



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4**

**Laboratory Services & Applied Science Division
Environmental Sampling Section
980 College Station Road
Athens, Georgia 30605-2720**

May 25th, 2022

MEMORANDUM

SUBJECT: Raymond POTW Final Report
Raymond, MS
LSASD Project ID: 22-0182

FROM: Chris McHugh, Environmental Engineer
Water Quality Section

Christopher McHugh

THRU: Greg White, Chief
Water Quality Section

**GREGORY
WHITE**

Digitally signed by
GREGORY WHITE
Date: 2022.05.24
15:29:10 -04'00'

TO: Jairo Castillo-Valenzuela, P.E., Chief
Wastewater Enforcement Section
Enforcement & Compliance Assistance Division

Attached is the Final Report for the Raymond WWTP NPDES Reconnaissance Sampling Evaluation.

If you have any questions concerning the sampling event, please call me at (706) 410-4082 or email me at mchugh.christopher@epa.gov.

Attachments:

cc (via email): Dennis Sayre, ECAD

Mission: To provide sound Science to our customers through superior environmental evaluation

Vision: To be a solutions-oriented organization, and seen as a leader in sound science through innovation, responsive customer service, and cutting-edge expertise

Project ID: 22-0182

**NPDES Reconnaissance Sampling
Evaluation Report**

Raymond POTW

**Old Port Gibson Rd
Raymond, Mississippi**

Project Date: March 29-30, 2022

Report Date: May 25, 2022

Project Leader: Chris McHugh
Environmental Engineer
Water Quality Section
Field Services Branch
Laboratory Services and Applied Science Division
U.S. EPA – Region 4
980 College Station Road
Athens, Georgia 30605-2720

The ANSI National Accreditation Board attests that U.S. EPA Region 4 Laboratory Services and Applied Science Division fulfills the requirements of ISO/IEC 17025:2017 ANAB Forensic Testing & Calibration AR 3125:2019 in the field of Forensic Testing. The activities contained in this report fall within the scope of accreditation, Certificate Number: FT-0330. Expires 31 July 2022.



LSASD
LABORATORY SERVICES & APPLIED SCIENCE DIVISION

Requestor:

Jairo Castillo Chief
Water Enforcement Branch
Enforcement and Compliance Assurance Division
U.S. EPA – Region 4
61 Forsyth Street SW
Atlanta, GA, 30303-8960

Analytical Support:

Inorganic Chemistry Section
Laboratory Services and Applied Science
Division
980 College Station Rd Athens, GA 30605

Approvals:**LSASD Project Leader:**

**CHRISTOPH
ER MCHUGH** Digitally signed by
CHRISTOPHER MCHUGH
Date: 2022.05.24 14:52:58
-04'00'

Chris McHugh
Water Quality Section
Field Services Branch
Laboratory Services and Applied Science Division

Technical Reviewer:

 Digitally signed by
DEREK LITTLE
Date: 2022.05.24
15:04:37 -04'00'

Derek Little
Water Quality Section
Field Services Branch
Laboratory Services and Applied Science Division

Approving Official:

**GREGORY
WHITE** Digitally signed by
GREGORY WHITE
Date: 2022.05.24
15:29:37 -04'00'

Greg White, Chief
Water Quality Section
Field Services Branch
Laboratory Services and Applied Science Division

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**NPDES Sampling Evaluation
Raymond POTW (Permit No. MS0051772)**

1. Introduction

On March 29-30, 2022, representatives of the U.S. Environmental Protection Agency (U.S. EPA) Region 4 Laboratory Services and Applied Science Division (LSASD) conducted a National Pollutant Discharge Elimination System (NPDES) Reconnaissance Sampling Evaluation at Raymond Publicly Owned Treatment Works (POTW) in Raymond, Mississippi. The evaluation was requested by the ECAD Water Enforcement Branch as part of the agency's goal to address significant non-compliance (SNC) facilities. A 24-hr composite sample was collected and analyzed for Total Suspended Solids (TSS), Ammonia (NH₃), Total Phosphorus (P) and Biochemical Oxygen Demand (BOD₅), listed on the issued NPDES Permit MS0051772 as well for Total Kjeldahl Nitrogen (TKN), and Nitrate/Nitrite as N. TKN and Nitrate/Nitrite were collected to calculate the Total Nitrogen (N) parameter listed on the permit. The inspection followed the procedures listed in the LSASD Project No. 22-00181-0183 Sample and Analysis Plan (SAP). Table 1 lists the sampling participants.

Table 1 – Inspection Personnel

Inspector	Organization	Date(s) on site
Chris McHugh	U.S. EPA Region 4 LSASD	3/29-30/2022
Asher Sampong	U.S. EPA Region 4 LSASD	3/29-30/2022
Jon Brown	Inframark (contracted facility operator)	3/29-30/2022

2. Summary

Analytical results for BOD₅ and NH₃ from the 24-hour composite effluent discharge sample EFF001 exceeded the NPDES permitted limits. The result for TSS were within the permitted limit and Total Nitrogen and Phosphorus have report only requirements.

The wastewater treatment system consists of an activated sludge basin with mechanical aerators and a rectangular clarifier. Chlorine disinfection is added in the rectangular contact chamber before the effluent is discharged.

3. Sample Analysis Results

Following the permit, a 24-hr time based composite sample was collected at EFF001. The sample collected at EFF001 was collected after final chlorine disinfection in the rectangular discharge box. The analytical results were all within the permitted limits for TSS, pH, and Dissolved Oxygen. The results for BOD₅ and NH₃ as N were above the permitted limits highlighted below.

Table 2 – EPA Sample Results vs. Permitted Limits

Analyte	EPA Analytical Results	Permitted Limit	Sample Location
TSS	5.0 mg/L *U, J, H-6, QM-4	45 mg/L Weekly Avg.	Effluent (EFF001)
BOD ₅	6.5 mg/L *A	4.5 mg/L Weekly Avg.	Effluent (EFF001)
NH ₃ as N	6.8 mg/L *J, QM-2	3 mg/L Weekly Avg.	Effluent (EFF001)
Total Kjeldahl Nitrogen	7.5 mg/L	NA	Effluent (EFF001)
Nitrate/Nitrite as N	0.14 mg/L	NA	Effluent (EFF001)
Total Phosphorus	1.4 mg/L	Report Maximum Weekly Average	Effluent (EFF001)
Total Nitrogen	15.84 mg/L	Report Maximum Weekly Average	Effluent (EFF001)
pH	6.79 S.U.	6.0 S.U. < pH < 9.0 S.U.	Effluent (EFF001)
Dissolved Oxygen	8.15 mg/L	6.0 mg/L < Dissolved Oxygen	Effluent (EFF001)
Total Residual Chlorine	0.12 mg/L**	0.019 mg/L Weekly Avg.	Effluent (EFF001)

** This value is above the weekly average; however, the monitoring requirement is 5x per week to calculate the Total Residual Chlorine weekly average. The facility should evaluate the dosing to ensure that it doesn't lead to exceeding the weekly average of 0.019 mg/L.

DATA QUALIFIER DEFINITIONS

* U The analyte was not detected at or above the reporting limit.

* H-6 Sample originally analyzed within holding time; some QC requirements not met. The reported result is from a second analysis performed for confirmation which occurred after the holding time expired.

* QM-2 Matrix Spike Recovery greater than method control limits.

* QM-4 Matrix Precision outside method control limits.

* J The identification of the analyte is acceptable; the reported value is an estimate.

* A The analyte was analyzed in replicate. Reported value is an average value of the replicates.

CALCULATIONS

* Total Nitrogen is the sum of NH_3 as N, Total Kjeldahl Nitrogen, and Nitrate/Nitrite as N.



Figure 1 – Sample Collection Point

Appendix A

The following table lists the total number of pages for each of the Analytical Datasheets for this report. Each document is contained in the PDF portfolio.

R4LIMS ID	Lab ID	Analysis	Total Pages
22-0182	E221402-01	TSS, BOD ₅ , NH ₃ , P, NO ₂ , NO ₃ , TKN	11

End of Report



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 22-0182

Project: 22-0182, Raymond POTW - Reported by Kristin Trapp

April 20, 2022

MEMORANDUM

SUBJECT: FINAL Analytical Report
Project: 22-0182, Raymond POTW

FROM: Kristin Trapp
LSB Inorganic Chemistry Section Chief

THRU: Stacie Masters, Chief
Laboratory Services Branch

TO: Asher Sampong

Attached are the final results for the analytical groups listed below. This report shall not be reproduced except in full without approval of the Region 4 laboratory. These analyses were performed in accordance with the Laboratory Services Branch's Laboratory Operations and Quality Assurance Manual (LSB LOQAM) found at www.epa.gov/region4/sesd/asbsop. Any unique project data quality objectives specified in writing by the data requestor have also been incorporated into the data unless otherwise noted in the Report Narrative. Chemistry data have been verified based on the LSB LOQAM specifications and have been qualified by this laboratory if the applicable quality control criteria were not met. Verification is defined in Chapter 5 of the LSB LOQAM. For a listing of specific data qualifiers and explanations, please refer to the Data Qualifier Definitions included in this report. The reported results are accurate within the limits of the method(s) and are representative only of the samples as received by the laboratory.

Analyses Included in this report:

Method Used:

Accreditations:

Classical/Nutrient Analyses (CNA)

Ammonia as N	EPA 350.1 (Water)	ISO
Ammonia/TKN	EPA 351.2 (Water)	ISO
Demand	SM 5210B (Water)	ISO
Nitrate and/or Nitrite	EPA 353.2 (Water)	ISO/DW
Phosphorous	EPA 365.1 (Water)	ISO
Solids	USGS I-3765-85 (Water)	ISO



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Sample Disposal Policy

Due to limited space for long term sample storage, LSB's policy is to dispose of samples on a periodic schedule. Air samples collected in summa canisters will be disposed of 30 days following the issuance of this report. All other sample media including original samples, sample extracts and or digestates will be disposed of, in accordance with applicable regulations, 60 days from the date of this report.

This sample disposal policy does not apply to criminal samples which are held until the laboratory is notified by the criminal investigators that case development and litigation are complete.

These samples may be held in the laboratory's custody for a longer period of time. If samples require storage beyond the 60-day period, please contact the Sample Control Coordinator by e-mail at R4SampleCustody@epa.gov.



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SAMPLES INCLUDED IN THIS REPORT

Project: 22-0182, Raymond POTW

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
22-0182-0001	E221402-01	Municipal Eff. Wastewater	3/30/22 15:30	3/31/22 11:10



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DATA QUALIFIER DEFINITIONS

U	The analyte was not detected at or above the reporting limit.
A	The analyte was analyzed in replicate. Reported value is an average value of the replicates.
H-6	Sample originally analyzed within holding time; some QC requirements not met. The reported result is from a second analysis performed for confirmation which occurred after the holding time expired.
J	The identification of the analyte is acceptable; the reported value is an estimate.
QM-2	Matrix Spike Recovery greater than method control limits
QM-4	Matrix Precision outside method control limits



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ACRONYMS AND ABBREVIATIONS

CAS Chemical Abstracts Service

Note: Analytes with no known CAS identifiers have been assigned codes beginning with "E", the EPA ID as assigned by the EPA Substance Registry System (www.epa.gov/srs), or beginning with "R4-", a unique identifier assigned by the EPA Region 4 laboratory.

MDL Method Detection Limit - The minimum concentration of a substance (an analyte) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero.

MRL Minimum Reporting Limit - Analyte concentration that corresponds to the lowest demonstrated level of acceptable quantitation. The MRL is sample-specific and accounts for preparation weights and volumes, dilutions, and moisture content of soil/sediments.

TIC Tentatively Identified Compound - An analyte identified based on a match with the instrument software's mass spectral library. A calibration standard has not been analyzed to confirm the compound's identification or the estimated concentration reported.

ACCREDITATIONS:

ISO Accredited to ISO/IEC 17025:2017 and accreditation requirements for Forensic Science Testing Laboratories.

Refer to the certificate and scope of accreditation FT-0330 at:
<http://www.epa.gov/aboutepa/about-region-4s-science-and-ecosystem-support-division-sesd>

NR Not accredited for this test.

DW Accredited for conformance with ISO/IEC 17025:2017 and testing elements in the Fifth Edition of the Manual for the Certification of Laboratories Analyzing Drinking Water, EPA 815-R-05-004, 2005.

Refer to the certificate and scope of accreditation AT-2628 at:
<http://www.epa.gov/aboutepa/about-region-4s-science-and-ecosystem-support-division-sesd>

ISO/DW Accredited to ISO/IEC 17025:2017 and accreditation requirements for Forensic Science Testing Labs, and conformance with ISO/IEC 17025:2017 and testing elements in the Manual for the Certification of Laboratories Analyzing Drinking Water.



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D.A.R.T. Id: 22-0182

Project: 22-0182, Raymond POTW - Reported by Kristin Trapp

Classical/Nutrient Analyses

Project: 22-0182, Raymond POTW

Sample ID: 22-0182-0001

Lab ID: E221402-01

Station ID: EFF001

Matrix: Municipal Eff. Wastewater

Date Collected: 3/30/22 15:30

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
7664-41-7	Ammonia as N	6.8	J, QM-2	mg/L	0.10	4/04/22 18:07	4/07/22 10:48	EPA 350.1
E17148461	Total Kjeldahl Nitrogen	7.5		mg/L	0.25	4/11/22 8:41	4/15/22 10:52	EPA 351.2
E1640606	BOD, 5 Day	6.5	A	mg/L	2.0	4/01/22 10:43	4/06/22 10:10	SM 5210B
E701177	Nitrate/Nitrite as N	0.14		mg/L	0.050	4/14/22 9:20	4/14/22 14:36	EPA 353.2
7723-14-0	Total Phosphorus	1.4		mg/L	0.050	4/06/22 14:50	4/06/22 15:22	EPA 365.1
E1642818	Total Suspended Solids	5.0	U, J, H-6, QM-4	mg/L	5.0	4/04/22 8:40	4/04/22 8:40	USGS I-3765-85



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Classical/Nutrient Analyses (CNA) - Quality Control

US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2203098 - C SM5210 BOD

Blank (2203098-BLK1)

Prepared: 04/01/22 Analyzed: 04/06/22

SM 5210B

BOD, 5 Day U 2.0 mg/L U

LCS (2203098-BS1)

Prepared: 04/01/22 Analyzed: 04/06/22

SM 5210B

BOD, 5 Day 206.70 2.0 mg/L 198.00 104 84.6-115.4

LCS (2203098-BS2)

Prepared: 04/01/22 Analyzed: 04/06/22

SM 5210B

BOD, 5 Day 208.20 2.0 mg/L 198.00 105 84.6-115.4

LCS (2203098-BS3)

Prepared: 04/01/22 Analyzed: 04/06/22

SM 5210B

BOD, 5 Day 210.70 2.0 mg/L 198.00 106 84.6-115.4

Batch 2204004 - C 350.1 Ammonia

Blank (2204004-BLK1)

Prepared: 04/04/22 Analyzed: 04/07/22

EPA 350.1

Ammonia as N U 0.050 mg/L U

LCS (2204004-BS1)

Prepared: 04/04/22 Analyzed: 04/07/22

EPA 350.1

Ammonia as N 0.95500 0.050 mg/L 1.0000 95.5 90-110

Matrix Spike (2204004-MS1)

Source: E221401-01

Prepared: 04/04/22 Analyzed: 04/07/22

EPA 350.1

Ammonia as N 1.1240 0.050 mg/L 1.0000 0.15600 96.8 90-110

Matrix Spike (2204004-MS2)

Source: E221402-01

Prepared: 04/04/22 Analyzed: 04/07/22

EPA 350.1

Ammonia as N 7.8320 0.10 mg/L 1.0000 6.7740 106 90-110

Matrix Spike Dup (2204004-MSD1)

Source: E221401-01

Prepared: 04/04/22 Analyzed: 04/07/22

EPA 350.1

Ammonia as N 1.0980 0.050 mg/L 1.0000 0.15600 94.2 90-110 2.34 10



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Classical/Nutrient Analyses (CNA) - Quality Control

US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2204004 - C 350.1 Ammonia

Matrix Spike Dup (2204004-MSD2)

Source: E221402-01

Prepared: 04/04/22 Analyzed: 04/07/22

EPA 350.1

Ammonia as N	8.0340	0.10	mg/L	1.0000	6.7740	126	90-110	2.55	10	QM-2
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MRL Verification (2204004-PS1)

Prepared: 04/04/22 Analyzed: 04/07/22

EPA 350.1

Ammonia as N	0.054000	0.050	mg/L	0.050000		108	70-130			MRL-2
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Batch 2204005 - C 351.2 TKN

Blank (2204005-BLK1)

Prepared: 04/11/22 Analyzed: 04/15/22

EPA 351.2

Total Kjeldahl Nitrogen	U	0.050	mg/L							U
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LCS (2204005-BS1)

Prepared: 04/11/22 Analyzed: 04/15/22

EPA 351.2

Total Kjeldahl Nitrogen	1.6520	0.050	mg/L	1.7500		94.4	90-110			
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Matrix Spike (2204005-MS1)

Source: E221402-01

Prepared: 04/11/22 Analyzed: 04/15/22

EPA 351.2

Total Kjeldahl Nitrogen	8.7000	0.25	mg/L	1.0000	7.5450	116	90-110			XM-1
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Matrix Spike Dup (2204005-MSD1)

Source: E221402-01

Prepared: 04/11/22 Analyzed: 04/15/22

EPA 351.2

Total Kjeldahl Nitrogen	8.7150	0.25	mg/L	1.0000	7.5450	117	90-110	0.172	20	XM-1
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MRL Verification (2204005-PS1)

Prepared: 04/11/22 Analyzed: 04/15/22

EPA 351.2

Total Kjeldahl Nitrogen	0.067000	0.050	mg/L	0.050000		134	70-130			MRL-2, QR-2
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Batch 2204006 - C 353.2 NO3-NO2

Blank (2204006-BLK1)

Prepared & Analyzed: 04/14/22

EPA 353.2

Nitrate/Nitrite as N	U	0.050	mg/L							U
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Project: 22-0182, Raymond POTW - Reported by Kristin Trapp

Classical/Nutrient Analyses (CNA) - Quality Control

US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2204006 - C 353.2 NO3-NO2

LCS (2204006-BS1)

Prepared & Analyzed: 04/14/22

EPA 353.2

Nitrate/Nitrite as N	0.49880	0.050	mg/L	0.50200		99.4	90-110			
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Matrix Spike (2204006-MS1)

Source: E221402-01

Prepared & Analyzed: 04/14/22

EPA 353.2

Nitrate/Nitrite as N	0.64510	0.050	mg/L	0.50200	0.13920	101	90-110			
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Matrix Spike Dup (2204006-MSD1)

Source: E221402-01

Prepared & Analyzed: 04/14/22

EPA 353.2

Nitrate/Nitrite as N	0.65220	0.050	mg/L	0.50200	0.13920	102	90-110	1.09	10	
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MRL Verification (2204006-PS1)

Prepared & Analyzed: 04/14/22

EPA 353.2

Nitrate/Nitrite as N	0.048200	0.050	mg/L	0.050000		96.4	70-130			MRL-2, U
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Batch 2204008 - C 2540 Solids

Blank (2204008-BLK1)

Prepared & Analyzed: 04/04/22

USGS I-3765-85

Total Suspended Solids	U	5.0	mg/L							U
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LCS (2204008-BS1)

Prepared & Analyzed: 04/04/22

USGS I-3765-85

Total Suspended Solids	95.800	5.0	mg/L	100.00		95.8	77.1-110			
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LCS Dup (2204008-BSD1)

Prepared & Analyzed: 04/04/22

USGS I-3765-85

Total Suspended Solids	96.700	5.0	mg/L	100.00		96.7	77.1-110	0.935	10	
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Duplicate (2204008-DUP1)

Source: E221402-01

Prepared & Analyzed: 04/04/22

USGS I-3765-85

Total Suspended Solids	1.8000	5.0	mg/L		1.3000			32.3	10	QM-4, U
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MRL Verification (2204008-PS1)

Prepared & Analyzed: 04/04/22

USGS I-3765-85

Total Suspended Solids	2.9000	5.0	mg/L	5.0000		58.0	57.1-130			MRL-2, U
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Classical/Nutrient Analyses (CNA) - Quality Control

US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 2204008 - C 2540 Solids

MRL Verification (2204008-PS1)

Prepared & Analyzed: 04/04/22

Batch 2204014 - C 365.1 TPhos

Blank (2204014-BLK1)

Prepared & Analyzed: 04/06/22

EPA 365.1

Total Phosphorus	U	0.010	mg/L							U
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LCS (2204014-BS1)

Prepared & Analyzed: 04/06/22

EPA 365.1

Total Phosphorus	0.36500	0.010	mg/L	0.37800		96.6	90-110			
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Matrix Spike (2204014-MS1)

Source: E221402-01

Prepared & Analyzed: 04/06/22

EPA 365.1

Total Phosphorus	1.8750	0.050	mg/L	0.49900	1.3950	96.2	90-110			
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Matrix Spike Dup (2204014-MSD1)

Source: E221402-01

Prepared & Analyzed: 04/06/22

EPA 365.1

Total Phosphorus	1.8750	0.050	mg/L	0.49900	1.3950	96.2	90-110	0.00	10	
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MRL Verification (2204014-PS1)

Prepared & Analyzed: 04/06/22

EPA 365.1

Total Phosphorus	0.011000	0.010	mg/L	0.010000		110	70-130			MRL-2
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 22-0182

Project: 22-0182, Raymond POTW - Reported by Kristin Trapp

Notes and Definitions for QC Samples

U	The analyte was not detected at or above the reporting limit.
MRL-2	MRL verification for Non-Potable Water matrix
QM-2	Matrix Spike Recovery greater than method control limits
QM-4	Matrix Precision outside method control limits
QR-2	MRL verification recovery greater than upper control limits.
XM-1	Sample background/spike ratio higher than method evaluation criteria