information

Client:	Big Bend Power Station		
Lab Sample ID:	L19I017-04	Sampled By: Robert Barthel	ette
Sample Description:	BBS-CCR-BW1	Date and Time Collected: 9/	17/19 10:23
Sample Collection Met	hod: Grab	Date of Sample Receipt: 9/17	//19 14:00

Laboratory Results

Sample Qualifier:

					Qualifier		Test		Analysis
Parameter	Result	Units	MDL	PQL	Code	Dil	Method	Analyst	Date & Time
	7	fampa Electr	ic Compan	y, Labor	atory Ser	vices			
General Chemistry Paramete	rs								
Chloride	622	mg/L	8.00	20.0		20	EPA 300.0	ERS	9/23/19 19:16
Specific Conductance	4170	umhos/cm	100	100		1	FDEP SOP FT 1200	RAB	9/17/19 10:23
Dissolved Oxygen	0.100	mg/L	0.100	0.100	U	1	FDEP SOP FT 1500	RAB	9/17/19 10:23
Fluoride	0.340	mg/L	0.0100	0.0500		1	EPA 300.0	ERS	9/23/19 19:06
pH	6.52	pH Units	1.00	1.00		1	FDEP SOP FT 1100	RAB	9/17/19 10:23
REDOX Potential	-19.0	mV	-999	-999		1	SM 2580B	RAB	9/17/19 10:23
Total Dissolved Solids	3180	mg/L	40.0	40.0		4	SM 2540C	TMH	9/19/19 11:50
Sulfate	1320	mg/L	10.0	40.0		20	EPA 300.0	ERS	9/23/19 19:16
Turbidity	3.67	NTU	0.100	0.100		1	FDEP SOP FT 1600	RAB	9/17/19 10:23
Total Mercury by SW846 Me	thod 7470/7471								
Mercury	0.200	ug/L	0.200	0.800	U	1	EPA 7470A	MCR	9/19/19 10:06
Total Recoverable Metals by 2	200 Series								
Antimony	0.600	ug/L	0.600	2.00	U	1	EPA 200.8	MCR	9/19/19 11:35
Arsenic	7.81	ug/L	0.320	2.00		1	EPA 200.8	MCR	9/19/19 11:35
Cadmium	0.100	ug/L	0.100	0.500	U	1	EPA 200.8	MCR	9/19/19 11:35
Cobalt	2.14	ug/L	0.136	2.00		1	EPA 200.8	MCR	9/19/19 11:35
Lead	0.0895	ug/L	0.0800	2.00	Ι	1	EPA 200.8	MCR	9/19/19 11:35
Selenium	3.09	ug/L	0.509	2.00		1	EPA 200.8	MCR	9/19/19 11:35
Thallium	0.100	ug/L	0.100	0.500	U	1	EPA 200.8	MCR	9/19/19 11:35
Total Recoverable Metals by S	SW846 Method	6010B							
Barium	0.0439	mg/L	0.000500	0.0200		1	EPA 6010B	RLC	9/18/19 14:17
Beryllium	0.500	ug/L	0.500	2.00	U	1	EPA 6010B	RLC	9/18/19 14:17
Boron	33.5	mg/L	0.0100	0.0500		1	EPA 6010B	RLC	9/18/19 14:17
Calcium	619000	ug/L	30.0	1000	V	1	EPA 6010B	RLC	9/19/19 11:57
Chromium	1.60	ug/L	1.60	12.0	U	1	EPA 6010B	RLC	9/18/19 14:17
Molybdenum	21.8	ug/L	2.50	20.0		1	EPA 6010B	RLC	9/18/19 14:17
		Euro	fins TestAn	nerica, T	ampa				
Metals (ICP)									
Lithium	0.023	mg/L	0.011	0.050	Ι	1	200.7 Rev 4.4 Z01	GESP	10/1/19 19:40
			KNL Lab	oratory					
Radium - 226									
Rad - 226	26.9	pCi/L	0.3	0.3		1	EPA 903.0	KL1	9/30/19 13:44
Rad - 226 Counting Error +/-	1.7	pCi/L				1	EPA 903.0	KL1	9/30/19 13:44



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Sample Information

Client:	Big Bend Power Station	
Lab Sample ID:	L19I017-04	Sampled By: Robert Barthelette
Sample Description:	BBS-CCR-BW1	Date and Time Collected: 9/17/19 10:23
Sample Collection Met	hod: Grab	Date of Sample Receipt: 9/17/19 14:00
	L	Laboratory Results

Sample Qualifier:										
				Qualifier			Test		Analysis	
Parameter	Result	Units	MDL	PQL	Code	Dil	Method	Analyst	Date & Time	
<u> Radium - 228</u>										
Rad - 228	3.0	pCi/L	0.6	0.6		1	EPA Ra-05	KL1	10/1/19 9:45	
Rad - 228 Counting Error +/-	0.6	pCi/L				1	EPA Ra-05	KL1	10/1/19 9:45	
Radium-226/228										
Rad-226/228	29.9	pCi/L	0.6	0.6		1	Calc	KL1	10/1/19 9:45	
Rad-226/228 Counting Error +/-	1.7	pCi/L				1	Calc	KL1	10/1/19 9:45	



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Sample Information

Client:	Big Bend Power Station		
Lab Sample ID:	L191017-05	Sampled By: Robert B	arthelette
Sample Description:	BBS-CCR-BW2	Date and Time Collected:	9/17/19 9:46
Sample Collection Met	hod: Grab	Date of Sample Receipt:	9/17/19 14:00

Laboratory Results

Sample Qualifier:

					Qualifier		Test		Analysis
Parameter	Result	Units	MDL	PQL	Code	Dil	Method	Analyst	Date & Time
	ſ	fampa Electr	ic Compan	y, Labor	atory Ser	vices			
General Chemistry Paramete	rs								
Chloride	118	mg/L	2.00	5.00		5	EPA 300.0	ERS	9/23/19 19:37
Specific Conductance	1940	umhos/cm	100	100		1	FDEP SOP FT 1200	RAB	9/17/19 9:46
Dissolved Oxygen	0.160	mg/L	0.100	0.100		1	FDEP SOP FT 1500	RAB	9/17/19 9:46
Fluoride	0.378	mg/L	0.0100	0.0500		1	EPA 300.0	ERS	9/23/19 19:26
pH	6.60	pH Units	1.00	1.00		1	FDEP SOP FT 1100	RAB	9/17/19 9:46
REDOX Potential	-26.0	mV	-999	-999		1	SM 2580B	RAB	9/17/19 9:46
Total Dissolved Solids	1460	mg/L	10.0	10.0		1	SM 2540C	TMH	9/19/19 11:50
Sulfate	630	mg/L	5.00	20.0		10	EPA 300.0	ERS	9/26/19 16:22
Turbidity	5.54	NTU	0.100	0.100		1	FDEP SOP FT 1600	RAB	9/17/19 9:46
Total Mercury by SW846 Me	thod 7470/7471								
Mercury	0.200	ug/L	0.200	0.800	U	1	EPA 7470A	MCR	9/19/19 10:07
Total Recoverable Metals by 2	200 Series								
Antimony	0.600	ug/L	0.600	2.00	U	1	EPA 200.8	MCR	9/19/19 11:39
Arsenic	7.27	ug/L	0.320	2.00		1	EPA 200.8	MCR	9/19/19 11:39
Cadmium	0.100	ug/L	0.100	0.500	U	1	EPA 200.8	MCR	9/19/19 11:39
Cobalt	0.427	ug/L	0.136	2.00	Ι	1	EPA 200.8	MCR	9/19/19 11:39
Lead	0.0800	ug/L	0.0800	2.00	U	1	EPA 200.8	MCR	9/19/19 11:39
Selenium	1.60	ug/L	0.509	2.00	Ι	1	EPA 200.8	MCR	9/19/19 11:39
Thallium	0.100	ug/L	0.100	0.500	U	1	EPA 200.8	MCR	9/19/19 11:39
Total Recoverable Metals by 3	SW846 Method	6010 <u>B</u>							
Barium	0.0616	mg/L	0.000500	0.0200		1	EPA 6010B	RLC	9/18/19 14:21
Beryllium	0.500	ug/L	0.500	2.00	U	1	EPA 6010B	RLC	9/18/19 14:21
Boron	2.83	mg/L	0.0100	0.0500		1	EPA 6010B	RLC	9/18/19 14:21
Calcium	367000	ug/L	30.0	1000	J-,V	1	EPA 6010B	RLC	9/19/19 12:08
Chromium	1.60	ug/L	1.60	12.0	U	1	EPA 6010B	RLC	9/18/19 14:21
Molybdenum	4.90	ug/L	2.50	20.0	Ι	1	EPA 6010B	RLC	9/18/19 14:21
		Euro	fins TestAn	nerica, T	ampa				
Metals (ICP)									
Lithium	0.011	mg/L	0.011	0.050	U	1	200.7 Rev 4.4 Z01	GESP	10/1/19 19:44
			KNL Lab	oratory					
Radium - 226									
Rad - 226	3.8	pCi/L	0.4	0.4		1	EPA 903.0	KL1	9/30/19 13:44
Rad - 226 Counting Error +/-	0.7	pCi/L				1	EPA 903.0	KL1	9/30/19 13:44



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Sample Information

Client:	Big Bend Power Station	
Lab Sample ID:	L19I017-05	Sampled By: Robert Barthelette
Sample Description:	BBS-CCR-BW2	Date and Time Collected: 9/17/19 9:46
Sample Collection Met	hod: Grab	Date of Sample Receipt: 9/17/19 14:00

Laboratory Results

Sample Qualifier:

				Qualifier			Test	Analysis		
Parameter	Result	Units	MDL	PQL	Code	Dil	Method	Analyst	Date & Time	
Radium - 228										
Rad - 228	0.9	pCi/L	0.8	0.8		1	EPA Ra-05	KL1	9/30/19 12:18	
Rad - 228 Counting Error +/-	0.6	pCi/L				1	EPA Ra-05	KL1	9/30/19 12:18	
Radium-226/228										
Rad-226/228	4.7	pCi/L	0.8	0.8		1	Calc	KL1	9/30/19 13:44	
Rad-226/228 Counting Error +/-	0.7	pCi/L				1	Calc	KL1	9/30/19 13:44	

Comments

U Indicates that the compound was analyzed for but not detected.

J- The reported value is an estimated value, see the case narrative for specifics.

I Estimated value

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

V Analyte detected in the method blank

Subcontract Laboratories:

Eurofins TestAmerica, Tampa	E84282
KNL Laboratory	E84025



Total Recoverable Metals by SW846 Method 6010B - Quality Control

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%Rec	%Rec Limits	RPD	RPD Limit	Qualifier	
Batch 19I0130 - EPA 6010B												
Blank (1910130-BLK1)					Prepared &	Analyzed:	09/18/19					
Barium	0.000500	0.000500	0.0200	mg/L							U	
Beryllium	0.500	0.500	2.00	ug/L							U	
Boron	0.0100	0.0100	0.0500	mg/L							U	
Calcium	36.6	30.0	1000	ug/L							Ι	
Chromium	1.60	1.60	12.0	ug/L							U	
Molybdenum	2.50	2.50	20.0	ug/L							U	
LCS (19I0130-BS1)					Prepared & Analyzed: 09/18/19							
Barium	1.01	0.000500	0.0200	mg/L	1.0000		101	80-120				
Beryllium	1010	0.500	2.00	ug/L	1000.0		101	80-120				
Boron	1.04	0.0100	0.0500	mg/L	1.0000		104	80-120				
Calcium	10900	30.0	1000	ug/L	10000		109	80-120			V	
Chromium	1020	1.60	12.0	ug/L	1000.0		102	80-120				
Molybdenum	1040	2.50	20.0	ug/L	1000.0		104	80-120				
Matrix Spike (1910130-MS1)		Sour	ce: L19I01	7-05	Prepared &	Analyzed:	09/18/19					
Barium	1.03	0.000500	0.0200	mg/L	1.0000	0.0616	96.8	75-125				
Beryllium	999	0.500	2.00	ug/L	1000.0	U	99.9	75-125				
Boron	3.83	0.0100	0.0500	mg/L	1.0000	2.83	100	75-125				
Calcium	358000	30.0	1000	ug/L	10000	367000	NR	75-125			J-,V	
Chromium	995	1.60	12.0	ug/L	1000.0	U	99.5	75-125				
Molybdenum	1050	2.50	20.0	ug/L	1000.0	4.90	105	75-125				
Matrix Spike Dup (19I0130-MSD1)		Sour	ce: L19I01	7-05	Prepared &	Analyzed:	09/18/19					
Barium	1.04	0.000500	0.0200	mg/L	1.0000	0.0616	97.6	75-125	0.726	20		
Beryllium	1000	0.500	2.00	ug/L	1000.0	U	100	75-125	0.494	20		
Boron	3.86	0.0100	0.0500	mg/L	1.0000	2.83	103	75-125	0.728	20		
Calcium	358000	30.0	1000	ug/L	10000	367000	NR	75-125	0.0420	20	J-,V	
Chromium	1000	1.60	12.0	ug/L	1000.0	U	100	75-125	0.684	20		
Molybdenum	1060	2.50	20.0	ug/L	1000.0	4.90	105	75-125	0.640	20		



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Total Mercury by SW846 Method 7470/7471 - Quality Control

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%Rec	%Rec Limits	RPD	RPD Limit	Qualifier
			-								-
Batch 19I0129 - EPA 7470A											
Blank (1910129-BLK1)					Prepared & Analyzed: 09/19/19						
Mercury	0.200	0.200	0.800	ug/L							U
LCS (19I0129-BS1)					Prepared &	Analyzed:	09/19/19				
Mercury	1.95	0.200	0.800	ug/L	2.0000		97.4	80-120			
Matrix Spike (19I0129-MS1)		Sour	ce: L19I01	7-05	Prepared &	Analyzed:	09/19/19				
Mercury	1.90	0.200	0.800	ug/L	2.0000	U	95.0	75-125			
Matrix Spike Dup (19I0129-MSD1)		Sour	ce: L19I01	7-05	Prepared & Analyzed: 09/19/19		09/19/19				
Mercury	1.92	0.200	0.800	ug/L	2.0000	U	95.8	75-125	0.891	20	



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Total Recoverable Metals by 200 Series - Quality Control

Analyte	P ogult	MDI	POI	Unite	Spike	Source	%Pac	%Rec	PPD	RPD Limit	Qualifier
Анатую	Kesuil	MDL	rųl	Units	Level	Result	70Rec	Liiiiits	KrD	LIIIII	Quanner
Batch 19I0128 - EPA 200.8											
Blank (19I0128-BLK1)					Prepared: 0	9/17/19 Ar	nalyzed: 09	9/19/19			
Antimony	0.600	0.600	2.00	ug/L	-						U
Arsenic	0.320	0.320	2.00	ug/L							U
Cadmium	0.100	0.100	0.500	ug/L							U
Cobalt	0.136	0.136	2.00	ug/L							U
Lead	0.0800	0.0800	2.00	ug/L							U
Selenium	0.509	0.509	2.00	ug/L							U
Thallium	0.100	0.100	0.500	ug/L							U
LCS (19I0128-BS1)					Prepared: 0	9/17/19 Ar	nalyzed: 09	9/19/19			
Antimony	95.9	0.600	2.00	ug/L	100.00		95.9	85-115			
Arsenic	93.4	0.320	2.00	ug/L	100.00		93.4	85-115			
Cadmium	97.7	0.100	0.500	ug/L	100.00		97.7	85-115			
Cobalt	97.0	0.136	2.00	ug/L	100.00		97.0	85-115			
Lead	96.6	0.0800	2.00	ug/L	100.00		96.6	85-115			
Selenium	101	0.509	2.00	ug/L	100.00		101	85-115			
Thallium	95.9	0.100	0.500	ug/L	100.00		95.9	85-115			
Matrix Spike (19I0128-MS1)		Sour	ce: L19I017	7-01	Prepared: 09/17/19 Analyzed: 09/19/19						
Antimony	96.6	0.600	2.00	ug/L	100.00	U	96.6	70-130			
Arsenic	93.1	0.320	2.00	ug/L	100.00	6.82	86.3	70-130			
Cadmium	81.9	0.100	0.500	ug/L	100.00	U	81.9	70-130			
Cobalt	85.2	0.136	2.00	ug/L	100.00	0.518	84.7	70-130			
Lead	84.7	0.0800	2.00	ug/L	100.00	U	84.7	70-130			
Selenium	91.7	0.509	2.00	ug/L	100.00	2.51	89.2	70-130			
Thallium	87.9	0.100	0.500	ug/L	100.00	U	87.9	70-130			
Matrix Spike Dup (19I0128-MSD1)		Sour	ce: L19I017	7-01	Prepared: 0	9/17/19 Ar	nalyzed: 09	9/19/19			
Antimony	96.3	0.600	2.00	ug/L	100.00	U	96.3	70-130	0.346	20	
Arsenic	89.1	0.320	2.00	ug/L	100.00	6.82	82.3	70-130	4.43	20	
Cadmium	80.2	0.100	0.500	ug/L	100.00	U	80.2	70-130	2.13	20	
Cobalt	81.0	0.136	2.00	ug/L	100.00	0.518	80.4	70-130	5.08	20	
Lead	85.2	0.0800	2.00	ug/L	100.00	U	85.2	70-130	0.544	20	
Selenium	84.9	0.509	2.00	ug/L	100.00	2.51	82.4	70-130	7.72	20	
Thallium	88.3	0.100	0.500	ug/L	100.00	U	88.3	70-130	0.439	20	



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General Chemistry Parameters - Quality Control

										1
				Spike	Source		%Rec		RPD	
Result	MDL	PQL	Units	Level	Result	%Rec	Limits	RPD	Limit	Qualifier
				Prepared &	a Analyzed:	09/19/19				
10.0	10.0	10.0	mg/L							U
				Prepared &	Analyzed:	09/19/19				
995	10.0	10.0	mg/L	1000.0		99.5	80-120			
	Sour	ce: L19I002	2-01	Prepared &	Analyzed:	09/19/19				
855	10.0	10.0	mg/L		845			1.18	10	
	Sour	ce: L19I016	6-05	Prepared & Analyzed: 09/19/19						
1600	10.0	10.0	mg/L		1610			0.809	10	
				Prepared &	Analyzed:	09/23/19				
0.400	0.400	1.00	mg/L							U
0.0100	0.0100	0.0500	mg/L							U
0.500	0.500	2.00	mg/L							U
				Prepared &	Analyzed:	09/23/19				
5.21	0.400	1.00	mg/L	5.0000		104	90-110			
4.96	0.0100	0.0500	mg/L	5.0000		99.2	90-110			
4.99	0.500	2.00	mg/L	5.0000		99.7	90-110			
	Sour	ce: L19I002	2-01	Prepared &	Analyzed:	09/23/19				
196	2.00	5.00	mg/L	25.000	174	89.4	90-110			J-
26.7	0.0500	0.250	mg/L	25.000	1.25	102	90-110			
311	2.50	10.0	mg/L	25.000	295	62.8	90-110			J-
	Result 10.0 10.0 995 855 1600 0.400 0.0100 0.500 5.21 4.96 4.99 196 26.7 311	Result MDL 10.0 10.0 995 10.0 995 10.0 Sour Sour 855 10.0 855 10.0 0.400 0.400 0.100 0.0100 0.500 0.500 5.21 0.400 4.96 0.0100 4.96 0.0100 4.99 0.500 Sour 196 2.00 26.7 0.0500 311 2.50	Result MDL PQL 10.0 10.0 10.0 995 10.0 10.0 995 10.0 10.0 Source: L191002 855 10.0 10.0 855 10.0 10.0 600 10.0 10.0 855 10.0 10.0 600 10.0 10.0 1600 10.0 10.0 5.21 0.400 1.00 4.96 0.0100 0.0500 4.99 0.500 2.00 Source: L191002 196 2.00 5.00 26.7 0.0500 0.250 311 2.50 10.0	Result MDL PQL Units 10.0 10.0 10.0 mg/L 995 10.0 10.0 mg/L 995 10.0 10.0 mg/L Source: L191002-01 855 10.0 10.0 mg/L 555 10.0 10.0 mg/L 6000 10.0 10.0 mg/L 1600 10.0 10.0 mg/L 0.400 0.400 1.00 mg/L 0.500 0.500 2.00 mg/L 5.21 0.400 1.00 mg/L 4.96 0.0100 0.0500 mg/L 4.99 0.500 2.00 mg/L 4.99 0.500 2.00 mg/L 196 2.00 5.00 mg/L 196 2.00 5.00 mg/L 311 2.50 10.0 mg/L	Result MDL PQL Units Spike Level 10.0 10.0 10.0 mg/L Prepared & 10.0 10.0 10.0 mg/L Prepared & 995 10.0 10.0 mg/L 1000.0 Source: L191002-01 Prepared & 855 10.0 10.0 mg/L Prepared & 855 10.0 10.0 mg/L Prepared & 1600 10.0 10.0 mg/L Prepared & 0.400 0.400 1.00 mg/L mg/L mg/L 0.400 0.400 1.00 mg/L mg/L mg/L mg/L 0.400 0.400 1.00 mg/L mg/L mg/L mg/L mg/L 0.500 0.500 2.00 mg/L 5.0000 mg/L mg/L mg/L 0.400 0.400 1.00 mg/L 5.0000 mg/L mg/L mg/L mg/L mg/L mg/L mg/L	Result MDL PQL Units Spike Level Source Result 10.0 10.0 10.0 mg/L Prepared & Analyzed: 10.0 10.0 10.0 mg/L Prepared & Analyzed: 995 10.0 10.0 mg/L 1000.0 Source: L191002-01 Prepared & Analyzed: 845 S55 10.0 10.0 mg/L 845 Source: L191016-05 Prepared & Analyzed: 1610 1600 10.0 10.0 mg/L 1610 1600 10.0 10.0 mg/L 1610 1600 10.0 0.500 mg/L 1610 0.400 0.400 1.00 mg/L 1610 0.500 0.500 mg/L 5.0000 100 0.400 0.400 0.0500 mg/L 5.0000 0.400 0.400 1.00 mg/L 5.0000 4.96 0.0100 0.0500 mg/L 5.0000	Result MDL PQL Units Spike Level Source Result %Rec Prepared & Analyzed: 09/19/19 9%Rec 9%Rec 9%Rec 9%Rec 10.0 10.0 ng/L Prepared & Analyzed: 09/19/19 995 10.0 10.0 mg/L 1000.0 99.5 Source: L191002-01 Prepared & Analyzed: 09/19/19 855 10.0 10.0 mg/L 845 Source: L191016-05 Prepared & Analyzed: 09/19/19 1600 10.0 10.0 mg/L 1610 Prepared & Analyzed: 09/23/19 0.400 0.400 1.00 mg/L 1610 Prepared & Analyzed: 09/23/19 0.400 0.0100 mg/L 5.0000 104 4.96 0.0100 0.0500 mg/L 5.0000 99.2 4.99 0.500 2.00 mg/L 5.0000 99.7 5.01 0.0100 0.0500	Result MDL PQL Units Spike Level Source Result %Rec %Rec 10.0 10.0 10.0 mg/L Prepared & Analyzed: 09/19/19 10.0 10.0 10.0 mg/L Prepared & Analyzed: 09/19/19 995 10.0 10.0 mg/L 1000.0 99.5 80-120 Source: L191002-01 Prepared & Analyzed: 09/19/19 855 10.0 10.0 mg/L 845 Source: L191016-05 Prepared & Analyzed: 09/19/19 1600 10.0 mg/L 1610 Prepared & Analyzed: 09/23/19 0.400 0.400 1.00 mg/L 0.400 0.400 1.00 mg/L 0.500 2.00 mg/L 5.000 104 0.400 0.400 0.0500 mg/L 5.000 0.400 0.000 mg/L 5.000 99.2 0.400 0.000 mg/L 5.0000 99.2 0.40	Result MDL PQL Units Spike Level Source Result %Rec %Rec Limits RPD Prepared & Analyzed: 09/19/19 10.0 10.0 mg/L Prepared & Analyzed: 09/19/19 995 10.0 10.0 mg/L 99.5 80-120 Source: L191002-01 Prepared & Analyzed: 09/19/19 855 10.0 10.0 mg/L 845 1.18 Source: L191016-05 Prepared & Analyzed: 09/19/19 1600 10.0 mg/L 1610 0.809 Prepared & Analyzed: 09/23/19 Prepared & Analyzed: 09/23/19 On 0.000 0.0500 mg/L On 0.000 0.0500 mg/L On 0.000 0.0500 mg/L On 0.000 0.0500 mg/L Source: L191002-01 Prepared & Analyzed: 09/23/19 On 0.000 0.0500 mg/L 5.0000 104 90-110 On 0.000 0.0500 <	Result MDL PQL Units Spike Level Source Result %Rec %Rec RPD Limits RPD Limit Prepared & Analyzed: 09/19/19 10.0 10.0 mg/L Prepared & Analyzed: 09/19/19 995 10.0 10.0 mg/L 1000.0 99.5 80-120 Source: L191002-01 Prepared & Analyzed: 09/19/19 855 10.0 10.0 mg/L 845 1.18 10 Source: L191016-05 Prepared & Analyzed: 09/19/19 1600 10.0 mg/L 1610 0.809 10 Prepared & Analyzed: 09/23/19 Prepared & Analyzed: 09/23/19 Othor Repared & Analyzed: 09/23/19 Othor Repared & Analyzed: 09/23/19 Prepared & Analyzed: 09/23/19 Prepared & Analyzed: 09/23/19 Source: L191002-01 Prepared & Analyzed: 09/23/19 Source: L191002-01 Prepared & Analyzed: 09/23/19 Source: L191002-01



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General Chemistry Parameters - Quality Control

	100-	80-		Spike	Source	0.17	%Rec	P.8-	RPD	0.115
Result	MDL	PQL	Units	Level	Result	%Rec	Limits	RPD	Limit	Qualifier
	Sour	ce: L19I01	1-01	Prepared & Analyzed: 09/23/19						
38.2	2.00	5.00	mg/L	25.000	10.6	111	90-110			J-
26.1	0.0500	0.250	mg/L	25.000	0.450	102	90-110			
58.8	2.50	10.0	mg/L	25.000	33.9	99.4	90-110			
	Source: L191002-01				Prepared & Analyzed: 09/23/19					
195	2.00	5.00	mg/L	25.000	174	87.5	90-110	0.246	20	J-
26.6	0.0500	0.250	mg/L	25.000	1.25	101	90-110	0.317	20	
310	2.50	10.0	mg/L	25.000	295	60.8	90-110	0.163	20	J-
	Source: L19I011-01			Prepared &	Analyzed:	09/23/19				
37.2	2.00	5.00	mg/L	25.000	10.6	107	90-110	2.56	20	
25.9	0.0500	0.250	mg/L	25.000	0.450	102	90-110	0.458	20	
59.1	2.50	10.0	mg/L	25.000	33.9	101	90-110	0.635	20	
				Prepared &	Analyzed:	09/26/19				
0.500	0.500	2.00	mg/L							U
				Prepared &	Analyzed:	09/26/19				
4.69	0.500	2.00	mg/L	5.0000		93.8	90-110			
	Sour	ce: L19I01	6-03RE1	Prepared &	Analyzed:	09/26/19				
921	5.00	20.0	mg/L	50.000	915	12.4	90-110			J-
	Sour	ce: L19I01	6-03RE1	Prepared & Analyzed: 09/26/19						
925	5.00	20.0	mg/L	50.000	915	19.5	90-110	0.379	20	J-
	Result 38.2 26.1 58.8 195 26.6 310 37.2 25.9 59.1 0.500 4.69 921 925	Result MDL Sour 38.2 2.00 26.1 0.0500 58.8 2.50 Sour 195 2.00 26.6 0.0500 310 2.50 Sour 37.2 2.00 25.9 0.0500 59.1 2.50 0.500 0.500 4.69 0.500 921 5.00 925 5.00	Result MDL PQL Source: L19101 38.2 2.00 5.00 26.1 0.0500 0.250 58.8 2.50 10.0 Source: L19100 195 2.00 5.00 26.6 0.0500 0.250 310 2.50 10.0 Source: L19101 37.2 2.00 5.00 25.9 0.0500 0.250 59.1 2.50 10.0 O.500 0.250 59.1 2.50 10.0 A.69 0.500 2.00 4.69 0.500 2.00 Source: L19101 921 5.00 20.0 Source: L19101 925 5.00 20.0	Result MDL PQL Units Source: L191011-01 38.2 2.00 5.00 mg/L 26.1 0.0500 0.250 mg/L 58.8 2.50 10.0 mg/L 58.8 2.50 10.0 mg/L 26.6 0.0500 0.250 mg/L 26.6 0.0500 0.250 mg/L 310 2.50 10.0 mg/L 310 2.50 10.0 mg/L 37.2 2.00 5.00 mg/L 25.9 0.0500 0.250 mg/L 59.1 2.50 10.0 mg/L 59.1 2.50 10.0 mg/L 4.69 0.500 2.00 mg/L 4.69 0.500 2.00 mg/L 921 5.00 20.0 mg/L 921 5.00 20.0 mg/L	Result MDL PQL Units Spike Level Source: L191011-01 Prepared & 38.2 2.00 5.00 mg/L 25.000 26.1 0.0500 0.250 mg/L 25.000 58.8 2.50 10.0 mg/L 25.000 58.8 2.50 10.0 mg/L 25.000 26.6 0.0500 0.250 mg/L 25.000 26.6 0.0500 0.250 mg/L 25.000 26.6 0.0500 0.250 mg/L 25.000 310 2.50 10.0 mg/L 25.000 310 2.50 10.0 mg/L 25.000 25.9 0.0500 0.250 mg/L 25.000 25.9 0.0500 0.250 mg/L 25.000 59.1 2.50 10.0 mg/L 25.000 59.1 2.50 2.00 mg/L 5.000 6 0.500 2.00 mg/L	Result MDL PQL Units Spike Level Source Result Source: L191011-01 Prepared & Analyzed: 38.2 2.00 5.00 mg/L 25.000 10.6 26.1 0.0500 0.250 mg/L 25.000 0.450 58.8 2.50 10.0 mg/L 25.000 33.9 Source: L191002-01 Prepared & Analyzed: 195 2.00 5.00 mg/L 25.000 1.25 310 2.50 10.0 mg/L 25.000 10.6 25.9 0.0500 0.250 mg/L 25.000 10.6 25.9 0.0500 2.50 mg/L 25.000 33.9 Prepared & Analyzed: 0.500 2.00	Result MDL PQL Units Spike Level Source Result %Rec Source: L191011-01 Prepared & Analyzed: 09/23/19 38.2 2.00 5.00 mg/L 25.000 10.6 111 26.1 0.0500 0.250 mg/L 25.000 0.450 102 58.8 2.50 10.0 mg/L 25.000 33.9 99.4 Source: L191002-01 Prepared & Analyzed: 09/23/19 195 2.00 5.00 mg/L 25.000 1.25 101 310 2.50 10.0 mg/L 25.000 1.25 101 310 2.50 10.0 mg/L 25.000 1.25 101 310 2.50 10.0 mg/L 25.000 1.6 107 25.9 0.0500 0.250 mg/L 25.000 3.9 101 25.9.1 2.50 10.0 mg/L 25.000 3.3.9 101	Result MDL PQL Units Spike Level Source Result %Rec %Rec Source: L191011-01 Prepared & Analyzed: 09/23/19 38.2 2.00 5.00 mg/L 25.000 10.6 111 90-110 26.1 0.0500 0.250 mg/L 25.000 0.450 102 90-110 58.8 2.50 10.0 mg/L 25.000 33.9 99.4 90-110 Source: L191002-01 Prepared & Analyzed: 09/23/19 90-110 Source: L191002-01 Prepared & Analyzed: 09/23/19 90-110 26.6 0.0500 0.250 mg/L 25.000 1.74 87.5 90-110 26.6 0.0500 0.250 mg/L 25.000 1.25 101 90-110 310 2.50 10.0 mg/L 25.000 0.450 102 90-110 25.9 0.0500 0.250 mg/L 25.000 33.9 <	Result MDL PQL Units Spike Level Source Result %ARc %Rec Limits RPD 38.2 2.00 5.00 mg/L 25.000 10.6 111 90-110 26.1 0.0500 0.250 mg/L 25.000 0.450 102 90-110 58.8 2.50 10.0 mg/L 25.000 33.9 99.4 90-110 Source: L191002-01 Prepared & Analyzed: 09/23/19 Source: L191002-01 Prepared & Analyzed: 09/23/19 195 2.00 5.00 mg/L 25.000 1.25 101 90-110 0.317 310 2.50 10.0 mg/L 25.000 295 60.8 90-110 0.163 Source: L191011-01 Prepared & Analyzed: 09/23/19 37.2 2.00 5.00 mg/L 25.000 0.450 102 90-110 0.458 59.1 2.50 10.0 mg/L 25.000 33.9 101 90-110 0	Result MDL PQL Units Spike Level Source Result %Rec %Rec RPD Limits RPD Limit Source: L191011-01 Prepared & Analyzed: 09/23/19



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Metals (ICP) - Quality Control

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%Rec	%Rec Limits	RPD	RPD Limit	Qualifier	
Batch 459401 - 200.7 Rev 4.4 Z01												
Blank (459652-81)					Prepared: (09/30/19 Ar	nalyzed: 10	/01/19				
Lithium	0.011	0.011	0.050	mg/L				-			U	
LCS (459652-82)	Prepared: 09/30/19 Analyzed: 10/01/19											
Lithium	1.01	0.011	0.050	mg/L	1.00		101	85-115				

Tampa Electric Company, Laboratory Services

Peggy Penner, Manager, Laboratory Services

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SITE NAME:		Big Be	end			SITE LOCATION:		Apollo Beach, FL.					
WELL NO:	B	BS-CCR-2	2		SAMPLE ID	L1910	017-02 A		DATE:				
		an an Anna Cara			PURG	NG DATA				-			
WELL DIAMETER (inches	5)	TUBING DIAMETER (ind	ches) 1/4	DEPTH 11.84	feet to	21.84 (feet)	STATIC DEPTH TO WATER (leet	6.58	PURGE PUMP T OR BAILER:	PP			
WELL VOLUME PI (only fillout if applic	URGE: able)	1 WELL VO	LUME = (TOT	AL WELL DEPTH -	STATIC DE	PTH TO WATER)	feet) x	PACITY	gallons/foo	(=	gallons		
EQUIPMENT VOLU (only fillout if applic	UME PURGE: able)	1 EQ	UIPMENT VOL	= PUMP VOLUMI	E + (TUBING		TUBING LENG	THIN + FLOW CE		aalloos =	0.12 nallanc		
INITIAL PUMP OR DEPTH IN WELL (f	TUBING (eet): 16.84	i and E	FINAL PUMP DEPTH IN W	POR TUBING	.84	PURGING INITIATED AT:	11:20	PURGING ENDED AT:	11:33	TOTAL VOLUME PURGED (gallor	E 15): 1.77		
TIME	VOLUME PURGED (GALLONS)	CUMUL, VOLUME PURGED (GALLONS)	PURGE RATE (GPM)	DEPTH TO WATER (FEET)	pH (standard units)	TEMP. (°C)	COND. (µmhos/cm OR µS/cm)	DISSOLVED OXYGEN (circle mg/l) r % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)		
11:29	1.24	1.24	0.14	6.69	6.80	26.12	1443	0.13	2.68	LT. YELLOW	NONE		
11:31	0.26	1.50	0.13	6.69	6.75	26.11	1443	0.13	2.05	LT. YELLOW	NONE		
11:33	0.27	1.77	0.14	6.68	6.73	26.13	1441	0.14	2.49	LT. YELLOW	NONE		
WELL CAPACITY (Ge TUBING INSIDE DIA,	Ilons Per Foot): 0 CAPACITY (Gal./Ft.	.75" = 0.02;]: 1/8" = 0.00006;	1" = 0.04; 3/16" = 0.0014	1.25" = 0.06; 2" = 1/4" = 0.0026;	0.16; 3" = 5/16" = 0.004	0.37; 4" = 0. ; 3/8" = 0.006;	65; 5* = 1. 1/2* = 0.01	0 6** = 1.47; 0 5/8** =	12" = 5 88 0016				
SAMPLED BY (PR		N.		SAMPLER (S) SIG	SAMPL	ING DATA		S APLING		SAMPLING			
CAMPLED DI (PA			TECO	MARI	etty	4		IN TATED AT:	11:33	ENDED AT:	11:44		
PUMP OR TUBING	eet): 16.8			SAMPLE PUMP	ner minute)		510		e PE	IS			
FIELD DECONTAN	INATION: Y			FIELD-FILTERED	T Y		ER SIZE:	μm	DUPLICATE:	YDNØ	i		
	SAMPLE CON	TAINER		Filtration Equipme	SAMPLE PRI	ESERVATION		INTE		SAM	PLING		
	SPECIFICA	MATERIAL	VOLUME	PRESERVATIVE	TO	TAL VOL	FINAL	ANALYS	IS AND/OR THOD	EQUIPMENT			
SAMPLE ID CODE	CONTAINERS	CODE	VOLUME	USED	ADDED I	N FIELD (ml) (1)	рН		11.00				
@Ino-500	1	PE	500ml	NONE	N	IONE	N/A	Inor	ganics	P	P		
@Met-250	2	PE	250ml	HNO3		1ml	<2	Me	etals	P	P		
@Rad-1L	2	PE	1L	HNO3		5ml	<2	Radio	logicals	P	P		
REMARKS: (1) Sample bol	ttles pre-prese	erved at lab	oratory pric	or to sample co	llection.								
MATERIAL CODES SAMPLING/PURGIN EQUIPMENT CODES	S: AG = Amber IG A S: R	Glass; CG PP = After Perist FPP = Reverse I	= Clear Glass altic Pump; B Flow Peristaltic I	PE = Polyethy = Bailer; BP = Blade Pump; SM = Straw	der Pump; ES Method (tubing	P = Polypropylene P = Electric Subm g Gravity Drain);	s: S = Silico irsable Pump; F VT = Vacuum Tr	PP = Peristallic Pur Pp = Peristallic Pur ap; O = Other (Sp	; O= Other (Spe np ecify)	ecify)			
NOTES:	1. The above de 2. STABILIZATION	o not constitu N CRITERIA FOR	te all of the in RANGE OF V	nformation requir	erd by Chap	ter 62-160, F.A.	C. IGS (SEE FS 22	12. SECTION 3)					

pH: ± 0.2 units Temperature: ± 0.2 ℃ Specific Conductance: ± 5% Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2);

SITE NAME:		Big Be	end			SITE LOCATION:		Apollo	oollo Beach, FL.			
WELL NO:	B	BS-CCR3	6		SAMPLE ID:	L1910	017-03A	1000000	DATE:			
					PURG	NG DATA	18 C 19 19 19 19 19	A				
	-	TUBING	thes) 1/4	WELL SCREEN IN	ITERVAL feet to	23 23 (feet)	STATIC DEP	Ti 6 22	PURGE PUMP T	PP		
WELL VOLUME PI	URGE:	1 WELL VO	LUME = (TOT	AL WELL DEPTH -	STATIC DEP	TH TO WATER)	X WELL CA	PACITY	-i-		1.	
(only fillout if applic	able)		= (feet -		feet) x		gallons/foo	t =	gallons	
EQUIPMENT VOL	UME PURGE:	1 EQU	JIPMENT VOL	= PUMP VOLUME	E + (TUBING	CAPACITY X T	UBING LENG	THI + FLOW CE	LL VOLUME			
(only fillout it applic	adie)		=(0	gallons + (0.0026 gallo	ons/foot X	24.23 fe	et)+ 0.06	gallons =	0.12 gallons	
INITIAL PUMP OR DEPTH IN WELL (f	TUBING feet): 18.23	3	FINAL PUMP DEPTH IN W	OR TUBING /ELL (feet): 18.	23	PURGING INITIATED AT:	11:59	PURGING ENDED AT:	12:12	TOTAL VOLUME 12:12 PURGED (gallons)		
TIME	VOLUME PURGED (GALLONS)	CUMUL. VOLUME PURGED (GALLONS)	PURGE RATE (GPM)	DEPTH TO WATER (FEET)	pH (standard units)	ТЕМР. (°С)	COND. (µmhos/cm OR µS/cm)	DISSOLVED OXYGEN (circle mg/) ar % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)	
12:08	0.76	0.76	0.08	6.52	6.33	27.28	1839	0.51	11.50	DK, YELLOW	MODERATE	
12:10	0.16	0.92	0.08	6.51	6.32	27.28	1818	0.27	9.87	DK. YELLOW	MODERATE	
12:12	0.17	1.09	0.09	6.53	6.33	27.30	1802	0.20	9.29	DK. YELLOW	MODERATE	
				_								
WELL CAPACITY (Ga TUBING INSIDE DIA.	CAPACITY (Gal /FI	0,75" = 0.02; 1): 1/8" = 0.00006;	1" = 0.04; 3/16" = 0.0014	1.25" = 0.06; 2" = 0 1/4" = 0.0026;	5/16; 3" = 5/16" = 0.004	0.37; 4" ≡ 0.6 3/8" = 0.005;	1/2" = 0.01	0 6" = 1.47; 0 5/8" = (12" = 5.88 0.016			
SAMPLED BY (PR	INT) / AFFILIATI	ON:	TECO	SAMPLER (S) SIG	NATURES:	4		S MPLING II TATED AT: 12 TUBING	::12	SAMPLING ENDED AT: 12	2:24	
DEPTH IN WELL (M	eet): 18.2			FLOW RATE (mL	per minutey	्रि हा प्र	B CIZE:	MATERIAL CODE	E PE/	S		
FIELD DECONTAN	AINATION:			Filtration Equipmen	nt Type	N M FILTE	IR SIZE:		DUPLICATE:	YLINM	1	
	SAMPLE CON	TION			SAMPLE PRE	SERVATION		INTE	NDED S AND/OR	SAN	IPLING PMENT	
SAMPLE ID CODE	# CONTAINERS	CODE	VOLUME	USED	TOTAL VOL. FINAL ADDED IN FIELD (ml) (1) PH			MET	нор	CODE		
@Ino-500	1	PE	500ml	NONE	N	ONE	N/A	Inorg	anics		p	
@Met-250	2	PE	250ml	HNO3		1ml	<2	Me	tals		op.	
@Rad-1L	2	PE	1L	HNO3		5ml	<2	Radio	ogicals		pp	
			-			_						
REMARKS:												
(1) Sample bot	ttles pre-pres	erved at lab	oratory pric	or to sample col	llection.							
MATERIAL CODES	S: AG = Ambe	r Glass; CG	= Clear Glass	PE = Polyethy	lene; PP	= Polypropylene	S = Silico	T = Teflon;	O= Other (Spec	cify)		
AMPLING/PURGIN	G A	APP = After Perist	altic Pump; B low Peristaltic	= Bailer; BP = Bladd Pump; SM = Straw M	ler Pump; ES	P = Electric Submi Gravity Drain): V	rsable Pump; F	PI= Peristallic Pum ap; O = Other (Soc	ip ecify)			
NOTES:	1. The above o	lo not constitu	te all of the i	nformation requie	rd by Chap	ter 62-160, F.A.	C.					

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212 SECTION 3)

pH: ± 0.2 units Temperature: ± 0.2 °C Specific Conductance: ± 5% Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2);

SITE NAME:		Big Be	end			SITE LOCATION:		Apollo	Beach, FL.			
WELL NO:	BBS	-CCR-BW	/-1		SAMPLE ID:	L1910	017-04 A		DATE:			
					PURG	NG DATA						
WELL DIAMETER (inches	5)	TUBING DIAMETER (inc	thes) 1/4	DEPTH 34.30	feet to	44.30 (feet	STATIC DEPT	ent): 28.34	PURGE PUMP T	ESP	_	
WELL VOLUME P (only fillout if applic	URGE: able)	1 WELL VO	LUME = (TOT = (AL WELL DEPTH	STATIC DEF	TH TO WATER) X WELL CAP	PACITY	gallons/fo	ot =	gallons	
EQUIPMENT VOL (only fillout if applic	UME PURGE: able)	1 EQI	JIPMENT VOL	= PUMP VOLUM	E + (TUBING	CAPACITY X	TUBING LENGT	100 (a)		anlines =	0.32 asiloas	
INITIAL PUMP OR DEPTH IN WELL (TUBING (eet): 39.30		FINAL PUMP DEPTH IN W	OR TUBING ELL (feet): 39	.30	PURGING INITIATED AT:	10:00	PURGING ELIDED AT:	10:20	TOTAL VOLUM PURGED (gallo	E ns): 14.79	
TIME	VOLUME PURGED (GALLONS)	VOLUME PURGED (GALLONS)	PURGE RATE (GPM)	DEPTH TO WATER (FEET)	pH (standard units)	TEMP. (°C)	COND. (µmhos/cm OR µS/cm)	DISSOLVED OXYGEN (circle(mg/L)) % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)	
10:16	11.83	11.83	0.74	29.70	6.52	27.85	4133	0.08	10.30	CLEAR	NONE	
10:18	1.48	13.31	0.74	29.72	6.52	27.86	4144	0.08	5.09	CLEAR	NONE	
10:20	1.48	14.79	0.74	29.71	6.52	27.86	4172	0.08	3.67	CLEAR	NONE	
WELL CAPACITY (Sallons Per Foot);	0,75" = 0.02;	1" = 0.1	04; 1.25 " = 0.	06; 2"=	0.16; 3'' = 0	.37: 4"=		1.02: 6"=	1.47; 12" =	5.88	
TUBING INSIDE DI	A. CAPACITY (Gal	/F1.): 1/8" = 0.00 DN:	006: 3/16" TECO	SAMPLER (S) SIC	SAMPL	5/16" = 0.004; ING DATA	3/8" = 0,006;	1/2" = 0.0	:20	SAMPLING ENDED AT:	0:23	
PUMP OR TUBING	(eet) 30 3	1		SAMPLE PUMP	ner minute	2	800		P	F		
	AINATION N			FIELD-FILTERED	Y D	N I FILT	ER SIZE:	μm	DUPLICATE:	Y TINF		
	SAMPLE CON	TAINER		Filtration Equipme	SAMPLE PRI	SERVATION		INTE	NDED	SAN	PLING	
	SPECIFICA	MATERIAL		PRESERVATIVE	тот	AL VOL.	FINAL	ANALYSI	S AND/OR	EQUIPMENT		
SAMPLE ID CODE	# CONTAINERS	CODE	VOLUME	USED	ADDED IN	ADDED IN FIELD (ml) (1) PH			HOD		CODE	
@Ino-500	1	PE	500ml	NONE	N	ONE	N/A	Inorg	anics	ESP		
011.1.050				111100					6-1-	-	00	
@Met-250	2	PE	250mi	HNO3		Tml Feel	<2	Ivie	tais		8P	
@Rad-1L	2	PE	16	HNO3		500	<2	Radio	ogicals		5P	
REMARKS:												
(1) Sample bo	ttles pre-pres	erved at lab	oratory pric	r to sample co	ollection.							
SAMPLING/PURGIN	s: AG = Amber IG A S: R	Glass; CG PP = After Perist FPP = Reverse F	= Clear Glass altic Pump; B low Peristaltic I	PE = Polyeth = Bailer, BP = Blad Pump; SM = Straw	yiene; PP der Pump; ES Method (tubing	P = Electric Subm Gravity Drain);	e; S = Silicor irsable Pump; P VT = Vacuum Tra	P = Peristallic Pum p, O = Other (Spe	O= Other (Spe icify)	ecity)		
NOTES:	1. The above d 2. STABILIZATION	o not constitu N CRITERIA FOR	te all of the in RANGE OF V/	nformation requi	erd by Chap THREE CONS	ter 62-160, F.A.	.C. NGS (SEE FS 22	2 SECTION 3)	1.2.1			

pH; ± 0.2 units Temperature: ± 0.2 °C Specific Conductance: ± 5% Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2);

SITE NAME:		Big Be	end			SITE LOCATION:		Apollo Beach, FL.					
WELL NO:	BBS	-CCR-BW	1-2		SAMPLE ID	L1910	017-05 A	DATE:					
					PURG	NG DATA			Large T				
WELL	5)	TUBING	thes) 1/4	WELL SCREEN	INTERVAL d feet to	23 34 (feet)	STATIC DEPT	6.54	PURGE PUMP T	PP			
WELL VOLUME P	URGE:	1 WELL VO	LUME = (TOT	AL WELL DEPTH	- STATIC DE	PTH TO WATER)	X WELL CAP	PAGITY	Less extremu				
(only fillout if applie	able)		= (feet -		feet) x		gallons/foo	ot =	gallons		
EQUIPMENT VOL (only fillout if applic	UME PURGE: able)	1 EQU	UIPMENT VOL	= PUMP VOLU 0	ME + (TUBING	CAPACITY X 1	TUBING LENGT	24.64 fe	ELL VOLUME et) + 0.06	gallons =	0.12 callons		
INITIAL PUMP OR DEPTH IN WELL (TUBING feet): 18.49		FINAL PUMP DEPTH IN W	OR TUBING ELL (feet): 1	8.49	PURGING INITIATED AT:	9:26		9:39	TOTAL VOLUM PURGED (gallo	E ns): 2.41		
TIME	VOLUME PURGED (GALLONS)	VOLUME PURGED (GALLONS)	PURGE RATE (GPM)	DEPTH TO WATER (FEET)	pH (standard units)	TEMP. (°C)	COND. (µmhos/cm OR µS/cm)	DISSOLVED OXYGEN (circle(mg/l))r % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)		
9:35	1.66	1.66	0.18	6.84	6.60	27.35	1948	0.14	8.09	LT. YELLOW	NONE		
9:37	0.38	2.04	0.19	6.86	6.60	27.35	1942	0.14	6.06	LT. YELLOW	NONE		
9:39	0.37	2.41	0.19	6.85	6.60	27.36	1938	0.16	5.54	LT. YELLOW	NONE		
WELL CAPACITY (TUBING INSIDE DI	Gallons Per Foot): A. CAPACITY (Gal.	0,75" = 0.02; /F1.): 1/8" = 0.00	1" = 0.1 3006; 3/16"	04; 1.25" = 1 = 0.0014: 1/4"	0.06; 2" = = 0.0026;	0.16; 3" = 0. 5/16" = 0.004;		0.:5; 5" 1/2" = 0.0	= 1.02; 6" = 1 010; 5/8	1.47; 12" = " = 0.016	5.88		
CAMPLED BY (DE		AL-		CAMPLED (S) C	SAMPL	ING DATA		ADUNG		ISAMPLING			
SAMPLED BY (PH	INT) / AFFILIATIC	JN:	TECO	DAD-	IGNATURES:			I TATED AT:	-30	ENDED AT:	46		
PUMP OR TUBING			1200	SAMPLE PUMP	eng		707	TUBING			.40		
DEPTH IN WELL (feet): 18.5			FIELD-FILTERE	D: v C	FILT	FR SIZE:		E PE	/S			
FIELD DECONTAN	SAMPLE CON		-	Filtration Equipm	ient Type.	NE	1. 2		DOPLICATE:		Skulles		
	SPECIFICA		-	PRESERVATIVE	SAMPLE PRI		FINAL	ANALYS	NDED IS AND/OR	SAM	PLING PMENT		
SAMPLE ID CODE	# CONTAINERS	CODE	VOLUME	USED	ADDED II	N FIELD (ml) (I)	pH	ME'	ТНОВ	CODE			
@Ino-500	1	PE	500ml	NONE	N	IONE	N/A	Inorg	ganics	F	P		
@Met-250	2	PF	250ml	HNO3		1ml	<2	Me	atals	F	p		
@Rad-1L	2	PE	1L	HNO3	1	5ml	<2	Radio	logicals	F	PP		
REMARKS: (1) Sample bo	ttles pre-prese	erved at lab	oratory pric	r to sample o	ollection.		· · · · ·						
SAMPLING/PURCH	S: AG = Amber	Glass; CG	= Clear Glass	PE = Polyet	hylene; PF	P = Polypropylene	irsable Pump	T = Teflon	O= Other (Spe	city)			
EQUIPMENT CODE	S: R	FPP = Reverse F	Now Peristaltic	Pump; SM = Stray	v Method (tubing	g Gravity Drain);	VT = Vacuum Tr	a), O = Other (Sp	ecify)				
NOTES:	1. The above de	o not constitu	te all of the in RANGE OF W	formation requ	ierd by Chap	eter 62-160, F.A.	.C.	2 SECTION 3)					

pH: ± 0.2 units Temperature: ± 0.2 °C Specific Conductance: ± 5% Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2);
une.	Dig De		Date.		The Manle.			medulet.				1120		
LIMS #	Loction Code	Time	FE*	pH (SU)	Temp "C	Cond(uMHOS)	DO Mg/L	Turbidity(NTU)	Redox (mv)	Sulfite (mg/L)	Color	Odor	1	IGVD
	-	10	mg/l	PH	TEMP-C	COND-F	DO	TURB-N-F	REDOX	SO3-TR	\$COLOR-W	\$ODOR-W	Time	LEVEL
L19I017-01 A	BBS-CCR-1	11:15		6.82	26.05	4266	0.15	2.73	-66.0	1	CLEAR	NONE		
L19I017-02 A	BBS-CCR-2	11:44		6.73	26.13	1441	0.14	2.49	-56.0		LT. YELLOW	NONE		
LIMS #	250ml Cyan (3)	1L Inorg (1)	500ml Inorg (2)	250ml Inorg (3)	1L Mt/s (1)	250ml Mtls (3)	1L Rads (1)	500ml Sulfide (2)	500ml Mtls (2)	250ml Nuts (3)	40ml Vial (6)	500 ml Nuts (2)	1L Rads Diss. (1)	Total Contai
L191017-01 A	3		1			2 2	2 2							10
L191017-02 A			1	1 1		2	✓ 2							
(1) 1L plastic (PP)		(2) 500ml plastic	c (PP)	(3) 250ml plastic	(PP)	(4) 100ml coliform be	ottle	(5) 1L amber glass ((AG)	(6) 40ml VOA vial	(CG)		Samples On Ice	Sample Reciept
ESS	0114801E	ESS	0200401E	ESS	0300401E	ESS		ESS		ESS			Yes No	Time 14:00
P	reservation			Pres ID		Preservation			Pres ID		Preservation		Pres ID	Temp 4.8
1L bottles (rads): 5 ml HM	NO3 to pH <2			L 023922N⊡	250ml bottles (nu	ts): 1 ml H2SO4 to pH	1<2		μ Ο	500 ml bottles(Sulf	ide) 2ml NAOH/Zinc	Acet. to pH >12	L	1
500 ml bottles (metals): 2	2 ml HNO3 to pH <2			L 🗆	40 ml Vial (TOC)	0.5 ml H2SO4 to pH	<2		L D	250 ml bottles (Cya	an) 1g NAOH to pH >	-12	L	i
250 ml bottles (metal): 1	ml HNO3 to pH <2			L 023922N	1L bottles (diss. r	ads): filtered with 0.45	Sum, 5 ml HNO3 to pH	<2	L D	A checked box in	dicates that the san	nple was verified to	o a pH of <2	
pH Meter Calibration		Buffer ID	Buffer Value	Cal	Time	ICV	Time	CCV	Time	Redox Cal	Time	Temp ^a C	Reading my	Theo Value
Meter ID:	MPM08	L 027553K	7	7,01	7:34			7.04	14:09	Meter ID:	7:17	22.00	234.0	234.9
FDEP FT 1100		L 026262D	10	10.04	7:34	QC: (pH +/- 0.2) (Co	and +/- 5%) (DO +/- 0.3	mg/L) (Redox +/- 10my	0	RM01	14:04	22.10	232.0	234.9
Units: SU		L 027378A	4	3.99	7:34	A checked box indi	cates ICV / CCV pass	ed		Zobell Sol ID:		1	1	
Conductivity Meter Cali	ib.	Standard ID	Std Value	Cal	Time	ICV	Time	CCV	Time	L 026839				
Meter ID:	MPM08	L 026445E	1000	1000	7:38					DO Meter Cal	Time	Temp °C	Reading mo/	Theo Value
FDEP FT 1200. Units: ut	AHOS	L 026125A	10000			10070	7:40	10066	14:02	Meter ID:	7:19	22.82	8.61	8.611
Turbidity Meter Calibrat	tion	Standard ID	Std Value	Arrantab	ility Rance	ICV	Time	CCV	Time	MPM08	15:04	22.26	8.87	8.710
Meter ID:	TM07	L 026862	4.53	4 08	4 98	4.52	7:20	007	Turic	Barom Pres	10.04	22.20	0.07	0.710
EDEP ET 1600 Linite: N	11107	L 26863	47.50	44 41	50.50	4.92	1.40	47.70	14:05	760			1 6	
PDEPTT 1000, Onlis. IN		1 2000	41.00	44.41	50.55			41.10	14.00	100	1	0		
Sulfite Info (QC Check)	(EPA 377.1)		QC Result mg/l	lime	Titrator ID	Na Thio ID	DO 3 Pillow ID	Starch Ind, ID	Iodate/Iodide ID	Therm ID	PH 0.2	Conduct.(%)	DO (mg/l)	Redox (n
QC Std. Shii (Na hio)/Su	ona Di=Tomg/L	Martin Constantinia	(Tables Isside Dise	Constitution Collinson			NIF WIGS	0.2	5	0.3	1 10
Purging Information		Well Capacities	s (gallons/ ft); 2	= 0.16 4 = 0.65	Depth to	Tubing Inside Diam	Wall	t): 1/4" =0.0026, 3/8" =	=0,006	Tibles	Pume	Call	1 East	T
Well #	Diam/ Comp	Screen Interval (ft)	Intake Depth (ft)	Depth (ft)	Water (ft)	= Column)	Capacity (gal) =	Volume (gal)	(Capacity (galitt.)	X Length)	+ Volume + (gal)	Volume (gal)	= Volume (gal)	-
BBS-CCR-1	2	10	17.32	22.32	6.97	15.35	0.16	2.46	0.0026	23.3	0	0.06	0.12	
Purge Meth:	Time	Rate (ml/min)	Volume (gal)	Total Vol. (gal)	Water Depth (ft)	pH (SU)	Temp °C	Cond (uMHOS)	DO (mg/L)	Turbidity (NTU)	Purge Criteria	Status	Equipment ID	Eqpt. Ta
1A	11:03	450	1.31	1.31	7.12	6.82	26.09	4270	0.16	2.22	ph:+/- 0.2	STABLE	Level Meter:	WLMO
Purge Start:	11:05	450	0.24	1.55	7.11	6.82	26.07	4260	0.15	2.02	Temp*C+/- 0.2	STABLE	Pump:	PP
10:52	11107	470	0.25	.80	7.10	6.62	1.2	4266	0.16	2.73	Cond % +/- 5	STABLE	Tubing:	PE/S
Purge End:		N. K.	1. 1.	- 2	1-1-12-1			- 4			00 % Sat.< 20	STABLE	Dedicated	Yes
11:07	-				1			The second second	1		Turb. NTU < 20	STABLE	Tubing?	No No
Purge Complete At	10:53	Gallons to P	urge 0.12	Stablility	Values =	6.82	26.05	4266	0.15	2.73		E.		
11/41 4	Diam (Cama	Screen	Intake	Well Depth (ft)	Depth to - Water (ft)	= Water = Column) (ft)	Well Capacity (gal) =	1 Well Volume	(Tubing Capacity X (gal/tt.)	Tubing Length) (ft)	Pump + Volume + (gal)	Ceti Volume =	1 Eqpt. Volume (gal)	
BBS-CCR-2	2	10	16.84	21.84	6.58	15.26	0.16	2 44	0.0026	22.84	1 0	0.06	0.12	-
Durge Meth	Time	Data (milini)	Volume (and	Tatal Mal Jack	Maler Death	10.20	Term PC	Conductor	0.0020	7.04 Turbichung	Contraction of the second seco	0.00	0.14	East T
ruige Meth.	11:00	Kate (mvmin)	volume (gal)	total vol. (gal)	water Depth (ft)	pri (SU)	Temp C	Cond (UMHOS)	DO (mg/L)	TURDICITY (NTU)	purge Criteria	Status	Equipment ID	Eqpt. 1a
AI	11:29	520	1.24	1.24	6.69	0.80	26.12	1443	0.13	2.68	pil.+, 0.2	STABLE	Level Meter:	WLMO
Purge Start:	11:31	500	0.26	1.50	6,69	6.75	26.11	1443	0.13	2.05	Temp@C+/- U.2	STABLE	Pump:	PP
11:20	11:33	510	0.27	1.77	6.68	6.73	26.13	1441	0.14	2.49	Cond % +/- 5	STABLE	Tubing:	PE/S
		1		-		-				-	00 % Sat.< 20	STABLE	Dedicated	Yes Yes
Purge End:											TT	a second a second second		1 Ma
Purge End: 11:33		1	1								10rb. N10 < 20	STABLE	Tubing?	

LIMS #	Loction Code	Time	FE ²	pH/SIN	Temp °C	Cond(uMHOS)	DO Molt	Turbidity/NTU	Redox (my)	Sulfite (moll)	Color	Orlor	N	IGVD
LIMS #	Locuon code	Tune	mal	PH (50)	TEMP.C	COND.E	DO MORE	TUPP.N.F	REDOX (IIIV)	SO3-TP	SCOLOR-W	SODOR-W	Time	LEVEL
1 10/017 024	DDS CCD3	12:24	ingn	6.92	27.20	1902	0.20	0.20	160.0	303-IK	DK VELLOW	MODERATE	Time	LLVLL
L131017-03A	BBS-CONS	12.24		0.00	21.50	1002	0.20	5.2.5	-100.0		DR. TELLOW	MODERATE		
LIMS #	250ml Cyan (3)	1L Inorg (1)	500ml Inorg (2)	250ml Inorg (3)	1L Mtls (1)	250ml Mtls (3)	1L Rads (1)	500ml Sulfide (2)	500ml Mtls (2)	250ml Nuts (3)	40ml Vial (6)	500 ml Nuts (2)	1L Rads Diss. (1)	Total Containe
L191017-03A		-	1	R		2 2	2 2							10
			1			2 2	2 2							1 10
(1) 1L plastic (PP)		(2) 500ml plasti	ic (PP)	(3) 250ml plastic	(PP)	(4) 100ml coliform b	ottle	(5) 1L amber glass (AG)	(6) 40ml VOA vial	(CG)		Samples On Ice	Sample Reciept
ESS	0114801E	ESS	0200401E	ESS	0300401E	ESS		ESS		ESS			Yes No	Time 14:00
	Preservation		1	Pres ID	1	Preservation			Pres ID		Preservation		Pres ID	Temp 4.8
1L bottles (rads): 5 ml H	INO3 to pH <2		1	L 023922N	250ml bottles (nu	its): 1 ml H2SO4 to pl	1<2		L	500 ml bottles(Sulfi	de) 2ml NAOH/Zinc A	Acet. to pH >12	L	
500 ml bottles (metals):	2 ml HNO3 to pH <2	5		L	40 ml Vial (TOC)	0.5 ml H2SO4 to pH	<2		L D	250 ml bottles (Cya	n) 1g NAOH to pH >1	12	L	
250 ml bottles (metal): 1	1 ml HNO3 to pH <2	4		L 023922N	1L bottles (diss. r	ads): filtered with 0.4	5um, 5 ml HNO3 to pH +	2	L	A checked box inc	licates that the sam	ple was verified to	a pH of <2	-
pH Meter Calibration		Buffer ID	Buffer Value	Cal	Time	ICV	Time	CCV	Time	Redox Cal	Time	Temp *C	Reading my	Theo Value n
Meter ID:	MPM08	L 027553K	7	7	7:34			7.04	14:09	Meter ID:	7:17	22.00	234.0	234.9
FDEP FT 1100		L 026262D	10	10	7:34	QC: (pH +/- 0.2) (Co	and +/- 5%) (DO +/- 0.3)	mg/L) (Redox +/- 10mv	()	RM01	14:04	22.10	232.0	234.9
Units: SU		L 027378A	4	4	7:34	A checked box ind	cates ICV / CCV passe	bi		Zobell Sol ID:				
Conductivity Meter Ca	ılib.	Standard ID	Std Value	Cal	Time	ICV	Time	CCV	Time	L 39				
Meter ID:	MPM08	L 026445E	1000	1000	7:38		+			DO Meter Cal	Time	Temp °C	Reading mg/l	Theo Value m
FDEP FT 1200, Units: u	MHOS	L 026125A	10000			10070	7:40	10066	14:02	Meter ID:	7:19	22.8	8.61	8.611
Turbidity Meter Calibra	ation	Standard ID	Std Value	Acceptab	hty Range	ICV	Time	CCV	Time	MPM08	15:04	22.3	8.87	8.710
Meter ID:	TM07	L 026862	4.53	4.08	4.98	4.52	7:20			Barom, Pres				
FDEP FT 1600, Units: N	ITU	L 26863	47.50	44.41	50.59			47.70	14:05	760				
Sulfite Info (QC Check	(EPA 377.1)		QC Result mg/	Time	Titrator ID	Na Thio ID	DO 3 Pillow ID	Starch Ind. ID	Iodate/Iodide ID	Therm ID	рН	Conduct.(%)	DO (mg/l)	Redox (mv
QC Std: 5ml (NaThio)/5	00ml DI=10mg/L		5	1		L	L	L	L	MPM08	0.2	5	0.3	10
Purging Information		Well Capacitie	s (gallons/ ft): 2"	= 0.16 4" = 0.65		Tubing Inside Dian	n. Capacities Gallons/f	t): 1/4" =0.0026 3/8" =0	0.006					
Well #	Diam/ Comp	Screen Interval (it)	Intake Depth (ft)	Well Depth (ft)	Depth to Water (ft)	= Water Column (ft)	(Capacity (gal) =	1 Well Volume (gal)	(Tubing X Capacity X (gal/ft)	Length)	+ Volume + (gal) +	Cell Volume (gal) :	= Volume (gal)	
	2	10	18.23	23.23	6.22	17.01	0.16	2.72	0.0026	24.23	0	0.06	0.12	
BBS-CCR3		Data (milmin)	Volume (gal)	Total Vol. (gal)	Water Depth (ft)	pH (SU)	Temp °C	Cond (uMHOS)	DO (mg/L)	Turbidity (NTU)	Purge Criteria	Status	Equipment ID	Eqpt. Tab
BBS-CCR3 Purge Meth:	Time	Rave (mornin)										OTADLE		INE MOR
BBS-CCR3 Purge Meth: 1A	Time 12:08	320	0.76	0.76	6.52	6.33	27.28	1839	0.51	11.50	pn:+/- 0.2	STABLE	Level Meter:	VVLIVIUO
BBS-CCR3 Purge Meth: 1A Purge Start:	Time 12:08 12:10	320 310	0.76	0.76	6.52 6.51	6.33 6.32	27.28	1839 1818	0.51	11.50 9.87	pn:+/- 0.2 Temp ^o C+/- 0.2	STABLE	Level Meter: Pump:	PP
BBS-CCR3 Purge Meth: 1A Purge Start: 11:59	Time 12:08 12:10 12:12	320 310 320	0.76 0.16 0.17	0.76 0.92 1.53	6.52 6.51 6.53	6.33 6.32 6.33	27.28 27.28 27.30	1839 1818 1802	0.51 0.27 0.20	11.50 9.87 9.29	pn:+/- 0.2 Temp*C+/- 0.2 Cond 35 5	STABLE STABLE	Level Meter: Pump: Tubing:	PP PE/S
BBS-CCR3 Purge Meth: 1A Purge Start: 11:59 Purge End:	Time 12:08 12:10 12:12	320 310 320	0.76 0.16 0.17	0.76 0.92 1.69	6.52 6.51 6.53	6.33 6.32 6.33	27.28 27.28 27.30	1839 1818 1202	0.51 0.27 0.20	9.87 9.29	pn:+/- 0.2 Temp*C+/- 0.2 Cond 3: 5 D0 % Sat.< 20	STABLE STABLE STABLE STABLE	Level Meter: Pump: Tubing: Dedicated	PP PE/S Ves
BBS-CCR3 Purge Meth: 1A Purge Start: 11:59 Purge End: 12:12	Time 12:08 12:10 12:12	320 310 320	0.76 0.16 0.17	0.76 0.92	6.52 6.51 6.53	6.33 6.32 6.33	27.28 27.28 27.30	1839 1818 1202	0.51 0.27 0.20	9.87 9.29	pn:+/- 0.2 Temp°C+/- 0.2 Cond 3: 5 D0 % Sat.< 20 Turb. NTU < 20	STABLE STABLE STABLE STABLE STABLE	Level Meter: Pump: Tubing: Dedicated Tubing?	PP PE/S Ves No
BBS-CCR3 Purge Meth: 1A Purge Start: 11:59 Purge End: 12:12 Purge Complete A	Time 12:08 12:10 12:12 12:12	320 310 320 310 320	0.76 0.16 0.17 Purge 0.12	0.76 0.92 1.03 Stablility	6.52 6.51 6.53 Values =	6.33 6.32 6.33 6.33	27.28 27.28 27.28 27.28 27.28	1839 1818 1202 1802	0.51 0.27 0.20	11.50 9.87 9.29 9.29 9.29	pn:+/- 0.2 Temp*C+/- 0.2 Cond % 5 D0 % Sat.< 20 Turb. NTU < 20	STABLE STABLE STABLE STABLE STABLE	Level Meter: Pump: Tubing: Dedicated Tubing?	PP PE/S Ves No
BBS-CCR3 Purge Meth: 1A Purge Start: 11:59 Purge End: 12:12 Purge Complete A Well #	Time 12:08 12:10 12:12 At 12:00 Diam/ Comp	Screen Interval (ft)	0.76 0.16 0.17 Purge 0.12 Intake Depth (ft)	0.76 0.92 1.05 Stability Well Depth (ft)	6.52 6.51 6.53 Values =	6.33 6.32 6.33 6.33 6.33 = Water Column (th)	27.28 27.28 27.30 27.30 Well Capacity (gal) =	1839 1818 1202 1802 1802 1 Well Volume (gal)	0.51 0.27 0.20 0.20 (Tubing (Capacity X (galit)	11.50 9.87 9.29 9.29 Tubing ength th	pn:+/- 0.2 Temp*C+/- 0.2 Cash 15 5 D0 % Sat. 20 Turb. NTU < 20	STABLE STABLE STABLE STABLE STABLE	Level Meter: Pump: Tubing: Dedicated Tubing? * Eapt Volume (gal)	PP PE/S PE/S No
BBS-CCR3 Purge Meth: 1A Purge Start: 11:59 Purge End: 12:12 Purge Complete A Well # 0	Time 12:08 12:10 12:12 At 12:00 Diam/ Comp 2	Gallons to I Screen Interval (ft) 10	0.76 0.16 0.17 Purge 0.12 Intake Depth (ft) 14	0.76 0.92 1.03 Stability Well Depth (ft) 18	6.52 6.51 6.53 Values =	6.33 6.32 6.33 6.33 = Water Column (t) 18.00	27.28 27.28 27.30 27.30 Well Capacity (gal) = 0.16	1839 1818 1202 1802 1802 1 Well Volume (pai) 2.88	0.51 0.27 0.20 0.20 Capacity X (galatity X 0.0026	11.50 9.87 9.29 9.29 Tuống tượng từ	pn:+/- 0.2 Temp*C+/- 0.2 Catch 35 5 D0 % Sat.< 20 Turb. NTU < 20 Pump + Volume (gal) +- 0	STABLE STABLE STASTE STABLE STABLE Cell Volume (gal = 0.06	Level Meter: Pump: Tubing: Dedicated Tubing? I East Volume (gal) 0.32	PP PE/S Yes No
BBS-CCR3 Purge Meth: 1A Purge Start: 11:59 Purge End: 12:12 Purge Complete A Well # 0 Purge Meth:	Time 12:08 12:10 12:12 At 12:00 Diam/ Comp 2 Time	Calle (m/min) 320 310 320 Gallons to I Screen Interval (ft) 10 Rate (m/min)	0.76 0.16 0.17 Purge 0.12 Intake Depth (R) 14 Volume (gal)	0.76 0.92 1.03 Stability Well Depth (ft) 18 Total Vol. (gal)	6.52 6.51 0.53 Values = Depth to Water (M) Water Depth (m)	6.33 6.32 6.33 6.33 = Water Column (th) 18.00 pH (SU)	27.28 27.28 27.30 27.30 Well Capacity (gal) = 0.16 Temp *C	1839 1818 1202 1802 1802 1 Well Volume (gal) 2.88 Cond (uMHOS)	0.51 0.27 0.20 0.20 (<u>Tubing</u> (<u>capacity</u> X 0.0026 DO (mg/L)	11.50 9.87 9.29 9.29 Turbing Length (t) 100 Turbidity (NTU)	pn:+/- 0.2 Temp*C+/- 0.2 Card 3: 5 D0 % Sat. 20 Turb. NTU <	STABLE STABLE STASTE STABLE STABLE STABLE Volume (gal = 0.06 Status	Level Meter: Pump: Tubing: Dedicated Tubing? I East Volume (gal) 0.32 Equipment ID	PP PE/S Yes No
BBS-CCR3 Purge Meth: 1A Purge Start: 11:59 Purge End: 12:12 Purge Complete A Well # 0 Purge Meth:	Time 12:08 12:10 12:12 At 12:00 Diam/ Comp 2 Time	Screen Interval (n) Rate (mt/min)	0.76 0.16 0.17 Purge 0.12 Intake Depth (R) 14 Volume (gal)	0.76 0.92 1.03 Stability Well Depth (ft) 18 Total Vol. (gal)	6.52 6.51 0.53 Values = Depth to Water (M) Water Depth (M)	6.33 6.32 6.33 6.33 = Water Column (th) 18.00 pH (SU)	27.28 27.28 27.30 27.30 ¥ Capachy (gal) = 0.16 Temp *C	1839 1818 1202 1802 1802 1 Well Volume (gal) 2.88 Cond (uMHOS)	0.51 0.27 0.20 0.20 (<u>Capacity</u> X (<u>capacity</u> X 0.0026 DO (mg/L)	11.50 9.87 9.29 9.29 Tuống Length (t) 100 Turbidity (NTU)	pn:+/- 0.2 Temp*C+/- 0.2 Card 15 5 DO % Sat.< 20 Turb. NTU < 20 Pump + Volume (gal) + 0 Purge Criteria ph:+/- 0.2	STABLE STABLE STASTE STABLE STABLE STABLE Cell Volume (gal _= 0.06 Status	Level Meter: Pump: Tubing: Dedicated Tubing? I East Volume (gal) 0.32 Equipment ID Level Meter:	PP PE/S Ves No
BBS-CCR3 Purge Meth: 1A Purge Start: 11:59 Purge End: 12:12 Purge Complete A Well # 0 Purge Meth: Purge Start:	Time 12:08 12:10 12:12 At 12:00 Diam/ Comp 2 Time	Gallons to I Screen Interval (fi) Rate (ml/min)	0.76 0.16 0.17 Purge 0.12 Intake Depth (R) 14 Volume (gst)	0.76 0.92 1.03 Stability Well Depth (ft) 18 Total Vol. (gal)	6.52 6.51 0.53 Values = Depth to Water (M) Water Depth (M)	6.33 6.32 6.33 6.33 6.33 6.33 6.33 6.33	27.28 27.28 27.30 27.30 X Capacity (gal) = 0.16 Temp ⁹ C	1839 1818 1202 1802 1802 1 Well Volume (gal) 2.88 Cond (uMHOS)	0.51 0.27 0.20 0.20 (<u>Capacity</u> X (<u>capacity</u> X 0.0026 DO (mg/L)	11.50 9.87 9.29 9.29 Turbing Length (t) 100 Turbidity (NTU)	pn:+/- 0.2 Temp*C+/- 0.2 Card 15 5 DO % Sat.< 20 Turb. NTU < 20 Pump + Volume (gal) + 0 Purge Criteria ph:+/- 0.2 Temp*C+/- 0.2	STABLE STABLE STABLE STABLE STABLE Cell Volume (gal = 0.06 Status	Level Meter: Pump: Tubing: Dedicated Tubing? 1 Equit. Volume (gal) 0.32 Equipment ID Level Meter: Pump:	PP PE/S PE/S Pes No Eqpt. Tab WLM08 PP
BBS-CCR3 Purge Meth: 1A Purge Start: 11:59 Purge End: 12:12 Purge Complete A Well # 0 Purge Meth: Purge Start:	Time 12:08 12:10 12:12 At 12:00 Diam/ Comp 2 Time	Gallons to I Screen Interval (fi) Rate (ml/min)	0.76 0.16 0.17 Purge 0.12 Intake Depth (R) 14 Volume (gst)	0.76 0.92 1.03 Stability Well Depth (ft) 18 Total Vol. (gal)	6.52 6.51 0.53 Values = Depth to Water (M) Water Depth (M)	6.33 6.32 6.33 6.33 6.33 6.33 6.33 6.33	27.28 27.28 27.30 27.30 X Capacity (gal) = 0.16 Temp ³ C	1839 1818 1202 1802 1802 1 Well Volume (gal) 2.88 Cond (uMHOS)	0.51 0.27 0.20 0.20 (<u>Capacity</u> X (<u>capacity</u> X 0.0026 DO (mg/L)	11.50 9.87 9.29 9.29 Turbing Length (t) 100 Turbidity (NTU)	pn:+/- 0.2 Temp*C+/- 0.2 Cach 15 5 D0 % Sat. 20 Turb. NTU <	STABLE STABLE STABLE STABLE STABLE Cell Volume (gal = 0.06 Status	Level Meter: Pump: Tubing: Dedicated Tubing? 1 Eqpt. Volume (gal) 0.32 Equipment ID Level Meter: Pump: Tubing:	PP PE/S PE/S Pes No Eqpt. Tab WLM08 PP PE/S
BBS-CCR3 Purge Meth: 1A Purge Start: 11:59 Purge End: 12:12 Purge Complete A Well # 0 Purge Meth: Purge Start: Purge Start: Purge End:	Time 12:08 12:10 12:12 At 12:00 Diam/ Comp 2 Time	Gallons to I Screen Interval (fi) Rate (ml/min)	0.76 0.16 0.17 Purge 0.12 Intake Depth (t) 14 Volume (gst)	0.76 0.92 1.03 Stability Well Depth (f) 18 Total Vol. (gal)	6.52 6.51 0.53 Values = Depth to Water (M) Water Depth (M)	6.33 6.32 6.33 6.33 6.33 6.33 6.33 6.33	27.28 27.28 27.30 27.30 X Capacity (gal) = 0.16 Temp *C	1839 1818 1202 1802 1802 1 Well Volume (gal) 2.88 Cond (uMHOS)	0.51 0.27 0.20 0.20 (<u>Capacity</u> X (<u>capacity</u> X 0.0026 DO (mg/L)	11.50 9.87 9.29 9.29 Tuống Length (t) 100 Turbidity (NTU)	pn:+/- 0.2 Temp?C+/- 0.2 Cact 3: 5 D0 % sat.< 20 Turb. NTU < 20 Pump + Volume (gal) + 0 Purge Criteria ph:+/- 0.2 Temp?C+/- 0.2 Cond % +/- 5 D0 % sat.< 20	STABLE STABLE STABLE STABLE STABLE Cell Volume (gal = 0.06 Status	Level Meter: Pump: Tubing: Dedicated Tubing? 1 Equt Volume (gal) 0.32 Equipment ID Level Meter: Pump: Tubing: Dedicated	PP PE/S PE/S Pes No Eqpt. Tab WLM08 PP PE/S Ves
BBS-CCR3 Purge Meth: 1A Purge Start: 11:59 Purge End: 12:12 Purge Complete A Well # 0 Purge Meth: Purge Start: Purge End:	Time 12:08 12:10 12:12 At 12:00 Diam/ Comp 2 Time	Gallons to I Screen Interval (fi) Rate (mt/min)	0.76 0.16 0.17 Purge 0.12 Intake Depth (R) 14 Volume (gst)	0.76 0.92 1.03 Stability Well Depth (f) 18 Total Vol. (gal)	6.52 6.51 0.53 Values = Depth to Water (M) Water Depth (M)	6.33 6.32 6.33 6.33 6.33 6.33 6.33 6.33	27.28 27.28 27.30 27.30 X Capacity (gal) = 0.16 Temp ⁹ C	1839 1818 1202 1802 1802 1 Well Volume (gal) 2.88 Cond (uMHOS)	0.51 0.27 0.20 0.20 (<u>Capacity</u> X 0.0026 DO (mg/L)	11.50 9.87 9.29 9.29 Tubing Length (t) 100 Turbidity (NTU)	pn:+/- 0.2 Temp?C+/- 0.2 Cact 3: 5 D0 % sat.< 20 Turb. NTU < 20 Pump + Volume (gal) + 0 Purge Criteria ph:+/- 0.2 Temp?C+/- 0.2 Cond 5: +/- 5 D0 % sat.< 20 Turb. NTU < 20	STABLE STABLE STABLE STABLE STABLE Cell Volume (gal = 0.06 Status	Level Meter: Pump: Tubing: Dedicated Tubing? 1 Equt Volume (gal) 0.32 Equipment ID Level Meter: Pump: Tubing: Dedicated Tubing?	PP PE/S PE/S Pes No Eqpt. Tab WLM08 PP PE/S PE/S PE/S No

oite:	ыу ве	na	Date:		File Name:			Weather:			iniuais	TIEC	O Initials	MD_
LIMS #	Loction Code	Time	FE ²	pH (SU)	Temp °C	Cond(uMHOS)	DO Mg/L	Turbidity(NTU)	Redox (mv)	Sulfite (mg/L)	Color	Odor	1	NGVD
			mg/l	PH	TEMP-C	COND-F	DO	TURB-N-F	REDOX	SO3-TR	\$COLOR-W	\$ODOR-W	Time	LEVEL
L19I017-04 A	BBS-CCR-BW-1	10:23		6.52	27.86	4172	0.08	3.67	-19.0		CLEAR	NONE		
L19I017-05 A	BBS-CCR-BW-2	9:46		6.60	27.36	1938	0.16	5.54	-26.0		LT. YELLOW	NONE		
LIMS #	250ml Cyan (3)	1L Inorg (1)	500ml Inorg (2)	250ml Inorg (3)	1L MUs (1)	250ml Mtls (3)	1L Rads (1)	500ml Sulfide (2)	500ml Mtls (2)	250ml Nuts (3)	40ml Vial (6)	500 ml Nuts (2)	1L Rads Diss. (1)	Total Container
191017-04 A			1			2 2	2 2							10
191017-05 A			1			2 2	2 2							10
I) 1L plastic (PP)		(2) 500ml plastic	: (PP)	(3) 250ml plastic ((PP)	(4) 100ml coliform b	ottle	(5) 1L amber glass	(AG)	(6) 40ml VOA vial	(CG)		Samples On Ice	Sample Reciept
SS	0114801E	ESS	0200401E	ESS	0300401E	ESS		ESS		ESS			Yes No	Time 14:00
	Preservation			Pres ID		Preservation			Pres ID		Preservation		Pres ID	Temp 4.8
L bottles (rads): 5 ml l	HNO3 to pH <2			L 023922N	250ml bottles (nu	ts): 1 ml H2SO4 to pl	H <2		L	500 ml bottles(Sulfi	ide) 2ml NAOH/Zinc	Acet, to pH >12	L	1
00 ml bottles (metals)	2 ml HNO3 to pH <2			LD	40 ml Vial (TOC):	0.5 ml H2SO4 to pH	<2		1 0	250 mi bottles (Cva	n) 1g NAOH to pH >	12	L	
50 ml bottles (metal):	1 ml HNO3 to pH <2	1		L 023922N	11. bottles (diss r	ads): filtered with 0.4	5um 5 ml HNQ3 to pH +	0	L T	A checked box in	dicates that the sam	ple was verified to	a pH of <2	1.
H Meter Calibration		Buffer ID	Buffer Value	Cal	Time	ICV	Time	001	Time	Rodov Cal	Time	Temn °C	Panding mu	Theo Value m
later ID:	MPM08	L 027553K	7	7	7.34	IGY	THING	7.04	14.00	Matar ID:	7-17	22.00	234.0	234 0
DEP ET 1100	MI MICO	L 026262D	10	10	7:34	00: (all +(0 3) (0		noll) (Baday a) 40m	14.03	RM01	14:04	22.00	232.0	234.9
Inits: SU		L 027378A	4	4	7:34	A chacked how ind	icetas ICV / CCV	Ingril (Redox +/- 10m)	0	Zobell Sol ID:	14.04	22.10	232.0	234.5
onductivity Mater C	alib	Standard ID	Std Value	F I	Time	ICV	Time	CCV	Time	00000		-		
latar ID:	MPM08	1 0264455	1000	1000	7.39	100	tune	UUV	Tune	020635	Time	Temp °C	Panding gran	These Malus and
DED ET 1990 Heiter	IVIF IVIOO	1 0261254	10000	1000	1.30	10070	7.40	10066	14:00	DO Meter Cal	7:10	00.0	Reading mgn	0 C11
DEP FT 1200, Ohits:	umhos	0201238	10000			10070	7:40	10066	14.02	Meter ID:	7.19	22.0	0.01	0.011
urbidity Meter Calib	THOT	Standard ID	Std Value	Acceptabi	lity Range	ICV	Time	CCV	Time	MPM08	15:04	22.3	8.87	8.710
Aeter ID:	TM07	026662	4,53	4.08	4.98	4.52	7:20		1/10	Barom. Pres				
DEP FT 1600, Units:	NTU	L 26863	47.50	44.41	50.59			47.70	14:05	760				
Sulfite Info (QC Chec	k) (EPA 377.1)		QC Result mg/l	Time	Titrator ID	Na Thio ID	DO 3 Pillow ID	Starch Ind. ID	Iodate/Iodide ID	Therm ID	pH	Conduct.(%)	DO (mg/l)	Redox (mv)
QC Std: 5ml (NaThio)/	500ml DI=10mg/L					<u> </u>	L	1	L	MPM08	0.2	5	0.3	10
ourging Information		Well Capacities	(gallons/ ft): 2"	= 0.16 4" = 0.65	1 F	Tubing Inside Dian	n. Capacities Gallons/f	t): 1/4" =0.0026 3/8" =	0.006					-
Well #	Diam/ Comp	Screen interval (ft)	Intake Depth (ft)	Well Depth * (ft)	Depth to Water (ft)	= Water Column (ft)	X Capacity (gal) =	1 Well Volume (gal)	(Tubing X Capacity X (galift.)	Length)	+ Volume + (gal)	(gal) Cell	1 Eqpt. Volume (gal)	
BBS-CCR-BW-1	2	10	39.3	44.3	28.34	15.96	0.16	2.55	0.0026	100	0	0.06	0.32	
Purge Meth:	Time	Rate (mVmin)	Volume (gai)	Total Vol. (gal)	Water Depth (ft)	pH (SU)	Temp °C	Cond (uMHOS)	DO (mg/L)	Turbidity (NTU)	Purge Criteria	Status	Equipment ID	Eqpt. Table
1A	10:16	2800	11.83	11.83	29.70	6.52	27.85	4133	0.08	10.30	ph:+/- 0.2	STABLE	Level Meter:	WLM08
Purge Start:	10:18	2800	1.48	13.31	29.72	6.52	27.86	4144	0.08	5.09	Temp ^o C+/- 0.2	STABLE	Pump:	ESP
10:00	10:20	2800	1.48	14.72	29.71	6.52	27.86	4172	0.00	3.67	Cond 1 44 5	BIABLE	Tubing:	PE
Purge End:					- 38 <u>5</u> g						DO % Sat.< 20	STABLE	Dedicated	□ Yes
10:20					1.1.2				A		Turb. NTU < 20	STABLE	Tubing?	No No
Purge Complete	At 10:00	Gallons to P	urge 0.32	Stability	Values =	6.52	27.86	4172	0.08	3.67		No.		-
		Screen	Intake	Well Depth -	Depth to Water	= Water Column	Well X Capacity (gal) =	1 Well Volume	(Tubing) (Capacity)	Tubing Length)	Pump + Volume + (cal)	Cell Volume (call) =	1 Eqpt. Volume (cal)	
BBS-CCB-BW/2	Diamy Comp	interval (ft)	18 /0	23.84	6.54	17.30	0.16	2 77	0.0000	24.64		0.06	0.42	-
Duran Moth:	-	Denter	10.43	20.04	0.04	17.50	0.10	2.11	0,0026	24.04	U	0.00	0.12	E I E II
-uige weth:	Time	Rate (ml/min)	voiume (gai)	fotal Vol. (gal)	vvater Depth (ft)	pH (SU)	Temp "C	Cond (uMHOS)	DO (mg/L)	Turbidity (NTU)	Purge Criteria	Status	Equipment ID	Eqpt. Table
IA	9:35	700	1.00	1.66	6.84	6.60	27.35	1948	0.14	8.09	pn.+- 0.2	STABLE	Level Meter:	WLM08
rurge Start:	9:37	720	0.38	2.04	6.86	6.60	27.35	1942	0.14	6.06	Temp®C+/- U.2	STABLE	Pump:	PP
9:26	9:39	/00	0.37	2.41	6.85	6.60	27.36	1938	0.16	5.54	Cond % +/- 5	STABLE	Tubing:	PE/S
			-								DO % Sat.< 20	STABLE	Dedicated	Yes
Purge End:								1	1	1	Turb. NTU < 20	STABLE	Tubina?	L No
Purge End: 9:39		0.0						-						

GROUNDWATER WELL SAMPLING EQUIPMENT CALIBRATION

				Date:		Sampler(s):			Initials /	AS			
pH Meter Calibration			Buffer ID	Buffet Value	Cal	Time				CCV	Time	Pass/Fail	
Meter ID:	MPM08	L	027553K	7.01	7.01	7:34				7.04	14:09	Pass	
FDEP FT 1100		L	026262D	10.04	10.04	7:34			QC (pH +/- 0.2)	(Cond +/- 5%) (DC) +/- 0.3mg/L) (Redox =	(- 10mv)	
Units: SU		L	027378A	4.00	3.99	7:34	ICV	Time	Pass/Fail	A checked box li	ndicates ICV / CCV pa	ssed	
	ICV Check	L	026487L	7.01			7.03	735	Pass				
Conductivity Meter Calib		Ц	Standard ID	Std Value	Cal	Time	ICV	Time	Pass/Fail	CCV	Time	Pass/Fail	
Meter ID;	MPM08	L	026445E	1000	1000	7:38			1				
FDEP FT 1200, Units: uMH	os	L	026125A	10000			10070	7:40	Pass	10066	14:02	Pass	8
furbidity Meter Calibratio	n	1	Standard ID	Std Value	Acceptability	Range	CCV	Time	Pass/Fail	CCV	Time	Pass/Fad	
Meter ID:	TM07	L	026862	4.53	4.08	4.98	4.52	7:20	Pass				
FDEP FT 1600, Units: NTU		L	26863	47.50	44.41	50.59				47.70	14:05	Pass	
Sulfite Info (QC Check)	EPA 377 F)			QC Result mg/l	Time	Titrator ID	Na Thio ID	DO 3 Pillow ID	Starch Ind. ID	lodate/lodide ID			
QC Std: 5ml (NaThio)/500m	I DI=10mg/L						L	L	L	L			
Redox Cal	Time		Temp [®] C	Reading mv.	Theo Value mv	Pass / Fail	DO Meter Cal	Time	Temp °C	Reading mg/l	Theo Value mg/l	Pass / Fall	
						T	FDEP FT 1500						
Meter ID:	1:17	-	22.0	234.0	234.9	Pass	Meter ID;	7:19	22.82	8.61	8.611	Pass	
RMUT	14:04	-	22.1	232.0	234,9	Pass	MPM08	15:04	22.26	8.87	8.710	Pass	8
026830		-					Barom. Pres			-			
<u> </u>							760	P 1	1				
MPM08	0.2		5	DO mgil	Redox my		Calbration	Comporter ID		Bangast ID:	1		
CIO ₂ DPD Check must read	+/- 10% of the	Calcu	lated Std. Concer	ntration, multiplie	d by 2.4.	0.2	Glycene check shoul	Id read < 0.10 mg/l Cl	01.	Reagent ID.	Le La la		-
							Initial Calibratio	on Verification ICV		Continuous Collection Varification CCV			Method 101
		1					1						
Chlorine Dioxide (mg/l)	Std. Conc. (mg/l)	Sto	i. Spike Volume (ml)	Cal Sample Volume (ml)	Calc. Std. Conc. (mg/l)	DPD Chack (mg/l)	Glycene Check	Time	Pass/Fall	DPD Check (mg/l)	Time	Pass/Fall	"Equivalent to
Meter ID:			1.0	100									4500 CIO2 D.
	DPD ID: L				Čí.	Glycene ID:	L	A che	ecked box indicat	es reagent expiration	on date has been verifie	d	
COMMENTS:		100	21124		- 11 -	the second second	a second s		Carlos and the states in the	Ro La Manager Lawrence	Marc and a second		

DEP-SOP-001/01 FS 2200 Groundwater Sampling Form FD 9000-24 GROUNDWATER SAMPLING LOG

FACILITY NAME:	Y Big Bend					SITE LOCATION:		Apollo Beach, FL.				
WELL NO:	BE	BS-CCR-1			SAMPLE ID	L1910	017-01 A	2	DATE:			
					PURG	NG DATA						
WELL DIAMETER (inches		TUBING DIAMETER (inc	ches) 1/4	WELL SC DEPTH 12.3	REEN INTERV 2 feet to	AL (NGVD) 22.32 (feet)	STATIC DEP TO WATER (TH 6.97	PURGE PUMP T OR BAILER:	PP PP		
WELL VOLUME PURGE	1	1 WELL VOLU	IME = (TOTAL WE	LL DEPTH - STATIC	DEPTH TO WATE	R) X WELL CAPAC	μтγ					
(only boost in approximation)			= (feet -	and the second	feet) x		gallons/foo		gallons	
EQUIPMENT VOLU (only fillout if application)	ME PURGE: ible)	1 EQ	UIPMENT VOL	. = PUMP VOLU	ME + (TUBING	0.0026 gall	TUBING LENG	TH) + FLOW CE 23.3 feet)	+ 0.06	gallons =	0.12 gallon:	
INITIAL PUMP OR DEPTH IN WELL (1	rubing aet): 17.32	the set of	FINAL PUMP DEPTH IN W	OR TUBING ELL (feet): 1	7.32	PURGING INITIATED AT:	10:52	PURGING ENDED AT:	11:07	PURGED (gallo	1E (ns): 1.8	
TIME	VOLUME PURGED (GALLONS)	CUMUL. VOLUME PURGED (GALLONS)	PURGE RATE (GPM)	DEPTH TO WATER (FEET)	pH (standard units)	TEMP. (°C)	COND. (µmhos/cm OR µS/cm)	DISSOLVED OXYGEN (circle mg/l) or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)	
11:03	1.31	1.31	0.12	7,12	6.82	26.09	4270	0.16	2.22	CLEAR	NONE	
11:05	0.24	1.55	0.12	7.11	6.82	26.07	4260	0.15	2.02	CLEAR	NONE	
11:07	0.25	1.80	0.13	7.13	6.82	26.05	4266	0.15	2.73	CLEAR	NONE	
WELL CAPACITY (Ga TUBING INSIDE DIA. SAMPLED BY (PR	lions Per Fool): 0 CAPACITY (Gal /Ft NT) / AFFILIATIC	,75° = 0.02;): 1/8° = 0.00006; DN:	1" = 0.04; 3/16" = 0.0014	1.25" = 0.06; 2" 1/4" = 0.0026; SAMPLER (S) S	=0.16: 3" = 5/16" = 0.004 SAMPL SIGNATURES:	0.37; 4" = 0. 3/8" = 0.006; ING DATA	65; 5" = 1 1/2" = 0.0	6" = 1.47; 10 5/8" = S //PLING II TATED AT:	12" = 5.88 0.016	SAMPLING ENDED AT: 1	1:15	
PUMP OR TUBING	aet): 17.3		TECO	SAMPLE PUMP	nL per minute):		457	TUBING	E: PE	i/s		
FIELD DECONTAN	INATION: Y			FIELD-FILTERE			ER SIZE:	μm	DUPLICATE:	YUNE	/	
	SAMPLE CON	TAINER		r nu chon e quipi	SAMPLE PR	ESERVATION		INT	ENDED	SAM	MPLING	
SAMPLE ID CODE	SPECIFICA # CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIV	E TO ADDED I	TAL VOL. N FIELD (ml) (1)	FINAL pH	ANALYS ME	IS AND/OR THOD	EQU	IPMENT ODE	
@lno-500	1	PE	500ml	NONE	N	IONE	N/A	Inor	ganics		PP	
@Met-250	2	PE	250ml	HNO3	-	1ml	<2	M	etals		PP	
@Rad-1L	2	PE	1L	HNO3		5ml	<2	Radio	logicals		PP	
REMARKS: (1) Sample bo	tles pre-pres	erved at lab	poratory pric	or to sample o	collection.	uoranulare: D	Silicops		Ihar (Specifi4			
SAMPLING/PURGIN	G AG B: R	PP = After Peris FPP = Reverse	taltic Pump; B Flow Peristaltic	= Bailer; BP = Bi Pump; SM = Stra	adder Pump; E: w Method (tubin	SP = Electric Subn g Gravity Drain);	nirsable Pump; VT = Vacuum T	PF = Peristaltic Pur rap: O = Other (Sp	mp recify)			

STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)
 pH: ± 0.2 units Temperature: ± 0.2 °C Specific Conductance: ± 5% Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2);

optionally, ± 0.2 mg/L or ± 10% (whichever is greater) Turbidity: all readings ≤ 20 NTU; optionally ± 5 NTU or 10% (whichever is greater)

🛟 eurofins

Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Tampa 6712 Benjamin Road Suite 100 Tampa, FL 33634 Tel: (813)885-7427

Laboratory Job ID: 660-97425-1 Client Project/Site: L19I017

For:

Tampa Electric Company 5012 Causeway Boulevard Tampa, Florida 33619

Attn: Ms. Peggy Penner

Jess House

Authorized for release by: 10/3/2019 3:31:30 PM

Jess Hornsby, Project Manager II (813)280-8340 jess.hornsby@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Review your project results through

LINKS



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Sample Summary

Client: Tampa Electric Company Project/Site: L19I017

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
660-97425-1	L19I017-01	Water	09/17/19 11:15	09/20/19 13:37	
660-97425-2	L19I017-02	Water	09/17/19 11:44	09/20/19 13:37	
660-97425-3	L19I017-03	Water	09/17/19 12:24	09/20/19 13:37	
660-97425-4	L19I017-04	Water	09/17/19 10:23	09/20/19 13:37	
660-97425-5	L19I017-05	Water	09/17/19 09:46	09/20/19 13:37	

Detection Summary

Client: Tampa Electric Company Project/Site: L19I017 Job ID: 660-97425-1

Client Sample ID: L19I017-01	ent Sample ID: L19I017-01							Lab Sample ID: 660-97425-1				
Analyte Lithium	Result 0.018	Qualifier	PQL	MDL 0.011	Unit mg/L	Dil Fac	D Method 200.7 Rev 4.4	Prep Type Total/NA	4			
Client Sample ID: L19I017-02						Lab S	Sample ID: 66	60-97425-2	5			
Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D Method	Prep Type	6			
Lithium	0.014	I	0.050	0.011	mg/L	1	200.7 Rev 4.4	Total/NA				
Client Sample ID: L19I017-03						Lab S	Sample ID: 60	60-97425-3				
Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D Method	Prep Type	8			
Lithium	0.013	I	0.050	0.011	mg/L	1	200.7 Rev 4.4	Total/NA				
Client Sample ID: L19I017-04						Lab S	Sample ID: 66	60-97425-4	9			
Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D Method	Prep Type				
Lithium	0.023	I	0.050	0.011	mg/L	1	200.7 Rev 4.4	Total/NA				
Client Sample ID: L19I017-05						Lab S	Sample ID: 66	60-97425-5				
No Detections.												
									10			
									ГJ			

Job ID: 660-97425-1

Laboratory: Eurofins TestAmerica, Tampa

Narrative

Receipt

The samples were received on 9/20/2019 1:37 PM; the samples arrived in good condition, properly preserved and, where required, on ice.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Qualifiers

Metals Qualifier	Qualifier Description	
Ι	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.	
U	Indicates that the compound was analyzed for but not detected.	5

Glossary

Ciccoury	
Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 660-97425-1

Client: Tampa Electric Company Project/Site: L19I017 Client Sample ID: L19I017-01

Lab Sample ID: 660-97425-1 Matrix: Water

Date	Collected	d: 09/17/19	11:15
Date	Received	d: 09/20/19	13:37

Method: 200.7 Rev 4.4 - Metals (ICP)											
Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac		
Lithium	0.018	I	0.050	0.011	mg/L		09/30/19 18:51	10/01/19 19:32	1		

Job ID: 660-97425-1

Client: Tampa Electric Company Project/Site: L19I017 Client Sample ID: L19I017-02

Lab Sample ID: 660-97425-2 Matrix: Water

Date	Collected:	09/17/19	11:44
Date	Received:	09/20/19	13:37

Method: 200.7 Rev 4.4 - Metals (ICP)												
Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac			
Lithium	0.014	I	0.050	0.011	mg/L		09/30/19 18:51	10/01/19 19:36	1			

Job ID: 660-97425-1

Client: Tampa Electric Company Project/Site: L19I017

Lab Sample ID: 660-97425-3 Matrix: Water

Client Sample ID: L19I017-03 Date Collected: 09/17/19 12:24 Date Received: 09/20/19 13:37

Method: 200.7 Rev 4.4 - Metals (ICP)												
Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac			
Lithium	0.013	I	0.050	0.011	mg/L		09/30/19 18:51	10/01/19 19:51	1			

Job ID: 660-97425-1

Client: Tampa Electric Company Project/Site: L19I017

Client Sample ID: L19I017-04

Lab Sample ID: 660-97425-4 Matrix: Water

Date Collected: 09/17/19 10:23 Date Received: 09/20/19 13:37

_

Method: 200.7 Rev 4.4 - Metals (ICP)												
Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac			
Lithium	0.023	I	0.050	0.011	mg/L		09/30/19 18:51	10/01/19 19:40	1			

Job ID: 660-97425-1

Client: Tampa Electric Company Project/Site: L19I017 Client Sample ID: L19I017-05

Lab Sample ID: 660-97425-5 Matrix: Water

Date Collected: 09/17/19 09:46 Date Received: 09/20/19 13:37

Method: 200.7 Rev 4.4 - Metals (IC	(P)								
Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	0.011	U	0.050	0.011	mg/L		09/30/19 18:51	10/01/19 19:44	1

QC Sample Results

Job ID: 660-97425-1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 400-459 Matrix: Water Analysis Batch: 459652	9401/1-A	MB MB						Clie	ent Samp	ole ID: Metho Prep Type: ⁻ Prep Batch	od Blank Fotal/NA : 459401
Analyte	Res	ult Qualifier	P	QL I	MDL (Unit	D	Р	repared	Analyzed	Dil Fac
Lithium	0.0	011 U	0.0	050 0	.011 r	mg/L		09/3	0/19 18:51	10/01/19 17:5	7 1
Lab Sample ID: LCS 400-45 Matrix: Water Analysis Batch: 459652	59401/2-A						Clien	it Sai	mple ID:	Lab Control Prep Type: Prep Batch	Sample Fotal/NA : 459401
			Spike	LCS	LCS			_	~ -	%Rec.	
Analyte			Added	Result	Quali	fier	Unit		%Rec		
			1.00	1.01			mg/L		101	611-60	
Lab Sample ID: 400-176711 Matrix: Water Analysis Batch: 459652	-A-3-C MS							CI	ient San	nple ID: Matr Prep Type: ⁻ Prep Batch	ix Spike Fotal/NA : 459401
	Sample S	Sample	Spike	MS	MS					%Rec.	
Analyte	Result (Qualifier	Added	Result	Quali	fier	Unit	D	%Rec	Limits	
Lithium	0.074		1.00	1.20			mg/L		112	70 - 130	
Lab Sample ID: 400-176711 Matrix: Water Analysis Batch: 459652	-A-3-D MSD)					Client S	amp	le ID: Ma	atrix Spike D Prep Type: ⁻ Prep Batch	uplicate Fotal/NA : 459401
-	Sample S	Sample	Spike	MSD	MSD					%Rec.	RPD
Analyte	Result (Qualifier	Added	Result	Quali	fier	Unit	D	%Rec	Limits RI	PD Limit
Lithium	0.074		1.00	1.10			mg/L		103	70 - 130	8 20

QC Association Summary

Job ID: 660-97425-1

9

459401

200.7 Rev 4.4

Metals

Prep Batch: 459401

400-176711-A-3-D MSD

Matrix Spike Duplicate

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-97425-1	L19I017-01	Total/NA	Water	200.7	
660-97425-2	L19I017-02	Total/NA	Water	200.7	
660-97425-3	L19I017-03	Total/NA	Water	200.7	
660-97425-4	L19I017-04	Total/NA	Water	200.7	
660-97425-5	L19I017-05	Total/NA	Water	200.7	
MB 400-459401/1-A	Method Blank	Total/NA	Water	200.7	
LCS 400-459401/2-A	Lab Control Sample	Total/NA	Water	200.7	
400-176711-A-3-C MS	Matrix Spike	Total/NA	Water	200.7	
400-176711-A-3-D MSD	Matrix Spike Duplicate	Total/NA	Water	200.7	
Analysis Batch: 4596	52				
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-97425-1	L19I017-01	Total/NA	Water	200.7 Rev 4.4	459401
660-97425-2	L19I017-02	Total/NA	Water	200.7 Rev 4.4	459401
660-97425-3	L19I017-03	Total/NA	Water	200.7 Rev 4.4	459401
660-97425-4	L19I017-04	Total/NA	Water	200.7 Rev 4.4	459401
660-97425-5	L19I017-05	Total/NA	Water	200.7 Rev 4.4	459401
MB 400-459401/1-A	Method Blank	Total/NA	Water	200.7 Rev 4.4	459401
LCS 400-459401/2-A	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	459401
400-176711-A-3-C MS	Matrix Spike	Total/NA	Water	200.7 Rev 4.4	459401

Total/NA

Water

Lab Chronicle

Job ID: 660-97425-1

Lab Sample ID: 660-97425-3

Lab Sample ID: 660-97425-4

Lab Sample ID: 660-97425-5

Matrix: Water

Matrix: Water

Matrix: Water

Client Sample ID: L19I017-01 Date Collected: 09/17/19 11:15 Date Received: 09/20/19 13:37

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			50 mL	50 mL	459401	09/30/19 18:51	NET	TAL PEN
Total/NA	Analysis	200.7 Rev 4.4		1			459652	10/01/19 19:32	GESP	TAL PEN

Client Sample ID: L19I017-02 Date Collected: 09/17/19 11:44 Date Received: 09/20/19 13:37

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			50 mL	50 mL	459401	09/30/19 18:51	NET	TAL PEN
Total/NA	Analysis	200.7 Rev 4.4		1			459652	10/01/19 19:36	GESP	TAL PEN

Client Sample ID: L19I017-03 Date Collected: 09/17/19 12:24 Date Received: 09/20/19 13:37

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			50 mL	50 mL	459401	09/30/19 18:51	NET	TAL PEN
Total/NA	Analysis	200.7 Rev 4.4		1			459652	10/01/19 19:51	GESP	TAL PEN

Client Sample ID: L19I017-04 Date Collected: 09/17/19 10:23

Date Received: 09/20/19 13:37

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			50 mL	50 mL	459401	09/30/19 18:51	NET	TAL PEN
Total/NA	Analysis	200.7 Rev 4.4		1			459652	10/01/19 19:40	GESP	TAL PEN

Client Sample ID: L19I017-05 Date Collected: 09/17/19 09:46 Date Received: 09/20/19 13:37

_	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			50 mL	50 mL	459401	09/30/19 18:51	NET	TAL PEN
Total/NA	Analysis	200.7 Rev 4.4		1			459652	10/01/19 19:44	GESP	TAL PEN

Laboratory References:

TAL PEN = Eurofins TestAmerica, Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

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Client: Tampa Electric Company Project/Site: L19I017

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	TAL PEN
200.7	Preparation, Total Metals	EPA	TAL PEN

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL PEN = Eurofins TestAmerica, Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

Job ID: 660-97425-1

Laboratory: Eurofins TestAmerica, Tampa

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	3052	06-30-20
Florida	NELAP	E84282	06-30-20
Georgia (DW)	State	905	06-30-20
USDA	US Federal Programs	P525-170731-001	09-25-20

Laboratory: Eurofins TestAmerica, Pensacola

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alabama	State	40150	07-01-20
ANAB	ISO/IEC 17025	L2471	02-22-20
Arizona	State	AZ0710	01-12-20
Arkansas DEQ	State	88-0689	09-01-20
California	State	2510	07-01-20
Florida	NELAP	E81010	06-30-20
Georgia	State	E81010(FL)	06-30-20
Illinois	NELAP	004586	10-09-19
lowa	State Program	367	08-01-20
Kansas	NELAP	E-10253	08-16-20
Kentucky (UST)	State Program	53	06-30-20
Kentucky (WW)	State	93030	12-30-19
Louisiana	NELAP	30976	06-30-20
Louisiana (DW)	NELAP	LA017	12-31-19
Maryland	State	233	09-30-20
Massachusetts	State	M-FL094	06-30-20
Michigan	State	9912	05-06-20
Minnesota	NELAP	012-999-481	12-31-19
New Jersey	NELAP	FL006	07-30-20
North Carolina (WW/SW)	State Program	314	12-31-19
Oklahoma	State	9810-186	08-31-20
Pennsylvania	NELAP	68-00467	01-31-20
Rhode Island	State Program	LAO00307	12-30-19
South Carolina	State Program	96026	06-30-20
Tennessee	State	TN02907	06-30-20
Texas	NELAP	T104704286	09-30-20
US Fish & Wildlife	Federal	LE058448-0	07-31-20
USDA	Federal	P330-18-00148	05-17-21
Virginia	NELAP	460166	06-14-20
Washington	State	C915	05-15-20
West Virginia DEP	State	136	06-30-20

SUBCONTRACT ORDER

Tampa Electric Company, Laboratory Services

L19I017

SENDING LABORATORY:

Tampa Electric Company, Laboratory Services 5012 Causeway Blvd Tampa, FL 33619 Phone: (813) 630-7490 Fax: (813) 630-7360 Project Manager: Peggy Penner

RECEIVING LABORATORY:

Eurofins TestAmerica, Tampa 6712 Benjamin Rd., Suite 100 Tampa, FL 33634 Phone :(813) 885-7427 Fax: -

Due Date: 10/01/19 16:00

Analysis		Expires		Laboratory ID	Comments
Sample ID: L191017-01 Sampled: 09/17/19 11:15	BBS-CCR-1		Water		
Lithium, Total EPA 6010 Containers Supplied: Poly UNO2 250ml (A)		03/15/20 11:15			
Sample ID: L191017-02 Sampled: 09/17/19 11:44	BBS-CCR-2		Water		
Lithium, Total EPA 6010 Containers Supplied: Poly HNO3 - 250mL (A)		03/15/20 11:44			
Sample ID: L19I017-03 Sampled: 09/17/19 12:24	BBS-CCR-3		Water		
Lithium, Total EPA 6010 Containers Supplied: Poly HNO3 - 250mL (A)		03/15/20 12:24			
Sample ID: L191017-04 Sampled: 09/17/19 10:23	BBS-CCR-BW1		Water		
Lithium, Total EPA 6010 Containers Supplied: Poly HNO3 - 250mL (A)		03/15/20 10:23			
Sample ID: L191017-05 Sampled: 09/17/19 09:46	BBS-CCR-BW2		Water		
Lithium, Total EPA 6010 Containers Supplied: Poly HNO3 - 250mL (A)		03/15/20 09:46	Loc: 660 97425 -	660-97425 Ct	nain of Custody
Babaety Released By	9-20-19 	Time Re	202 Jose	09/20/1 De	<u>5 1337</u> ite & Time
Released By	Date &	Time Re	ceived By	Da	ite & Tîme

age 1 of 3

10/3/2019

Chain of Custody Record



🔅 eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler: Lab F Horr Phone: E-Ma jees				b PM: ornsby, Jess				Ca	Carrier Tracking No(s):			COC No: 660-116619.1 Page: Page 1 of 1			
Slient Contact:					ail: s.homsbv@testamericainc.com			St	State of Origin: Florida			12-3				
Sompany:				Ac	credital	ions Re	quired (See note)):		onda				Job #:	
FestAmerica Laboratories, Inc.	Due Date Requested:				NELAP - Florida; NELAP - Texas				-			660-97425-1 Preservation Code	oc.			
3355 McLemore Drive,	9/27/2019				Analysis Requested					_			A - HCL	M - Hexane		
City: Pensacola	TAT Requested (da	ys):													B - NaOH C - Zn Acetate	N - None O - AsNaO2
State, Zip: FL, 32514				- 1											D - Nitric Acid E - NaHSO4	P - Na2O4S Q - Na2SO3
Phone: 850-474-1001(Tel) 850-478-2671(Fax)	PO #:														G - Amchlor H - Ascorbic Acid	R - Na2S2O3 S - H2SO4 T - TSP Dodecabydrate
Email:	WO #:			or No	10										I - Ice J - DI Water	U - Acetone V - MCAA
Project Name:	Project #:			Nos	S or N	m								ainer	K - EDTA L - EDA	W - pH 4-5 Z - other (specify)
Site	SSOW#:				ardura	T Lith							11	f cont	Other:	
Sample Identification - Client ID (1 ab ID)	Sample Date	Sample Time	Sample Ma Type (w (C=comp, organization)	atrix =water, rsolid, raste/oll,	Perform MS/MS	00.7/200.7_P_TO								Fotal Number o	Special In	structions/Note-
Sample Identification - Offent ID (Lab ID)		>	Preservation (Code:		-								X	Opeoid	
L19I017-01 (660-97425-1)	9/17/19	11:15 Eastern	N	/ater		x								1		
L19I017-02 (660-97425-2)	9/17/19	11:44 Eastern	N N	/ater		x								1		
L191017-03 (660-97425-3)	9/17/19	12:24 Eastern	N N	/ater		x								1		
L19I017-04 (660-97425-4)	9/17/19	10:23 Eastern	v	Vater		x								1		
L19I017-05 (660-97425-5)	9/17/19	09:46 Eastern	v	Vater		x								1		
		-		-	+		+		-			-				
÷		1	1					11								
Note: Since laboratory accreditations are subject to change, TestAmerica currently maintain accreditation in the State of Origin listed above for an Laboratories, Inc. attention immediately. If all requested accreditations a	a Laboratories, Inc. places the alysis/tests/matrix being analy are current to date, return the	e ownership of zed, the samp signed Chain o	method, analyte & ac les must be shipped to of Custody attesting to	creditation back to the b said comp	complia TestAm blicance	nce up erica la to Test	on out su boratory America	ubcontrac or other i Laborato	t laborat instructio ries, Inc	tories. Ti ons will b	his sample e provided.	shipme Any c	nt is forwa hanges to	irded und accredita	ler chain-of-custody. I Ition status should be	f the laboratory does not brought to TestAmerica
Possible Hazard Identification					Sa		Dispo: eturn T	sal (A f	fee ma	be a	ssessed isposal E	if sar By Lat	nples ar	re retail	ned longer than chive For	1 month) Months
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Delive	rable Rank:	2		Sp	ecial 1	nstruct	ions/Q0	C Requ	liremer	ts:					
Empty Kit Relinquished by:		Date:			Time:					-	Meth	od of S	hipment:			
Relinquished by Mufa Cawardy	Date/Time:	9 /	625 /	Man	pa	Recei	ved by:	la	da	W	ly		Date/Time Date/Time	1/1	9 350	Company
Relinquished by:	Date/Time:	-	Com	ipany		Recei	ved by:			-			Date/Time	K:		Company
Custody Seals Intact: Custody Seal No.:						Coole	er Tempe	erature(s)	°C and I	Other Re	marks:		1.8	(T	28	
5 TOP. 15 TOP						-							1.		-u	Ver: 01/16/2019
						4	ω	R	,		5	٥	\mathbf{c}	7	ைப	1 ω 4

10/3/2019

0 01 4 ω N -



Client: Tampa Electric Company

Login Number: 97425 List Number: 1 Creator: Hornsby, Terry

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	Thermal preservation not required.
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Job Number: 660-97425-1

List Source: Eurofins TestAmerica, Tampa

Client: Tampa Electric Company

Samples do not require splitting or compositing.

Multiphasic samples are not present.

Residual Chlorine Checked.

Login Number: 97425 List Number: 2 Creator: Conrady, Hank W

Login Number: 97425	List Source: Eurofins TestAmerica, Pensacola				
List Number: 2	List Creation: 09/21/19 02:13 PM				
Creator: Conrady, Hank W					
Question	Answer	Comment			
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td> <td></td>	N/A				
The cooler's custody seal, if present, is intact.	True				
Sample custody seals, if present, are intact.	N/A		8		
The cooler or samples do not appear to have been compromised or tampered with.	True		9		
Samples were received on ice.	True				
Cooler Temperature is acceptable.	True				
Cooler Temperature is recorded.	True	4.8°C IR-8			
COC is present.	True				
COC is filled out in ink and legible.	True				
COC is filled out with all pertinent information.	True				
Is the Field Sampler's name present on COC?	True		13		
There are no discrepancies between the containers received and the COC.	True				
Samples are received within Holding Time (excluding tests with immediate HTs)	True		14		
Sample containers have legible labels.	True				
Containers are not broken or leaking.	True				
Sample collection date/times are provided.	True				
Appropriate sample containers are used.	True				
Sample bottles are completely filled.	True				
Sample Preservation Verified.	True				
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True				
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A				

True

True

N/A



Report Date: October 1, 2019

TECOField Custody:Client5012 Causeway Blvd.Client/Field ID:L19I017-01Tampa, FL 33619Sample Collection:09-17-19/1115Attn: Peggy PennerLab ID No:19.11800Lab Custody Date:09-20-19/1300Sample description:Water

CERTIFICATE OF ANALYSIS

			Analysis			Detection	
Parameter	Units	Resul	ts	Date	Method	Limit	
Combined Radium (Radium-226 + Radium 228)	pCi/l	30.4 ±	2.2	Calc	Calc	0.6	
Radium-226	pCi/l	28.3 ±	2.2	9-27-19/1435	EPA 903.0	0.6	
Radium-228	pCi/l	2.1 ±	0.5	10-1-19/0945	EPA Ra-05	0.6	

* 104% carrier recovery

Thomas J. Weeks Laboratory Manager

Test results meet all requirements of the NELAC standards. Statement of estimated uncertainty available upon request. Test results refer only to sample(s) listed. Contact person: Thomas Weeks (813) 229-2879.

Page 1 of 1



Report Date: October 1, 2019

TECO Field Custody: Client 5012 Causeway Blvd. Client/Field ID: L19I017-02 BBS-CCR-2 Sample Collection: 09-17-19/1144 Attn: Peggy Penner Lab ID No: 19.11801 Lab Custody Date: 09-20-19/1300 Sample description: Water

CERTIFICATE OF ANALYSIS

			Analysis		Detection	
Parameter	Units	Results	Date	Method	Limit	
Combined Radium (Radium-226 + Radium 228)	pCi/l	16.2 ± 1.7	Calc	Calc	0.6	
Radium-226	pCi/l	16.0 ± 1.7	9-27-19/01435	EPA 903.0	0.5	
Radium-228	pCi/l	0.2 ± 0.4	10-1-19/0945	EPA Ra-05	0.6	

* 109% carrier recovery

Thomas J. Weeks Laboratory Manager

Test results meet all requirements of the NELAC standards. Statement of estimated uncertainty available upon request. Test results refer only to sample(s) listed. Contact person: Thomas Weeks (813) 229-2879.

Page 1 of 1



Report Date: October 1, 2019

TECO 5012 Causeway Blvd.	Field Custody: Client/Field ID:	Client L19I017-03 BBS-CCR-3
Tampa, FL 33019	Sample Collection:	09-17-19/1224
Attn: Peggy Penner	Lab ID No: Lab Custody Date: Sample description:	19.11802 09-20-19/1300 Water

CERTIFICATE OF ANALYSIS

Parameter	Units	Results	Analysis Date	Method	Detection Limit	
Combined Radium (Radium-226 + Radium 228)	pCi/l	17.7 ± 1.3	Calc	Calc	0.6	
Radium-226	pCi/l	15.6 ± 1.3	9-30-19/1344	EPA 903.0	0.4	
Radium-228	pCi/l	2.1 ± 0.5	10-1-19/0945	EPA Ra-05	0.6	

* 113% carrier recovery

Thomas J. Weeks Laboratory Manager

Test results meet all requirements of the NELAC standards. Statement of estimated uncertainty available upon request. Test results refer only to sample(s) listed. Contact person: Thomas Weeks (813) 229-2879.

Page 1 of 1



Report Date: October 1, 2019

TECO	Field Custody:	Client
5012 Causeway Blvd.	Client/Field ID:	L19I017-04
Tampa, FL 33619		BBS-CCR-BW1
rampa, re	Sample Collection:	09-17-19/1023
Attn: Peggy Penner	Lab ID No:	19.11803
	Lab Custody Date:	09-20-19/1300
	Sample description:	Water

CERTIFICATE OF ANALYSIS

	Analysis			Detection		
Units	Resu	lts	Date	Method	Limit	_
pCi/l	29.9 ±	: 1.7	Calc	Calc	0.6	
pCi/l	26.9 ±	1.7	9-30-19/1344	EPA 903.0	0.3	
pCi/l	3.0 ±	0.6	10-1-19/0945	EPA Ra-05	0.6	
	Units pCi/l pCi/l pCi/l	Units Result pCi/l 29.9 ± pCi/l 26.9 ± pCi/l 3.0 ±	Units Results pCi/l 29.9 ± 1.7 pCi/l 26.9 ± 1.7 pCi/l 3.0 ± 0.6	Analysis Units Results Date pCi/l 29.9 ± 1.7 Calc pCi/l 26.9 ± 1.7 9-30-19/1344 pCi/l 3.0 ± 0.6 10-1-19/0945	Analysis Method Units Results Date Method pCi/l 29.9 ± 1.7 Calc Calc pCi/l 26.9 ± 1.7 9-30-19/1344 EPA 903.0 pCi/l 3.0 ± 0.6 10-1-19/0945 EPA Ra-05	Analysis Detection Units Results Date Method Limit pCi/l 29.9 ± 1.7 Calc Calc 0.6 pCi/l 26.9 ± 1.7 9-30-19/1344 EPA 903.0 0.3 pCi/l 3.0 ± 0.6 10-1-19/0945 EPA Ra-05 0.6

* 107% carrier recovery

Thomas J. Weeks Laboratory Manager

Test results meet all requirements of the NELAC standards. Statement of estimated uncertainty available upon request. Test results refer only to sample(s) listed. Contact person: Thomas Weeks (813) 229-2879.

Page 1 of 1



Report Date: October 1, 2019

TECO 5012 Causeway Blvd. Tampa, FL 33619

Attn: Peggy Penner

Field Custody: Client Client/Field ID: L19I017-05 BBS-CCR-BW2 Sample Collection: 09-17-19/0946 Lab ID No: 19.11804 Lab Custody Date: 09-20-19/1300 Sample description: Water

CERTIFICATE OF ANALYSIS

	Unito	Posults	Analysis	Method	Detection Limit	
Parameter	UNILS	Results	Date			-
Combined Radium (Radium-226 + Radium 228)	pCi/l	4.7 ± 0.7	Calc	Calc	0.8	
Radium-226	pCi/l	3.8 ± 0.7	9-30-19/1344	EPA 903.0	0.4	
Radium-228	pCi/l	0.9 ± 0.6	9-30-19/1218	EPA Ra-05	0.8	

* 100% carrier recovery

Thomas J. Weeks Laboratory Manager

Test results meet all requirements of the NELAC standards. Statement of estimated uncertainty available upon request. Test results refer only to sample(s) listed. Contact person: Thomas Weeks (813) 229-2879.

Page 1 of 1

SUBCONTRACT ORDER

Tampa Electric Company, Laboratory Services

L19I017

SENDING LABORATORY:

Tampa Electric Company, Laboratory Services 5012 Causeway Blvd Tampa, FL 33619 Phone: (813) 630-7490 Fax: (813) 630-7360 Project Manager: Peggy Penner

RECEIVING LABORATORY:

KNL Laboratory Services 3202 N. Florida Ave. Tampa, FL 33603 Phone :(813) 229-2879 Fax: -

Due Date: 10/01/19 16:00

Analysis	Expires		Laboratory ID	Comments
Sample ID: L191017-01 BBS-CCR-1 Sampled: 09/17/19 11:15		Water	19.11800	
Radium 226 EPA 903.0	03/15/20 11:15		Level 2 Data requred	
Radium 226+228, Total	03/15/20 11:15		Level 2 Data requred	
Radium 228 Ra-05	03/15/20 11:15		Level 2 Data requred	
Containers Supplied:				
RAD Poly HNO3 - 1000mL (C)	RAD Poly HNO3 - 1000mI	L (D)		
Sample ID: L19I017-02 BBS-CCR-2 Sampled: 09/17/19 11:44		Water	19.11001	
Radium 226 EPA 903.0	03/15/20 11:44		Level 2 Data requred	
Radium 226+228, Total	03/15/20 11:44		Level 2 Data requred	
Radium 228 Ra-05	03/15/20 11:44		Level 2 Data requred	
Containers Supplied: RAD Poly HNO3 - 1000mL (C)	RAD Poly HNO3 - 1000mI	(D)		
Sample ID: L19I017-03 BBS-CCR-3 Sampled: 09/17/19 12:24		Water	19.11202	
Radium 226+228, Total	03/15/20 12:24		L vel 2 Data requred	
Radium 228 Ra-05	03/15/20 12:24		Level 2 Data requred	
Radium 226 EPA 903.0	03/15/20 12:24		Level 2 Data requred	
Containers Supplied: RAD Poly HNO3 - 1000mL (C)	RAD Poly HNO3 - 1000mI	L (D)		
Sample ID: L19I017-04 BBS-CCR-B Sampled: 09/17/19 10:23	W1	Water	1911803	
Radium 226 EPA 903.0	03/15/20 10:23		Level 2 Data requred	
Radium 226+228, Total	03/15/20 10:23		Level 2 Data requred	
Radium 228 Ra-05	03/15/20 10:23		1 ovel 2 Data requred	
Containers Supplied:				
RAD Poly HNO3 - 1000mL (C)	RAD Poly HNO3 - 1000mI	L (D)		

zw 9-20-19 KIL ull 19 1300 Date & Time Received By Date & Time Released By

Released By

SUBCONTRACT ORDER

Tampa Electric Company, Laboratory Services

L19I017

	L1910	017	93
Analysis	Expires		Laboratory ID Comments
Sample ID: L191017-05 BBS-CCR Sampled: 09/17/19 09:46	-BW2	Water	19.11.004
Radium 228 Ra-05	03/15/20 09:46		Level 2 Data requred
Radium 226 EPA 903.0	03/15/20 09:46		Level 2 Data requred
Radium 226+228, Total	03/15/20 09:46		Level 2 Data requred
Containers Supplied:			
RAD Poly HNO3 - 1000mL (C)	RAD Poly HNO3 - 1000	mL (D)	

BB-100000 9-20	-191300		KAR	P	9.2019	,
Released By	Date & Time	Received By			Date & Time	

1300

APPENDIX D

Statistical Analyses Summary Memoranda – Fourth and Fifth Detection Monitoring Events and Geosyntec Data Validation Reports



12802 Tampa Oaks Blvd., Suite 151 Tampa, FL 33637 PH 813-558-0990 FAX 813-558-9726 www.geosyntec.com

12 July 2019

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

Subject: Summary of Results – Fourth Detection Monitoring Event (March 2019) 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 Fourth Detection Monitoring Event performed on 14 March 2019 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 previous three 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 & When

Todd K. Kafka (FL PG 2338) Principal

Michael Jodato

Michael N. Lodato (FL PG 1351) Senior Principal



12802 Tampa Oaks Blvd., Suite 151 Tampa, Florida 33637 PH 813.558.0990 FAX 813.558.9726 www.geosyntec.com

Memorandum

Date:	20 June 2019
To:	Randy Melton
Copies to:	Terry Eastley Zel Jones
From:	Cathy Crea, Ph.D.
Reviewed by:	Michael 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 Gibsonton, 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 Gibsonton, 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 fourth detection monitoring event as required by 40 CRF 257.94. The fourth detection

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CCR Groundwater Detection Monitoring 20 June 2019 Page 2

monitoring event was performed by TEC staff on 14 March 2019. 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 three detection monitoring events (October 2017, April 2018, and September 20109) was used for the fourth detection monitoring event (March 2019) 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 fourth detection monitoring event included the collection of five groundwater samples from the GMS in March 2019. 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 fourth 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)

CCR Groundwater Detection Monitoring 20 June 2019 Page 3

for pH is 6.70 standard units (SU), and the pH at BBS-CCR-1 was 6.81. Similar pH values were reported in this well during the first three detection monitoring events (October 2017, April 2018, and September 2018). The pH concentrations at BBS-CCR-2 and BBS-CCR-3 remain within background concentrations.

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 1

Detection Monitoring Results – March 2019

TABLE 1 - DETECTION MONITORING RESULTS - March 2019 Tampa Electric Company, Big Bend Station, Economizer Ash and Pyrite Pond System, Apollo Beach, FL

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	March 2019 Detection Monitoring Results						
BBS-CCR-1	3/14/2019	18.4	518	664	0.415 U	6.81	1,160	3,000
BBS-CCR-2	3/14/2019	0.279	208	77.2	0.394 U	6.74	445	1,060
BBS-CCR-3	3/14/2019	0.259	207	161	0.513 J+	6.43	534	1,350

Notes:

#

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

J+ : Data validation qualifer - 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.

mg/L - milligrams per litre

STD - standard units

U: Laboratory qualifer - Indicates that the compound was not detected above the reporting limit.

ATTACHMENT A

Data Validation Memorandum



Memorandum

To: Todd Kafka

From: Kristoffer Henderson

CC: J. Caprio

Subject: Stage 2A Data Validation – Level II Data Deliverable – Tampa Electric Laboratory Service Work Order L19C024, TestAmerica Job ID 660-93234-1 and KNL Environmental Testing Order L19C024

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 March 14, 2019 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
- Anions (Chloride, Fluoride and Sulfate) by EPA Method 300.0
- Total Dissolved Solids (TDS) by Standard Method 2540C

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below and the information provided, 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
L19C024-01	BBS-CCR-1
L19C024-02	BBS-CCR-2
L19C024-03	BBS-CCR-3

Laboratory ID	Client ID
L19C024-04	BBS-CCR-BW1
L19C024-05	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.

Times were not listed for the relinquished by and received by signatures for the first transfer and the relinquished by signature for the second transfer on the chain of custody (COC) for the sample transfer from TELS to KNL.

The laboratory report was revised on May 15, 2019 to add calcium LCS/MS/MSD results and to include the radiochemistry QC. The revised report was identified as L19C024 Revised.

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 (\checkmark) indicates an area of review in which the data were acceptable. A preceding crossed circle (\otimes) 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 <u>Holding Times</u>

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 <u>Method Blank</u>

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 433799, method 200.8 batch 19C0102 and method 6010B batch 19C0106). Metals were not detected in the method blanks above the method detection limits (MDLs).

1.4 <u>Matrix Spike/Matrix Spike Duplicate (MS/MSD)</u>

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). Two sample set specific MS/MSD pairs were reported, one for the method 200.8 data using sample BBS-CCR-BW1; and one for the method 6010B data using sample BBS-CCR-1. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria, with the following exceptions.

The MS recoveries of boron and calcium were low and outside the laboratory specified acceptance criteria in the MS/MSD pair using sample BBS-CCR-1. Since the sample concentrations of boron and calcium were greater than four times the spiked concentration, no qualifications were applied to the data.

Batch MS/MSD pairs were also reported for the method 200.8 and method 200.7 Rev 4.4 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.

1.5 <u>Laboratory Control Sample (LCS)</u>

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.

1.6 Serial Dilution

Serial dilutions were not reported.

1.7 <u>Field Duplicate</u>

Field duplicates were not reported with the sample sets.

1.8 <u>Sensitivity</u>

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 <u>Electronic Data Deliverable (EDD) Review</u>

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 (\checkmark) indicates an area of review in which the data were acceptable. A preceding crossed circle (\otimes) 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 <u>Overall Assessment</u>

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 <u>Holding Times</u>

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 <u>Method Blank</u>

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 19C0109). Mercury was not detected in the method blank above the MDL.

2.4 <u>Matrix Spike/Matrix Spike Duplicate</u>

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-BW2, was reported. The recovery and RPD results were within the laboratory specified acceptance criteria.

One batch MS/MSD pair 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 <u>Laboratory Control Sample</u>

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 <u>Field Duplicate</u>

Field duplicates were not reported with the sample sets.

2.7 <u>Sensitivity</u>

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 <u>Electronic Data Deliverable Review</u>

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 (\checkmark) indicates an area of review in which the data were acceptable. A preceding crossed circle (\otimes) 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 <u>Holding Times</u>

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 <u>Method Blank</u>

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 (two for the radium-226 data and one for the radium-228 data). The method blanks were within the validation criteria.

3.4 <u>Matrix Spike</u>

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 <u>Laboratory Control Sample</u>

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

3.6 <u>Laboratory Duplicate</u>

Three 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 <u>Sensitivity</u>

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 <u>Electronic Data Deliverable Review</u>

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 anions (chloride, fluoride and sulfate) by EPA Method 300.0 and TDS by SM 2540C.

The areas of data review are listed below. A leading check mark (\checkmark) indicates an area of review in which the data were acceptable. A preceding crossed circle (\otimes) 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
- \otimes Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Laboratory Duplicate
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

4.1 <u>Overall Assessment</u>

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 <u>Holding Times</u>

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

4.3 <u>Method Blanks</u>

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 (TDS batch 19C0118 and the anions batch 19C0184). 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 19C0184. Therefore, the estimated concentrations of fluoride in the associated samples were U qualified as not detected at the RL and the fluoride concentrations in samples BBS-CCR-3 and BBS-CCR-BW1 were J+ qualified as estimated with high biases, based on professional and technical judgment.

Sample	Analyte	Laboratory Result (mg/L)	Laboratory Flag	Validation Result (mg/L)	Validation Qualifier*	Reason Code**
BBS-CCR-1	Fluoride	0.415	Ι	0.500	U	3
BBS-CCR-2	Fluoride	0.394	Ι	0.500	U	3
BBS-CCR-3	Fluoride	0.513	NA	0.513	J+	3
BBS-CCR-BW1	Fluoride	0.537	NA	0.537	J+	3
BBS-CCR-BW2	Fluoride	0.495	Ι	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 NA-not applicable

* 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

4.4 <u>Matrix Spike/Matrix Spike Duplicate</u>

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). One sample set specific MS/MSD pair, using sample BBS-CCR-1, was reported for the anions. The recovery and RPD results were within the laboratory specified acceptance criteria.

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

4.5 <u>Laboratory Control Sample</u>

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 <u>Laboratory Duplicate</u>

Two sample set specific laboratory duplicates were reported for TDS using samples BBS-CCR-1 and BBS-CCR-2. The RPD results were within the laboratory specified acceptance criteria.

4.7 <u>Field Duplicate</u>

Field duplicates were not reported with the sample sets.

4.8 <u>Sensitivity</u>

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 <u>Electronic Data Deliverable Review</u>

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.

* * * * *

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



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Memorandum

Date:	17 December 2019
To:	Randy Melton
Copies to:	Terry Eastley Zel Jones
From:	Cathy Crea, Ph.D.
Reviewed by:	Michael Lodato, PG Todd Kafka, PG
Subject:	Summary of Results for the Fifth Detection Monitoring Event Economizer Ash and Pyrite Pond System Tampa Electric Company - Big Bend Station 13031 Wyandotte Road Gibsonton, 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 Gibsonton, 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 fifth detection monitoring event as required by 40 CRF 257.94. The fifth detection

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monitoring event was performed by TEC staff on 17 September 2019. 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 four detection monitoring events (October 2017, April 2018, September 2018, and March 2019) was used for the fifth detection monitoring event (September 2019) 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 fifth detection monitoring event included the collection of five groundwater samples from the GMS in March 2019. 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 fifth detection monitoring results to the background values for the Appendix III constituents is shown in **Table 1** and indicates pH concentrations above/below background in all three downgradient monitoring wells, BBS-CCR-1 through BBS-CCR-3. The established lower and upper

CCR Groundwater Detection Monitoring 17 December 2019 Page 3

prediction limits (LPL and UPL) for pH are 6.38 and 6.70 standard units (SU), respectively. The pH at BBS-CCR-1 (6.81 SU) and BBS-CCR-2 (6.73 SU) were above the UPL, while the pH at BBS-CR-3 (6.33 SU) was below the LPL. Similar pH values were reported in CCR-1 and CCR-2 during the first four detection monitoring events (October 2017, April 2018, September 2018, and March 2019). This is the only monitoring event where the pH at BBS-CCR-3 was not within the range of background.

CONCLUSIONS

As specified in 40 CFR 257.94(3)(e), Geosyntec prepared an alternate source demonstration (ASD) documenting that the elevated pH values are not an SSI and are 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 are 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 1

Detection Monitoring Results – September 2019

TABLE 1 - DETECTION MONITORING RESULTS - SEPTEMBER 2019

Tampa Electric Company, Big Bend Station, Economizer Ash and Pyrite Pond System, Apollo Beach, FL

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 2019 Detection Monitoring Results						
BBS-CCR-1	9/17/2019	21	575	766	0.195	6.82	1140	3250
BBS-CCR-2	9/17/2019	0.199	212	79.5	0.183	6.73	419	1040
BBS-CCR-3	9/17/2019	0.541	211	129	0.39	6.33	540	1300

Notes:

#

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

mg/L - milligrams per litre

STD - standard units

ATTACHMENT A

Data Validation Memorandum



Memorandum

Date: 8 November 2019

To: Todd Kafka

From: Kristoffer Henderson

CC: J. Caprio

Subject: Stage 2A Data Validation – Level II Data Deliverable – Tampa Electric Laboratory Service Work Order L19I017

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 17, 2019 as part of the Big Bend Power Station coal combustion residuals (CCR) groundwater monitoring program plan.

Tampa Electric Laboratory Services, Tampa, Florida (TELS). The samples were analyzed for the following tests:

- Metals by EPA Methods 200.8 and 6010B
- Mercury by EPA Method 7470A
- Anions (Chloride, Fluoride and Sulfate) by EPA Method 300.0
- Reduction and Oxidation Potential by SM 2580B
- Total Dissolved Solids (TDS) by Standard Method 2540C

Eurofins TestAmerica Pensacola, Florida (ETA) analyzed the samples for the following test:

• Lithium by EPA Method 200.7 Rev. 4.4

KNL Environmental Testing, Tampa, Florida (KNL) analyzed the samples for the following tests:

- Radium-226 by EPA Method 903.0
- Radium-228 by EPA Method Ra-05

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below and the information provided, the data are usable for supporting project objectives.

The data were reviewed based on the pertinent methods referenced by the data package and professional and technical judgment and the following documents:

- 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) and
- American Nuclear Society Verification and Validation of Radiological Data for use in Waste Management and Environmental Remediation.

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

Laboratory ID	Client ID
L19I1017-01	BBS-CCR-1
L19I1017-02	BBS-CCR-2
L19I1017-03	BBS-CCR-3

Laboratory ID	Client ID
L19I1017-04	BBS-CCR-BW1
L19I1017-05	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.

Field parameters specific conductance, dissolved oxygen, pH and turbidity were reported in the laboratory report but were not validated.

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 (\checkmark) indicates an area of review in which the data were acceptable. A preceding crossed circle (\otimes) 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

1.1 Overall Assessment

The metals data reported in this package are considered usable for supporting 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 <u>Method Blank</u>

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 459401, method 200.8 batch 19I0128 and method 6010B batch 19I0130). Metals were not detected in the method blanks above the method detection limits (MDLs), with the following exception.

Calcium was detected at an estimated concentration greater than the MDL and less than the reporting limit (RL) in the method blank in batch 19I0130. Since calcium was detected above the RL in the associated sample, no qualifications were applied to the data.

1.4 <u>Matrix Spike/Matrix Spike Duplicate (MS/MSD)</u>

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

Since the calcium concentration in sample BBS-CCR-BW2 was greater than four times the spiked concentration, no qualifications were applied to the calcium data based on the MS/MSD pair results.

One batch MS/MSD pair was also reported for method 200.7 Rev 4.4 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.

1.5 <u>Laboratory Control Sample (LCS)</u>

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.

1.6 Field Duplicate

Field duplicates were not submitted with the sample sets.

1.7 <u>Sensitivity</u>

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.

1.8 <u>Electronic Data Deliverable (EDD) Review</u>

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. Also, the samples were reported to the MDLs in the laboratory report; however, only the RLs were listed 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 (\checkmark) indicates an area of review in which the data were acceptable. A preceding crossed circle (\otimes) 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 <u>Overall Assessment</u>

The mercury data reported in this package are considered usable for supporting 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 <u>Holding Times</u>

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 <u>Method Blank</u>

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 19I0129). Mercury was not detected in the method blank above the MDL.

2.4 <u>Matrix Spike/Matrix Spike Duplicate</u>

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-BW2, was reported. The recovery and RPD results were within the laboratory specified acceptance criteria.

2.5 <u>Laboratory Control Sample</u>

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 submitted with the sample sets.

2.7 <u>Sensitivity</u>

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 <u>Electronic Data Deliverable Review</u>

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. The samples were reported to the MDLs in the laboratory report; however, only the RLs were listed in the EDD. No other 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 (\checkmark) indicates an area of review in which the data were acceptable. A preceding crossed circle (\otimes) 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
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

3.1 <u>Overall Assessment</u>

The radium-226 and radium-228 data reported in this package are considered usable for supporting 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 <u>Holding Times</u>

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 <u>Method Blank</u>

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

3.4 <u>Matrix Spike</u>

MSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Four 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 <u>Laboratory Control Sample</u>

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

3.6 <u>Laboratory Duplicate</u>

Four 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 Field Duplicate

Field duplicates were not submitted with the sample sets.

3.8 <u>Sensitivity</u>

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.

3.9 <u>Electronic Data Deliverable Review</u>

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 anions (chloride, fluoride and sulfate) by EPA Method 300.0 and TDS by SM 2540C.

The areas of data review are listed below. A leading check mark (\checkmark) indicates an area of review in which the data were acceptable. A preceding crossed circle (\otimes) 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 Deliverable Review

4.1 **Overall Assessment**

The wet chemistry data reported in this package are considered usable for supporting 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 <u>Holding Times</u>

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

4.3 <u>Method Blanks</u>

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 (TDS batch 19I0139 and the anions batches 19I0161 and 19I0174). The wet chemistry parameters were not detected in the method blanks above the MDLs.

4.4 <u>Matrix Spike/Matrix Spike Duplicate</u>

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). Three batch MS/MSD pairs were reported for the anions, 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 <u>Laboratory Control Sample</u>

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 <u>Laboratory Duplicate</u>

Two sample set specific laboratory duplicates were reported for TDS using samples BBS-CCR-1 and BBS-CCR-2. The RPD results were within the laboratory specified acceptance criteria.

Two batch laboratory duplicates were also reported for TDS, since these are batch QC the results do not affect the samples in this data set and qualifications were not applied to the data.

4.7 <u>Field Duplicate</u>

Field duplicates were not reported with the sample sets.

4.8 <u>Sensitivity</u>

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 <u>Electronic Data Deliverable Review</u>

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. Also, the samples were reported to the MDLs in the laboratory report; however, only the RLs were listed 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. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".
- 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