

Chemical Analysis Report

SO-DIST-2016-12-09-02

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **San Carlos Bay**
Request ID: **RQ-2016-11-14-05**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Corey Anderson

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 06-JAN-2017 13:36



Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: Metals.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: PI-01

Collection Date/Time: 11/28/2016 12:32

Field ID: PI-01

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1856877	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P316848	
	EPA 200.8 Rev. 5.4	Arsenic	1.96		ug/L	P316848	
		Cadmium	0.060	U	ug/L	P316848	
		Chromium	0.25	I	ug/L	P316848	
		Copper	0.48	I	ug/L	P316848	
		Lead	0.25	U	ug/L	P316848	
		Nickel	0.25	I	ug/L	P316848	
		Silver	0.015	U	ug/L	P316848	
		Zinc	3.0	U	ug/L	P316848	

Sample Location: PI-02

Collection Date/Time: 11/28/2016 12:43

Field ID: PI-02

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1856878	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P316848	
	EPA 200.8 Rev. 5.4	Arsenic	1.98		ug/L	P316848	
		Cadmium	0.060	U	ug/L	P316848	
		Chromium	0.28	I	ug/L	P316848	
		Copper	0.58	I	ug/L	P316848	
		Lead	0.25	U	ug/L	P316848	
		Nickel	0.28	I	ug/L	P316848	
		Silver	0.015	U	ug/L	P316848	
		Zinc	3.0	U	ug/L	P316848	

Sample Location: PI-14

Collection Date/Time: 11/28/2016 12:22

Field ID: PI-14

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1856879	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P316848	
	EPA 200.8 Rev. 5.4	Arsenic	1.99		ug/L	P316848	
		Cadmium	0.060	U	ug/L	P316848	
		Chromium	0.29	I	ug/L	P316848	
		Copper	0.46	I	ug/L	P316848	
		Lead	0.25	U	ug/L	P316848	
		Nickel	0.26	I	ug/L	P316848	
		Silver	0.015	U	ug/L	P316848	
		Zinc	3.0	U	ug/L	P316848	

Quality Assurance Report

Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P316848

Component	Result	Code	Units
Iron	30	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P316848

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.050	U	ug/L
Copper	0.10	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.050	U	ug/L
Silver	0.0050	U	ug/L
Zinc	1.0	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P316848

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	109		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P316848

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	101		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	98.8		P	85 - 115
Copper	97.8		P	85 - 115
Lead	101		P	85 - 115
Nickel	99.9		P	85 - 115
Silver	106		P	85 - 115
Zinc	103		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P316848

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856703	Iron	112	106	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P316848

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856703	Arsenic	105	104	P/P	70 - 130
1856703	Cadmium	94.7	89.7	P/P	70 - 130
1856703	Chromium	79.7	79.1	P/P	70 - 130
1856703	Copper	96.2	94.7	P/P	70 - 130
1856703	Lead	112	114	P/P	70 - 130
1856703	Nickel	101	101	P/P	70 - 130
1856703	Silver	96.0	94.3	P/P	70 - 130

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P316848

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856703	Zinc	90.2	89.2	P/P	70 - 130

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P316848

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856703	Iron	4.16	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P316848

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856703	Arsenic	1.10	Spike	P	0 - 20
1856703	Cadmium	5.43	Spike	P	0 - 20
1856703	Chromium	0.598	Spike	P	0 - 20
1856703	Copper	1.45	Spike	P	0 - 20
1856703	Lead	1.21	Spike	P	0 - 20
1856703	Nickel	0.502	Spike	P	0 - 20
1856703	Silver	1.79	Spike	P	0 - 20
1856703	Zinc	1.12	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A73451
Included Lab Sample IDs: 1856877, 1856878, 1856879

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	102	102	P/P	90 - 110
Cadmium	99.7	99.3	P/P	90 - 110
Chromium	92.3	90.9	P/P	90 - 110
Copper	99.4	98.3	P/P	90 - 110
Lead	99.6	100	P/P	90 - 110
Nickel	101	99.8	P/P	90 - 110
Silver	104	104	P/P	90 - 110
Zinc	101	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A73483
Included Lab Sample IDs: 1856877, 1856879

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A73483
Included Lab Sample IDs: 1856877, 1856879

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	94.9	95.0	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A73494
Included Lab Sample IDs: 1856877, 1856878, 1856879

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	107	108	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
EPA 200.7 Rev. 4.4	Iron	109	106 112			4.16
EPA 200.8 Rev. 5.4	Arsenic	101	105 104			1.10
	Cadmium	100	94.7 89.7			5.43
	Chromium	98.8	79.7 79.1			0.598
	Copper	97.8	96.2 94.7			1.45
	Lead	101	112 114			1.21
	Nickel	99.9	101 101			0.502
	Silver	106	96.0 94.3			1.79
	Zinc	103	90.2 89.2			1.12

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1856877, 1856878, 1856879
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1856877, 1856878, 1856879

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 200.7 Rev. 4.4	12/09/2016	12/15/2016	Elliott D. Healy	12/20/2016	Joshua Ayres	1856877, 1856878, 1856879
EPA 200.8 Rev. 5.4	12/09/2016	12/15/2016	Elliott D. Healy	12/19/2016	Charles J. Peterson	1856877, 1856878, 1856879
	12/09/2016	12/15/2016	Elliott D. Healy	12/20/2016	Charles J. Peterson	1856877, 1856879