



Annual Report
April 1, 2020 to March 31, 2021
Gadsden-Etowah MS4
Gadsden, Etowah County, Alabama
S&ME Project No. 4482-20-045

PREPARED FOR:

City of Attalla (ALR040052)
City of Gadsden (ALR040053)
City of Glencoe (ALR040054)
City of Hokes Bluff (ALR040055)
City of Rainbow City (ALR040056)
City of Southside (ALR040057)
Etowah County (ALR040009)

PREPARED BY:

S&ME, Inc.
360D Quality Circle NW, Suite 450
Huntsville, AL 35806

June 1, 2020



June 1, 2021

Alabama Department of Environmental Management
Water Division - Storm Water Management Branch
1400 Coliseum Boulevard
Montgomery, Alabama 36110-2059

Attention: Ms. Cammie Ashmore

Reference: **Gadsden, Alabama Urbanized Area**
Gadsden-Etowah MS4 Entities
Phase II Small MS4 NPDES General Permit
Annual Report (April 1, 2020 to March 31, 2021)
S&ME Project No. 4482-20-045

Dear Ms. Ashmore:

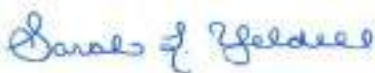
S&ME, Inc., on behalf of the Phase II Small MS4 Entities that comprise the *Gadsden, Alabama Urbanized Area*, is pleased to submit the attached Annual Report for the above-referenced project. This report covers the April 1, 2020 to March 31, 2021 reporting period for the following permitted entities:

Entity	ADEM Permit Number
City of Attalla	ALR040052
City of Gadsden	ALR040053
City of Glencoe	ALR040054
City of Hokes Bluff	ALR040055
City of Rainbow City	ALR040056
City of Southside	ALR040057
Etowah County	ALR040009

As discussed, this submittal will be through our Sharefile site and electronic copies of the documents will be provided on CD in lieu of a hardcopy submittal at a later date. For your convenience, the report appendices will be included as individual files. If additional information is required or requested, please contact the undersigned.

Sincerely,

S&ME, Inc.


Sarah L. Yeldell, P.E.
Project Manager


Deborah J. Jones, P.E.
Senior Engineer



Table of Contents

1.0	Introduction	1
1.1	Permit History.....	1
1.2	Storm Sewer System.....	2
1.3	Area and Population Description.....	2
1.4	Hydrologic Units in the Urbanized Area.....	3
1.5	Water Quality Concerns	4
1.6	Coordination Between Entities.....	5
1.7	Responsible Party	5
1.8	SWMPP Components.....	6
1.9	Annual Review	6
1.10	Updates to the SWMPP	6
1.11	Annual Report Components.....	7
2.0	Storm Water Monitoring	1
2.1	Rationale Statement.....	1
2.2	Monitoring Events.....	1
2.3	Addition and Removal of Monitoring Points.....	2
2.3.1	<i>Coosa River</i>	<i>2</i>
2.3.2	<i>Big Wills Creek.....</i>	<i>3</i>
2.3.3	<i>HB 3 Watershed</i>	<i>3</i>
2.3.4	<i>Monitoring Points SME 2 and SME 3.....</i>	<i>3</i>
2.4	Monitoring Results.....	4
2.4.1	<i>Monitoring Points AT 5 and SME 7.....</i>	<i>4</i>
2.4.2	<i>Monitoring Points SME 4, SME 5, and SME 6.....</i>	<i>4</i>
2.4.3	<i>Monitoring Point SME 1.....</i>	<i>4</i>
2.5	Statistical Analysis.....	4
2.5.1	<i>Overview</i>	<i>4</i>
2.5.2	<i>Approach to Statistical Analysis.....</i>	<i>5</i>
2.5.3	<i>Results of Statistical Evaluation</i>	<i>5</i>



2.6	Summary of Recommendations	7
3.0	Reporting and Record-Keeping	1
3.1	Annual Reports.....	1
3.2	Recordkeeping	1
4.0	City of Attalla (ALR040052)	1
4.1	Public Education and Public Involvement on Storm Water Impacts.....	1
4.1.1	<i>Implementation Status</i>	<i>1</i>
4.1.2	<i>Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period.....</i>	<i>2</i>
4.1.3	<i>Assessment of Controls</i>	<i>2</i>
4.1.4	<i>Proposed Changes</i>	<i>2</i>
4.1.5	<i>Responsible Party.....</i>	<i>2</i>
4.2	Illicit Discharge Detection and Elimination.....	2
4.2.1	<i>Implementation Status</i>	<i>2</i>
4.2.2	<i>Proposed Activities for the April 2, 2021 to March 31, 2022 Reporting Period.....</i>	<i>3</i>
4.2.3	<i>Assessment of Control.....</i>	<i>3</i>
4.2.4	<i>Proposed Changes</i>	<i>3</i>
4.2.5	<i>Responsible Party.....</i>	<i>3</i>
4.3	Construction Site Storm Water Runoff.....	3
4.3.1	<i>Implementation Status</i>	<i>3</i>
4.3.2	<i>Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period.....</i>	<i>4</i>
4.3.3	<i>Assessment of Controls</i>	<i>4</i>
4.3.4	<i>Proposed Changes</i>	<i>4</i>
4.3.5	<i>Responsible Party.....</i>	<i>4</i>
4.4	Post-Construction Storm Water Management in New Development and Redevelopment	4
4.4.1	<i>Implementation Status</i>	<i>4</i>
4.4.2	<i>Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period.....</i>	<i>5</i>
4.4.3	<i>Assessment of Control.....</i>	<i>5</i>
4.4.4	<i>Proposed Changes</i>	<i>5</i>
4.4.5	<i>Responsible Party.....</i>	<i>5</i>
4.5	Pollution Prevention and Good Housekeeping for Municipal Operations	5



4.5.1	Implementation Status	5
4.5.2	Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period.....	6
4.5.3	Assessment of Control.....	6
4.5.4	Proposed Changes	6
4.5.5	Responsible Party.....	6
4.6	Overall Program Evaluation	6
4.6.1	Major Accomplishments	6
4.6.2	Overall Programs Strengths and Weaknesses.....	7
4.6.3	Future Direction of the Program.....	7
4.6.4	Overall Effectiveness of the SWMPP.....	8
4.7	Agency Certification	8
5.0	City of Gadsden (ALR040053)	1
5.1	Public Education and Public Involvement on Storm Water Impacts.....	1
5.1.1	Implementation Status	1
5.1.2	Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period.....	2
5.1.3	Assessment of Control.....	3
5.1.4	Proposed Changes	3
5.1.5	Responsible Party.....	3
5.2	Illicit Discharge Detection and Elimination.....	3
5.2.1	Implementation Status	3
5.2.2	Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period.....	3
5.2.3	Assessment of Control.....	4
5.2.4	Proposed Changes	4
5.2.5	Responsible Party.....	4
5.3	Construction Site Storm Water Runoff.....	4
5.3.1	Implementation Status	4
5.3.2	Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period.....	5
5.3.3	Assessment of Control.....	5
5.3.4	Proposed Changes	5
5.3.5	Responsible Party.....	5



5.4	Post-Construction Storm Water Management in New Development and Redevelopment	5
5.4.1	Implementation Status	5
5.4.2	Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period	6
5.4.3	Assessment of Control	6
5.4.4	Proposed Changes	6
5.4.5	Responsible Party	6
5.5	Pollution Prevention and Good Housekeeping for Municipal Operations	6
5.5.1	Implementation Status	6
5.5.2	Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period	7
5.5.3	Assessment of Controls	7
5.5.4	Proposed Changes	7
5.5.5	Responsible Party	8
5.6	Overall Program Evaluation	8
5.6.1	Major Accomplishments	8
5.6.2	Overall Programs Strengths and Weaknesses	9
5.6.3	Future Direction of the Program	9
5.6.4	Overall Effectiveness of the SWMPP	9
5.7	Agency Certification	10
6.0	City of Glencoe (ALR040054)	1
6.1	Public Education and Public Involvement on Storm Water Impacts	1
6.1.1	Implementation Status	1
6.1.2	Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period	2
6.1.3	Assessment of Controls	2
6.1.4	Proposed Changes	2
6.1.5	Responsible Party	2
6.2	Illicit Discharge Detection and Elimination	3
6.2.1	Implementation Status	3
6.2.2	Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period	3
6.2.3	Assessment of Control	3
6.2.4	Proposed Changes	3



6.2.5	Responsible Party.....	4
6.3	Construction Site Storm Water Runoff.....	4
6.3.1	Implementation Status.....	4
6.3.2	Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period.....	4
6.3.3	Assessment of Control.....	4
6.3.4	Proposed Changes	4
6.3.5	Responsible Party.....	5
6.4	Post-Construction Storm Water Management in New Development and Redevelopment	5
6.4.1	Implementation Status.....	5
6.4.2	Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period.....	5
6.4.3	Assessment of Control.....	6
6.4.4	Proposed Changes	6
6.4.5	Responsible Party.....	6
6.5	Pollution Prevention and Good Housekeeping for Municipal Operations	6
6.5.1	Implementation Status.....	6
6.5.2	Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period.....	6
6.5.3	Assessment of Control.....	7
6.5.4	Proposed Changes	7
6.5.5	Responsible Party.....	7
6.6	Overall Program Evaluation.....	7
6.6.1	Major Accomplishments	7
6.6.2	Overall Programs Strengths and Weaknesses.....	8
6.6.3	Future Direction of the Program.....	8
6.6.4	Overall Effectiveness of the SWMPP.....	8
6.7	Agency Certification	9
7.0	City of Hokes Bluff (ALR040055).....	1
7.1	Public Education and Public Involvement on Storm Water Impacts.....	1
7.1.1	Implementation Status.....	1
7.1.2	Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period.....	3
7.1.3	Assessment of Control.....	3



7.1.4	<i>Proposed Changes</i>	3
7.1.5	<i>Responsible Party</i>	3
7.2	Illicit Discharge Detection and Elimination	3
7.2.1	<i>Implementation Status</i>	3
7.2.2	<i>Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period</i>	4
7.2.3	<i>Assessment of Control</i>	4
7.2.4	<i>Proposed Changes</i>	4
7.2.5	<i>Responsible Party</i>	4
7.3	Construction Site Storm Water Runoff	4
7.3.1	<i>Implementation Status</i>	4
7.3.2	<i>Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period</i>	5
7.3.3	<i>Assessment of Control</i>	5
7.3.4	<i>Proposed Changes</i>	5
7.3.5	<i>Responsible Party</i>	5
7.4	Post-Construction Storm Water Management in New Development and Redevelopment	5
7.4.1	<i>Implementation Status</i>	5
7.4.2	<i>Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period</i>	6
7.4.3	<i>Assessment of Control</i>	6
7.4.4	<i>Proposed Changes</i>	6
7.4.5	<i>Responsible Party</i>	6
7.5	Pollution Prevention and Good Housekeeping for Municipal Operations	6
7.5.1	<i>Implementation Status</i>	6
7.5.2	<i>Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period</i>	7
7.5.3	<i>Assessment of Control</i>	7
7.5.4	<i>Proposed Changes</i>	7
7.5.5	<i>Responsible Party</i>	7
7.6	Overall Program Evaluation	7
7.6.1	<i>Major Accomplishments</i>	7
7.6.2	<i>Overall Programs Strengths and Weaknesses</i>	8
7.6.3	<i>Future Direction of the Program</i>	9
7.6.4	<i>Overall Effectiveness of the SWMPP</i>	9



7.7	Agency Certification	9
8.0	Rainbow City (ALR040056)	1
8.1	Public Education and Public Involvement on Storm Water Impacts.....	1
8.1.1	Implementation Status	1
8.1.2	Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period.....	2
8.1.3	Assessment of Control.....	2
8.1.4	Proposed Changes	2
8.1.5	Responsible Party.....	2
8.2	Illicit Discharge Detection and Elimination.....	3
8.2.1	Implementation Status	3
8.2.2	Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period.....	3
8.2.3	Assessment of Control.....	3
8.2.4	Proposed Changes	3
8.2.5	Responsible Party.....	4
8.3	Construction Site Storm Water Runoff.....	4
8.3.1	Implementation Status	4
8.3.2	Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period.....	4
8.3.3	Assessment of Control.....	4
8.3.4	Proposed Changes	4
8.3.5	Responsible Party.....	5
8.4	Post-Construction Storm Water Management in New Development and Redevelopment	5
8.4.1	Implementation Status	5
8.4.2	Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period.....	5
8.4.3	Assessment of Control.....	5
8.4.4	Proposed Changes	5
8.4.5	Responsible Party.....	6
8.5	Pollution Prevention and Good Housekeeping for Municipal Operations	6
8.5.1	Implementation Status	6
8.5.2	Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period.....	6
8.5.3	Assessment of Control.....	6



8.5.4	<i>Proposed Changes</i>	7
8.5.5	<i>Responsible Party</i>	7
8.6	Overall Program Evaluation	7
8.6.1	<i>Major Accomplishments</i>	7
8.6.2	<i>Overall Programs Strengths and Weaknesses</i>	8
8.6.3	<i>Future Direction of the Program</i>	8
8.6.4	<i>Overall Effectiveness of the SWMPP</i>	8
8.7	Agency Certification	9
9.0	City of Southside (ALR040057)	1
9.1	Public Education and Public Involvement on Storm Water Impacts	1
9.1.1	<i>Implementation Status</i>	1
9.1.2	<i>Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period</i>	2
9.1.3	<i>Control</i>	2
9.1.4	<i>Proposed Changes</i>	3
9.1.5	<i>Responsible Party</i>	3
9.2	Illicit Discharge Detection and Elimination	3
9.2.1	<i>Implementation Status</i>	3
9.2.2	<i>Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period</i>	3
9.2.3	<i>Assessment of Control</i>	4
9.2.4	<i>Proposed Changes</i>	4
9.2.5	<i>Responsible Party</i>	4
9.3	Construction Site Storm Water Runoff	4
9.3.1	<i>Implementation Status</i>	4
9.3.2	<i>Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period</i>	4
9.3.3	<i>Assessment of Control</i>	5
9.3.4	<i>Proposed Changes</i>	5
9.3.5	<i>Responsible Party</i>	5
9.4	Post-Construction Storm Water Management in New Development and Redevelopment	5
9.4.1	<i>Implementation Status</i>	5
9.4.2	<i>Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period</i>	5



9.4.3	Assessment of Control.....	6
9.4.4	Proposed Changes	6
9.4.5	Responsible Party.....	6
9.5	Pollution Prevention and Good Housekeeping for Municipal Operations	6
9.5.1	Implementation Status	6
9.5.2	Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period.....	7
9.5.3	Assessment of Control.....	7
9.5.4	Proposed Changes	7
9.5.5	Responsible Party.....	7
9.6	Overall Program Evaluation	7
9.6.1	Major Accomplishments	7
9.6.2	Overall Programs Strengths and Weaknesses.....	8
9.6.3	Future Direction of the Program.....	8
9.6.4	Overall Effectiveness of the SWMPP.....	9
9.7	Agency Certification	9
10.0	Etowah County (ALR040009)	1
10.1	Public Education and Public Involvement on Storm Water Impacts.....	1
10.1.1	Implementation Status	1
10.1.2	Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period.....	2
10.1.3	Assessment of Control.....	2
10.1.4	Proposed Changes	2
10.1.5	Responsible Party.....	3
10.2	Illicit Discharge Detection and Elimination.....	3
10.2.1	Implementation Status	3
10.2.2	Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period.....	3
10.2.3	Assessment of Control.....	3
10.2.4	Proposed Changes	3
10.2.5	Responsible Party.....	3
10.3	Construction Site Storm Water Runoff.....	4
10.3.1	Implementation Status	4



10.3.2	<i>Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period</i>	4
10.3.3	<i>Assessment of Control</i>	4
10.3.4	<i>Proposed Changes</i>	4
10.3.5	<i>Responsible Party</i>	4
10.4	Post-Construction Storm Water Management in New Development and Redevelopment	4
10.4.1	<i>Implementation Status</i>	4
10.4.2	<i>Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period</i>	5
10.4.3	<i>Assessment of Control</i>	5
10.4.4	<i>Proposed Changes</i>	5
10.4.5	<i>Responsible Party</i>	5
10.5	Pollution Prevention and Good Housekeeping for County Operations	6
10.5.1	<i>Implementation Status</i>	6
10.5.2	<i>Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period</i>	6
10.5.3	<i>Assessment of Control</i>	6
10.5.4	<i>Proposed Changes</i>	7
10.5.5	<i>Responsible Party</i>	7
10.6	Overall Program Evaluation	7
10.6.1	<i>Major Accomplishments</i>	7
10.6.2	<i>Overall Programs Strengths and Weaknesses</i>	7
10.6.3	<i>Future Direction of the Program</i>	8
10.6.4	<i>Overall Effectiveness of the SWMPP</i>	8
10.7	Agency Certification	9

List of Tables

Table 1-1: Responsible Officials and Authorization Dates.....	1
Table 1-2: Permit Numbers for MS4 Entities.....	2
Table 1-3: Populations from 2000 and 2010 Census	2
Table 1-4: Hydrologic Hierarchy	3
Table 1-5: Watersheds in the Urbanized Area	3
Table 1-6: Subwatersheds in the Urbanized Area	3
Table 1-7: Impaired Waterbody Segments in the Urbanized Area	4



Table 1-8: MS4 Storm Water Steering Committee	6

Table 2-1: Monitoring Events	1

Appendices

Appendix A – Figures

Appendix B – Charts and Statistics

Appendix C – Monitoring Reports

Appendix D – City of Attalla (ALR0400052)

Appendix D-1 – City of Attalla Figures

Appendix D-2 – City of Attalla Control Measure Tables

Appendix D-3 – City of Attalla Supporting Documents

Appendix E – City of Gadsden (ALR0400053)

Appendix E-1 – City of Gadsden Figures

Appendix E-2 – City of Gadsden Control Measure Tables

Appendix E-3 – City of Gadsden Supporting Documents

Appendix F – City of Glencoe (ALR0400054)

Appendix F-1 – City of Glencoe Figures

Appendix F-2 – City of Glencoe Control Measure Tables

Appendix F-3 – City of Glencoe Supporting Documents

Appendix G – City of Hokes Bluff (ALR0400055)

Appendix G-1 – City of Hokes Bluff Figures

Appendix G-2 – City of Hokes Bluff Control Measure Tables

Appendix G-3 – City of Hokes Bluff Supporting Documents

Appendix H – City of Rainbow City (ALR0400056)

Appendix H-1 – City of Rainbow City Figures

Appendix H-2 – City of Rainbow City Control Measure Tables

Appendix H-3 – City of Rainbow City Supporting Documents

Appendix I – City of Southside (ALR0400057)

Appendix I-1 – City of Southside Figures

Appendix I-2 – City of Southside Control Measure Tables

Appendix I-3 – City of Southside Supporting Documents

Annual Report: April 1, 2020 to March 31, 2021

Gadsden-Etowah MS4

Gadsden, Etowah County, Alabama

S&ME Project No. 4482-20-045



Appendix J – Etowah County (ALR0400009)

Appendix J-1 – Etowah County Figures

Appendix J-2 – Etowah County Control Measure Tables

Appendix J-3 – Etowah County Supporting Documents



1.0 Introduction

S&ME, Inc. has prepared this Annual Report for the *Gadsden, Alabama Urbanized Area* Phase II Small Municipal Separate Storm Sewer System (MS4) in accordance with S&ME Proposal No. 44-2000255, dated September 18, 2020. The urbanized area consists of the following entities (jurisdictions): The City of Gadsden, City of Rainbow City, City of Southside, City of Glencoe, City of Hokes Bluff, City of Attalla, and portions of unincorporated Etowah County. The proposal authorization date and responsible official for each entity are provided in Table 1.1.

Table 1-1: Responsible Officials and Authorization Dates

Entity	Name	Date
City of Attalla	Larry Means, Mayor	October 20, 2020
City of Gadsden	Sherman Guyton, Mayor	October 22, 2020
City of Glencoe	Chris Hare, Mayor	October 19, 2020
City of Hokes Bluff	Scott Reeves, Mayor	November 10, 2020
City of Rainbow City	Joe Taylor, Mayor	October 20, 2020
City of Southside	Dana Snyder, Mayor	October 26, 2020
Etowah County	Jamie Grant, Commission Chair	N/A

The Annual Report is required by Part VI of the Alabama Department of Environmental Management (ADEM) National Pollutant Discharge Elimination System (NPDES) General Permit ALR040000 for discharges from regulated small municipal separate storm sewer systems (MS4). Information to complete the report was provided by each MS4 entity and compiled by S&ME.

1.1 Permit History

The Storm Water Phase II Final Rule issued by the United States Environmental Protection Agency (USEPA) in 1999 requires nationwide coverage of all operators of small MS4s located within the boundaries of an “urbanized area” as defined by the latest decennial Census. Based on the results of the 2010 census, the Bureau of the Census designated the *Gadsden, Alabama Urbanized Area* to include the City of Attalla, the City of Gadsden, the City of Glencoe, the City of Hokes Bluff, City of Rainbow City, the City of Southside, and portions of unincorporated Etowah County. A map outlining the approximate boundary of the *Gadsden, Alabama Urbanized Area* is included in **Appendix A, Figure 1**.

The *Gadsden, Alabama Urbanized Area* initially applied for and received a NPDES MS4 Phase II General Permit from ADEM in 2003, with the seven entities as co-permittees. Separate permits were issued to the Gadsden-Etowah MS4 members with an effective date of October 1, 2016. Permit numbers for each entity are provided in Table 1-2. The current general Phase II permit will expire on **September 30, 2021**.



Table 1-2: Permit Numbers for MS4 Entities

Entity	ADEM Permit Number
City of Attalla	ALR040052
City of Gadsden	ALR040053
City of Glencoe	ALR040054
City of Hokes Bluff	ALR040055
City of Rainbow City	ALR040056
City of Southside	ALR040057
Etowah County	ALR040009

Maps outlining the approximate urbanized area and city limits for each entity are included in their corresponding appendix. A copy of the NPDES General Permit is included in the 2017 Storm Water Management Program Plan (SWMPP).

1.2 Storm Sewer System

A Municipal Separate Storm Sewer System (MS4) is defined by 40 CFR Part 122.26(b)(8) to be a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) that is:

- (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;
- (ii) Designed or used for collecting or conveying storm water;
- (iii) Not a combined sewer; and,
- (iv) Not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

1.3 Area and Population Description

The *Gadsden, Alabama Urbanized Area* is located in northeast Alabama and encompasses approximately 38,223 acres. Populations of each entity covered by the referenced NPDES General Permits are shown in the following table.

Table 1-3: Populations from 2000 and 2010 Census

Entity	2000 Census Population	2010 Census Population
City of Attalla	6,592	6,048
City of Gadsden	38,978	36,856



Entity	2000 Census Population	2010 Census Population
City of Glencoe	5,152	5,160
City of Hokes Bluff	4,149	4,286
City of Rainbow City	8,428	9,602
City of Southside	7,036	8,412
Etowah County	103,459*	104,430*

* Total for the county, including municipalities

1.4 Hydrologic Units in the Urbanized Area

Neely Henry Lake (Coosa River) is the primary receiving water for the Gadsden-Etowah MS4. Hydrologic Hierarchy, Watersheds, and Subwatersheds are provided in the tables below.

Table 1-4: Hydrologic Hierarchy

Region	03	South Atlantic-Gulf
Subregion	03-15	Alabama River Basin
Basin	03-15-01	Coosa-Tallapoosa: Above the confluence of and including the Coosa and Tallapoosa River Basins
Subbasin	03-15-01-06	Middle Coosa

Table 1-5: Watersheds in the Urbanized Area

Watershed	HUC
Coosa River-Black Creek	03150106-01
Big Wills Creek	03150106-02
Coosa River-Big Canoe Creek	03150106-03

Table 1-6: Subwatersheds in the Urbanized Area

Subwatershed	HUC	Total Area (Acres)
Little Wills Creek	03150106-01-06	18,121
Black Creek	03150106-01-07	40,879
Horton Creek	03150106-01-08	16,902
Dry Creek	03150106-02-02	9,778
Big Cove Creek	03150106-02-03	18,028
Turkey Town Creek	03150106-02-04	57,474
Little Canoe Creek-Lake Sumatanga	03150106-03-04	20,260
Lower Big Canoe Creek	03150106-03-06	33,299



Subwatershed	HUC	Total Area (Acres)
Coosa River-H. Neely Henry Lake	03150106-03-09	46,439
Lower Ohatchee Creek	03150106-04-05	19,980

1.5 Water Quality Concerns

Section 303(d) of the Clean Water Act (CWA), as amended by the Water Quality Act of 1987, and EPA's Water Quality Planning and Management Regulations (40CFR130) require states to identify waterbodies not in compliance with the water quality standards applicable to their designated use classifications. The identified waters are prioritized based on severity of the pollution. Section 303(d) then requires that total maximum daily loads (TMDLs) be determined for all pollutants causing violation of applicable water quality standards in each identified segment. The TMDL process establishes the allowable loading of pollutants, or other quantifiable parameters for a waterbody, based on the relationship between pollution sources and in-stream water quality conditions.

As mentioned in Section 1.4, Neely Henry Lake is the primary receiving water for the Gadsden-Etowah MS4. In 1996, the ADEM identified five of the six reservoirs on the Coosa River within the State of Alabama's borders as being impaired, including Neely Henry Lake. The following table summarizes the impaired segments of Neely Henry Lake.

Table 1-7: Impaired Waterbody Segments in the Urbanized Area

Assessment Unit ID	Waterbody Name	Uses	Causes	Sources
AL03150106-0309-101	Coosa River (Neely Henry Lake)	Swimming Fish & Wildlife	Nutrients pH Organic Enrichment (CBOD, NBOD)	Industrial Municipal Flow regulation/modification Upstream sources
AL03150106-0309-102	Coosa River (Neely Henry Lake)	Fish & Wildlife	Nutrients pH Organic Enrichment (CBOD, NBOD)	Industrial Municipal Flow regulation/modification Upstream sources
AL03150106-0104-101	Coosa River (Neely Henry Lake)	Fish & Wildlife	Nutrients pH Organic Enrichment (CBOD, NBOD) Priority Organics (PCBs)	Industrial Municipal Flow regulation/modification Upstream sources Contaminated sediments
AL03150106-0104-102	Coosa River (Neely Henry Lake)	Public Water Supply Fish & Wildlife	Nutrients pH Organic Enrichment (CBOD, NBOD) Priority Organics (PCBs)	Industrial Municipal Flow regulation/modification Upstream sources Contaminated sediments



Sources of nutrient and organic enrichment from non-point sources within the Coosa River watershed include:

- Runoff from pastures
- Runoff from animal operations
- Direct discharge to streams due to cattle
- Improper land application of animal waste
- Failing septic systems
- Urban runoff

Point source contributors of storm water pollution within the Coosa River watershed include:

- Discharge from wastewater treatment plants
- Discharge from industrial operations

In 2008 the EPA approved TMDLs for Neely Henry Lake related to Nutrients (Total Phosphorous), pH, and Dissolved Oxygen. The Gadsden-Etowah MS4 is required to achieve a **30% reduction in Total Phosphorus discharge loading**.

Part IV.D of the NPDES General Permit requires that the SWMPP include BMPs and control measures specifically targeted to achieve the waste load allocations prescribed in the TMDL. The SWMPP must also include monitoring provisions to document that the waste load allocations prescribed in the TMDL are being achieved.

1.6 Coordination Between Entities

Each of the seven entities will provide at least one member to the Gadsden-Etowah Storm Water Steering Committee. Each entity will be responsible for providing the required annual updates and monitoring data to the Steering Committee.

Coordination between departments and individuals internal to each of the eight entities is established in each section of the Plan specific to the individual entities.

In March 2014, the Gadsden-Etowah Storm Water Steering Committee developed an Illicit Discharge Detection and Elimination (IDDE) Program for the entities to collectively use as a guidance. The IDDE Program is included in the 2017 SWMPP.

1.7 Responsible Party

Each entity is responsible for the coordination and implementation of their entity's SWMPP. Each entity provides a representative to participate on the Storm Water Steering Committee for the urbanized area. The Storm Water Steering Committee is responsible for the implementation of the monitoring plan. Current membership of the Storm Water Steering Committee is as follows:



Table 1-8: MS4 Storm Water Steering Committee

Entity	Contact	Phone Number	Email
City of Gadsden	Jeremy Ward	256-549-4527	jward@cityofgadsden.com
City of Gadsden	Heath Williamson	256-549-4520	hwilliamson@cityofgadsden.com
City of Attalla	Jason Nicholson	256-441-9200	jason.attalla@gmail.com
City of Rainbow City	Joel Garmon	256-413-1240	jgarmon@rbcalabama.com
City of Southside	Judd Rich	256-442-9775 Ext. 103	jrich@cityofsouthside.com
City of Glencoe	Todd Means	256-492-1424	toddmeans@cityofglencoe.net
City of Hokes Bluff	Lisa Johnson	256-492-2414	hbcity@cityofhokesbluff.net
Etowah County	Tim Graves	256-549-5358	tgraves@etowahcounty.org
Etowah County	Robert Nail	256-549-5358	Rnail@etowahcounty.org

1.8 SWMPP Components

Part III.B of the NPDES General Permit requires that the Permittee develop and implement a storm water management program that includes the following five minimum control measures:

1. Public Education and Public Involvement on Storm Water Impacts
2. Illicit Discharge Detection and Elimination (IDDE)
3. Construction Site Storm Water Runoff Control
4. Post-Construction Storm Water Management in New Development and Redevelopment
5. Pollution Prevention/Good Housekeeping for Municipal Operations

In 2016, S&ME was retained by the Gadsden-Etowah Storm Water Steering Committee to revise and update the SWMPP for the Gadsden-Etowah MS4. The updated SWMPP was submitted to the ADEM on January 1, 2017. ADEM approved the submitted SWMPP in January of 2017.

1.9 Annual Review

The SWMPP will be reviewed annually by each entity in preparation for the annual report required by Part V of the NPDES General Permit. The Storm Water Steering Committee will review the monitoring plan annually.

1.10 Updates to the SWMPP

The SWMPP may be updated following the procedures laid out in Part IV.B.2 of the NPDES General Permit. Changes to the SWMPP adding components, controls, or requirements may be made at any time, provided the ADEM is notified in writing. The changes must also be documented in the annual report.



Permission to remove or replace components, controls, or requirements in the SWMPP must be requested from the ADEM a minimum of 60 days prior to making the change. If the request is denied, the ADEM will provide a written response giving the reason for the decision.

1.11 Annual Report Components

Part VI of the NPDES General Permit requires that the Gadsden-Etowah MS4 prepare and submit annual reports to the ADEM each year by May 31. The Annual Report must cover the year prior to the submittal date (April 1 through March 31) and is required to include the following:

1. Contacts and responsible parties who had input to and are responsible for the preparation of the annual report
2. Overall evaluation of the SWMPP-developments and progress on the following:
 - a. Major accomplishments
 - b. Overall program strengths/weaknesses
 - c. Future direction of the program
 - d. Overall determination of the effectiveness of the SWMPP considering water quality/watershed improvements
 - e. Measurable goals that were not performed and reasons why the goals were not accomplished
 - f. Evaluation of the monitoring data
3. A narrative report of all minimum storm water control measures of the permit to include the following:
 - a. Minimum control measures completed and in progress
 - b. Assessment of the controls
 - c. Discussion of proposed BMP revisions or any identified measurable goals that apply to the minimum storm water control measures
4. Summary table of the storm water controls that are planned/scheduled for the next reporting cycle
5. Results of information collected and analyzed during the reporting period including monitoring data used to assess the success of the program at reducing the discharge of pollutants to the Maximum Extent Practical (MEP)
6. Notice of reliance on another entity to satisfy some of your permit obligations
7. All monitoring results collected during the reporting period
8. Proposed changes to the SWMPP



2.0 Storm Water Monitoring

2.1 Rationale Statement

As discussed in Section 1.4, the Gadsden-Etowah MS4 currently discharges to an impaired waterbody. Part IV.D.1(c) of the NPDES General Permit requires that the SWMPP include a monitoring plan to assess the effectiveness of the BMPs in achieving the waste load reductions/allocations outlined in the TMDL.

The intent of the proposed monitoring program is to evaluate the effectiveness of the City's BMPs in achieving the required reduction as established in the TMDL and to generally evaluate overall water quality. Where deviations are documented and/or expected, the collected monitoring data will be used to determine the extent and cause of the pollutant of concern.

The Storm Water Monitoring Plan including monitoring parameters, monitoring locations, field documentation, and sampling procedures is described in Section 2 of the SWMPP dated January 1, 2017.

2.2 Monitoring Events

Beginning in January 2013, S&ME was retained by the Gadsden-Etowah Storm Water Steering Committee to collect the required quarterly surface water samples and provide analyses of the sampling events.

Table 2-1: Monitoring Events to Date

MS4 Reporting Period	Monitoring Event	Date(s) Monitoring Conducted
April 1, 2012 – March 31, 2013	2013 Q1	March 12 & 13, 2013
April 1, 2013 – March 31, 2014	2013 Q2	May 8 & 20, 2013
	2013 Q3	September 23, 2013
	2013 Q4	December 10, 2013
	2014 Q1	February 6, 2014
April 1, 2014 – March 31, 2015	2014 Q2	June 26, 2014
	2014 Q3	September 30, 2014
	2014 Q4	November 19, 2014
	2015 Q1	March 23, 2015
April 1, 2015 – March 31, 2016	2015 Q2	April 22, 2015
	2015 Q3	September 30, 2015
	2015 Q4	November 19, 2015
	2016 Q1	March 15, 2016



MS4 Reporting Period	Monitoring Event	Date(s) Monitoring Conducted
April 1, 2016 – March 31, 2017	2016 Q2	June 29, 2016
	2016 Q3	August 9, 2016
	2016 Q4	December 7, 2016
	2017 Q1	March 2, 2017
April 1, 2017 – March 31, 2018	2017 Q2	June 21, 29, & 30 and July 5, 2017
	2017 Q3	August 16 & 17, 2017
	2017 Q4	October 25 & 26, 2017
	2018 Q1	March 27 & 28, 2018
April 1, 2018 – March 31, 2019	2018 Q2	June 26 & 29, 2018
	2018 Q3	August 1 & 2, 2018
	2018 Q4	December 10 & 11, 2018
	2019 Q1	April 15 & 17, 2019
April 1, 2019 – March 31, 2020	2019 Q2	June 11 & 12, 2019
	2019 Q3	August 27 & 28, 2019
	2019 Q4	October 29 & 30, 2019
	2020 Q1	March 30 & 31, 2020
April 1, 2020 – March 31, 2021	2020 Q2	June 10, 2020
	2020 Q3	September 21, 2020
	2020 Q4	December 17, 2020
	2021 Q1	March 18, 2021

A monitoring report was issued to the members of the Steering Committee following each monitoring event. Copies of the reports for the monitoring events conducted during the April 1, 2020 to March 31, 2021 reporting period are provided in **Appendix C**.

2.3 Addition and Removal of Monitoring Points

Following evaluation of the monitoring program for the 2019-2020 Annual Report in May of 2020, monitoring points CO14, SME 3, and GD3 were removed from the monitoring program and monitoring points SME 4, SME 5, SME 6, SME 7, and SME 8 were added. The changes to the monitoring program were implemented beginning with the 2020 fourth quarter sampling event. The monitoring locations are identified on Figure 2 in **Appendix A**.

2.3.1 Coosa River

Three monitoring points were added to assess water quality in the Coosa River where it enters the MS4, in the central portion of the MS4, and where it leaves the MS4 (SME 4, SME 5, and SME 6, respectively). The intent of the new monitoring points is to directly compare the assessed parameters as the Coosa River flows through the MS4.



2.3.2 *Big Wills Creek*

Monitoring point SME 7 was added to assess water quality in Big Wills Creek upstream of monitoring point AT 5, where elevated levels of orthophosphate, total phosphorous, nitrate-nitrite, total Kjeldahl nitrogen, and total suspended solids have been observed during past monitoring events. The monitoring point was sited where Big Wills Creek crosses the 2010 Urbanized Area boundary near Attalla.

Monitoring point AT 5 is located downstream of the confluence of Big Wills Creek and Little Wills Creek. Big Wills Creek has its headwaters in Valley Head, Alabama and flows through Fort Payne prior to entering the Gadsden Urbanized Area. The Big Wills Creek watershed encompasses approximately 257 square miles above monitoring point AT 5. By contrast, the Little Wills Creek watershed encompasses approximately 28 square miles above monitoring point AT 5. Approximately seven square miles of the Gadsden-Etowah MS4 contribute to Big Wills Creek upstream of monitoring point AT 5.

The new monitoring point is intended to determine whether the elevated levels of phosphorous and nitrogen observed at point AT 5 are entering the MS4 from Big Wills Creek.

2.3.3 *HB 3 Watershed*

Monitoring point HB 3 is located to assess discharges from Hokes Bluff to the Coosa River; however, the watershed for the monitoring point also captures approximately 1.3 square miles of land not inside the urbanized area. Monitoring point SME 8 was added to assess water quality characteristics of runoff from a portion of Hokes Bluff for comparison with the values obtained at HB 3.

2.3.4 *Monitoring Points SME 2 and SME 3*

The 2019-2020 Annual Report included a recommendation that monitoring point SME 3 be removed from the monitoring program. Accordingly, monitoring point SME 3 was not sampled for the 2020 Q4, 2021 Q1, or the 2020 Q2 monitoring events.

During the evaluation of the monitoring program for the current Annual Report, it was determined that the 2019-2020 Annual Report contained a typographical error misidentifying SME 2 as SME 3. The report stated SME 3, but listed the characteristics of SME 2. Upon further analysis, it appears that monitoring point SME 3 was meant to be retained and monitoring point SME 2 was meant to be removed.

Monitoring point SME 3 was sited to observe water quality at the location where Coal Creek enters the Coosa River. The sample is collected by boat. The Coal Creek watershed encompasses approximately 3.9 square miles and is located entirely within the MS4. **The Gadsden-Etowah MS4 will resume monitoring SME 3 during the 2021 Q3 sampling event.**

In keeping with the recommendation made in the previous Annual Report, **the Gadsden-Etowah MS4 proposes that monitoring be discontinued at monitoring point SME 2.** The SME 2 watershed is only 1.05 square miles and has very similar land use characteristics to the much larger GD 7 watershed. Past monitoring results at points GD 7 and SME 2 indicate similar results at both locations, suggesting that SME 2 is redundant.



2.4 Monitoring Results

A total of 33 quarterly monitoring events have been conducted since the Monitoring Program was first implemented in March of 2013. Charts 1 through 9 in **Appendix B** summarize the analytical data collected during these monitoring events.

2.4.1 *Monitoring Points AT 5 and SME 7*

Monitoring point SME 7 was first sampled in December 2020 and was only sampled twice during the reporting period; however, in both cases turbidity, nitrate-nitrite, and orthophosphate values were higher at AT 5 than upstream at SME 7. The initial data seem to indicate that Little Wills Creek may be a larger contributor to elevated phosphorous and nitrogen levels at AT 5 than previously assumed. The Gadsden-Etowah MS4 will continue to monitor points AT 5 and SME 7 during the April 1, 2021 to March 31, 2022 monitoring period.

2.4.2 *Monitoring Points SME 4, SME 5, and SME 6*

Monitoring points SME 4, SME 5, and SME 6 were first sampled in December 2020 and were only sampled twice during the reporting period. In December 2020, turbidity, nitrate-nitrite, TKN, and TSS levels in the Coosa River were higher entering the MS4 at SME 4 and lower leaving the MS4 at SME 6. In March 2021, they were higher at SME 6 leaving the MS4 and lower at SME 4 entering the MS4. No conclusions can be drawn from the limited data collected so far. The Gadsden-Etowah MS4 will continue to monitor points SME 4 and SME 6 during the April 1, 2021 to March 31, 2022 monitoring period.

2.4.3 *Monitoring Point SME 1*

Monitoring point SME 1 was sited to observe water quality at the location where the combined flow from Big Wills Creek, Black Creek, and Horton Creek enters the Coosa River, approximately 6.6 miles downstream from AT 5. Monitoring point GD 8 is located in Black Creek and monitoring point RC 2 is located in Horton Creek.

In six of the last ten monitoring events, the analytical results for phosphorous and nitrogen at SME 1 have been lower than those recorded at AT 5, GD 8, or RC 2, indicating that dilution is occurring before the combined flow from AT 5, GD 8, and RC 2 discharges to the Coosa River. The Gadsden-Etowah MS4 will continue to monitor points AT 5, GD 8, RC 2, and SME 1 during the April 1, 2021 to March 31, 2022 monitoring period.

2.5 Statistical Analysis

2.5.1 *Overview*

Statistical analysis was performed on the cumulative monitoring data to determine whether there has been a statistically significant increase (SSI) of concentrations between specific monitoring points.

For the current statistical analysis, S&ME performed the statistical evaluation using the ChemStat Version 4.0 software produced by Starpoint Software. The appropriate statistical procedure used in this evaluation was determined by the characteristics of the data set. The approach used to determine the appropriate statistical evaluation and the results of the statistical evaluation are summarized in the following paragraphs.



Specific monitoring points were chosen for comparison based on their location within the MS4 area respective to other monitoring point locations and trend of collected data. Table 2-2 in Section 2.5.3 reports the statistical evaluation for each analyte for the compared monitoring points.

2.5.2 *Approach to Statistical Analysis*

Essentially, there are two sets of data to be compared during this statistical evaluation. The Wilcoxon rank-sum test evaluates potential differences in the medians of two populations. The Wilcoxon rank-sum test can be used to compare a single data group against another data group. In this evaluation, we compared the specific monitoring points to determine if a statistically significant difference is present in a monitoring point using a statistical significance value (alpha) of 0.01. If a statistically significant difference was observed, we then compared the median values of each point to evaluate whether a point had a statistically significant increase (SSI) over the background point.

Sen's non-parametric estimator of slope is a method of estimating the slope (change in concentration over time) of the data. Because this method is non-parametric, it is suitable for high percentage of non-detects and is not significantly affected by outliers. The result indicates whether there is an upward, downward, or no trend in the concentration data. Sen's slope estimates were produced for points for which an SSI was observed.

The following field and laboratory parameters were evaluated in the statistical analysis:

- Turbidity
- pH
- DO
- Temperature
- Total Suspended Solids (TSS)
- Total Phosphorous
- Orthophosphate
- Nitrate-Nitrite
- Total Kjeldahl Nitrogen (TKN)

2.5.3 *Results of Statistical Evaluation*

Table 2-2 below reports the statistical evaluation for each analyte for the compared monitoring points.

Table 2-2 Results of Statistical Analysis

Upgradient Monitoring Point Analyzed	Downgradient Monitoring Point Compared	Monitoring Point SSI Identified	Parameters Identified	Sen's Slope Estimator for Point Analyzed
AT 5	SME 1	AT 5	Total Phosphorous	No Trend
			Orthophosphate	No Trend
			Nitrate-Nitrite	No Trend



Upgradient Monitoring Point Analyzed	Downgradient Monitoring Point Compared	Monitoring Point SSI Identified	Parameters Identified	Sen's Slope Estimator for Point Analyzed
HB 3	GD 5	HB 3	TSS	No Trend
HB 3	GD 7	HB 3	TSS	No trend
			Turbidity	Downward Trend
HB 3	GD 3	HB 3	TSS	No Trend
GD 8	SME 1	No SSI	---	---
RC 2	SME 1	No SSI	---	---
GD 5	GD 3	No SSI	---	---
HB 3	SME 3	No SSI	---	---
GD 6	GD 8	No SSI	---	---
HB 3	RC 14	HB 3	TSS	No Trend

As previously discussed, monitoring point SME 1 is located in Big Wills Creek, approximately 6.6 miles downstream from monitoring point AT 5. Based on the results of the Wilcoxon Rank-Sum test, monitoring point AT 5 was observed to have a statistically significant increase in total phosphorous, orthophosphate, and nitrate-nitrite compared to SME 1. The median values for the identified parameters at AT 5 are higher than the median values for SME 1, indicating a decrease in pollution from AT 5 to SME 1. Monitoring point GD 8 is sited on Black Creek and monitoring point RC 2 is sited on Horton Creek, and neither point was observed to have a statistically significant increase compared to SME 1 for any parameter. Black Creek and Horton Creek join Big Wills Creek upstream of SME 1.

Given that values for the identified parameters at AT 5 are statistically significantly higher than at SME 1, but values at GD 8 or RC 2 are lower than SME 1, the decrease in total phosphorous, orthophosphate, and nitrate-nitrite from AT 5 to SME 1 is likely due to dilution from Black Creek and Horton Creek. The results of the Sen's Slope Estimator did not indicate a trend downward or upward at AT 5, indicating that the pollution levels from activities outside the MS4 remain largely unchanged. Based on the analysis conducted for the 2019-2020 Annual Report, monitoring point SME 7 was added in December 2020 to evaluate water quality in Big Wills Creek, upstream of its confluence with Little Wills Creek.

Monitoring point HB 3 is located where a small unnamed tributary from Hokes Bluff enters the Coosa River and is the monitoring point farthest upstream in the Coosa River. Based on the results of the Wilcoxon Rank-Sum test, monitoring point HB 3 was observed to have a statistically significant increase in TSS when compared to monitoring points downstream, specifically monitoring point GD 5 (located where Cove Creek enters the Coosa River), monitoring point GD 3 (where an unnamed tributary from the Tidmore Bend area enters the Coosa River), monitoring point GD 7 (where the downtown Gadsden storm sewer discharges to the Coosa River), and monitoring point RC 14 (Rook Creek prior to entering the Coosa River). Monitoring point HB-3 was also observed to have a statistically significant increase in turbidity when compared to GD 7. The results of the Sen's Slope Estimator did not indicate a trend downward or upward for TSS values at HB 3. A downward trend was indicated for turbidity at HB 3.



The statistical analysis suggests that dilution is occurring as the Coosa River flows through the MS4, although it is also possible that TSS values at HB 3 are high due to runoff from agricultural areas outside the MS4. Based on the analysis conducted for the 2019-2020 Annual Report, monitoring point SME 4 was added in December 2020 to evaluate water quality in the Coosa River, outside of the unnamed tributary mixing zone at HB 3. Monitoring points SME 5 and SME 6 were also added to assess water quality in the Coosa River near the middle and lower end of the MS4.

The detailed results of the statistical analysis obtained from the ChemStat software are provided in **Appendix B**.

2.6 Summary of Recommendations

The entities that comprise the Gadsden-Etowah MS4 took a watershed approach regarding their Storm Water Monitoring Plan. This approach has allowed them to see how the overall watershed is responding to the established BMPs and to generally evaluate water quality across the MS4.

The Gadsden-Etowah MS4 entities plan to continue the watershed approach and proposes the following revisions to the Storm Water Monitoring Plan.

- Reinstatement of monitoring point SME 3
- Removal of monitoring point SME 2



3.0 Reporting and Record-Keeping

Part V.A of NPDES General Permit ALR040000 issued to each entity of the Gadsden-Etowah MS4 that comprises the *Gadsden, Alabama Urbanized Area* outlines the monitoring, recordkeeping, and reporting requirements.

3.1 Annual Reports

Annual reports are due to the ADEM by May 31 of each year. The annual report will cover the period from April 1 through March 31 of the year prior to the submittal date and will include:

1. List of contacts/responsible parties for the preparation of the Annual Report
2. Evaluation of SWMPP and discussion of the following:
 - a. Major accomplishments
 - b. Overall program strengths/weaknesses
 - c. Future direction of the program
 - d. Evaluation of the effectiveness of the SWMPP in achieving water quality/watershed improvements
 - e. Measurable goals that were not performed and reasons why
 - f. Evaluation of monitoring data
3. Measurable goals for each of the five minimum control measures
4. Proposed changes to the SWMPP, including changes to BMPs or measurable goals
5. An assessment of whether the existing BMPs are appropriate
6. Summary of storm water activities planned for the upcoming year
7. Progress toward reducing the discharge of pollutants to the maximum extent practicable

3.2 Recordkeeping

The following records must be maintained by each entity and will be made available for examination. Records will be retained for a minimum period of at least three (3) years from the data of the sample, measurement, report, or application for the term of the NPDES General Permit, whichever is longer.

The following is a list of records to be retained:

- Copies of all reports required by the permit
- Copies of monitoring reports
- Copy of the NPDES General Permit
- Copy of the Notice of Intent



10.0 Etowah County (ALR040009)

Unincorporated portions of Etowah County (County) within the *Gadsden, Alabama Urbanized Area* encompass approximately 16.5% of the Urbanized Area and account for approximately 4.5% of the population. Although only a relatively small portion of unincorporated Etowah County lies within the MS4 boundary, the majority of Etowah County lies within the Coosa River watershed. The information, resources, minimum control measures, and best management practices developed for the MS4 Storm Water Management Program can be applied to any area within the County and therefore ultimately benefit water quality of the Coosa River. A map depicting the Etowah County's urbanized area and county limits is in **Appendix J-1, Figure 1**.

In accordance with Part III.B of the NPDES General Permit, the 2017 SWMPP detailed the specific activities the County planned to undertake regarding the following five minimum control measures:

1. Public Education and Public Involvement on Storm Water Impacts
2. Illicit Discharge Detection and Elimination (IDDE)
3. Construction Site Storm Water Runoff Control
4. Post-Construction Storm Water Management in New Development and Redevelopment
5. Pollution Prevention/Good Housekeeping for Municipal Operations

The following sections detail the current implementation status of each minimum control measure, activities conducted during the current reporting period, planned activities for the upcoming reporting period, requested changes to the provisions of the 2012 and 2017 SWMPP, and the party responsible for implementing each minimum control measure.

Information for the preparation of this report was provided by:

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402 Tuscaloosa Ave
Gadsden, AL 35901
(256) 549-5358
msmith@etowahcounty.org

10.1 Public Education and Public Involvement on Storm Water Impacts

10.1.1 *Implementation Status*

During the April 1, 2020 to March 31, 2021 reporting period, Etowah County completed eight (8) of the eleven (11) Public Education and Public Involvement strategies identified in the previous Annual Report and the 2017 SWMPP.

A Gadsden-Etowah MS4 Steering Committee meeting was held on October 14, 2020, but an Etowah County representative did not attend (Activity 8).

Annual Report: April 1, 2020 to March 31, 2021

Gadsden-Etowah MS4

Gadsden, Etowah County, Alabama

S&ME Project No. 4482-20-045



Two (2) planned activities were cancelled due to the Covid-19 Pandemic:

- Water Quality Awareness Week (Activity 4)
- Great American Cleanup (Activity 6)

Etowah County also completed seven (7) strategies beyond those proposed in the previous Annual Report or 2017 SWMPP. These strategies included:

- Etowah County partnered with Advanced Disposal to provide free garbage disposal days at several locations across County (Activity 12)
- Etowah County sponsored a Drug Collection Day (Activity 13)
- Etowah County supported Adopt-A-Mile Program by providing trash bags for cleanup, maintaining the Adopt-A-Mile signs, and disposing of the garbage collected (Activity 14)
- Etowah County partnered with the Etowah County Sheriff to sponsor a community cleanup day in Whorton Bend (Activity 15)
- Etowah County enforced a Litter Ordinance (Activity 16)
- Etowah County managed a drop off facility for oil waste recycling (Activity 17)
- Etowah County collected aluminum cans for recycling (Activity 18)

A table identifying each Public Education and Public Involvement strategy planned for the 2020-2021 reporting period, a description of actions taken by Etowah County, and a description of activities planned for the next reporting period is provided in **Appendix J-2**. Supporting documentation is also included in **Appendix J-3**.

10.1.2 *Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period*

The 2016 Phase II General Permit will expire on September 30, 2021. Provided the reissued permit is finalized for an October 1, 2021 effective date, Etowah County will be required to submit a revised SWMPP by January 1, 2022. The City will evaluate the success of the current program to aid in preparing the revised SWMPP.

The County will implement the activities listed in the 2017 SWMPP and in the tables in **Appendix J-2** as part of their Public Education and Public Involvement Program during the 2021-2022 reporting period. The County will evaluate the success of the program to aid in preparing the required Annual Report based on the evaluation criteria established for each strategy.

10.1.3 *Assessment of Control*

The strategies enacted during the reporting period appear to be effective in meeting the objectives of the Public Education and Public Involvement Control Measure. The strategies are adequate to educate the community about the impacts of storm water runoff, provide opportunities for public involvement, and identify steps the community can take to help reduce pollutants.

10.1.4 *Proposed Changes*

Etowah County requests no changes to the Public Education and Public Involvement strategies identified in the 2017 SWMPP. Changes may be necessitated by the reissued permit and will be addressed in the revised SWMPP.



10.1.5 *Responsible Party*

The Etowah County Engineering Department is responsible for overseeing, developing, and coordinating the Public Education and Public Involvement efforts.

10.2 Illicit Discharge Detection and Elimination

10.2.1 *Implementation Status*

During the April 1, 2020 to March 31, 2021 reporting period, the Etowah County completed seventeen (17) of the seventeen (17) Illicit Discharge Detection and Elimination strategies identified in the previous Annual Report and the 2017 SWMPP.

A table identifying each Illicit Discharge Detection and Elimination strategy planned for the 2020-2021 reporting period, a description of actions taken by the Etowah County, and a description of activities planned for the next reporting period is provided in **Appendix J-2**. Supporting documentation is also included in **Appendix J-3**.

10.2.2 *Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period*

The 2016 Phase II General Permit will expire on September 30, 2021. Provided the reissued permit is finalized for an October 1, 2021 effective date, Etowah County will be required to submit a revised SWMPP by January 1, 2022. The City will evaluate the success of the current program to aid in preparing the revised SWMPP.

The County will implement the activities listed in the 2017 SWMPP and in the tables in **Appendix J-2** as part of their Illicit Discharge Detection and Elimination Program during the 2021-2022 reporting period. The County will evaluate the success of the program to aid in preparing the required Annual Report based on the evaluation criteria established for each strategy.

10.2.3 *Assessment of Control*

The strategies enacted during the reporting period appear to be effective in meeting the objectives of the Illicit Discharge Detection and Elimination Control Measure. The strategies are adequate to prevent or correct illicit discharges to the Gadsden-Etowah MS4.

10.2.4 *Proposed Changes*

Etowah County requests no changes to the Illicit Discharge Detection and Elimination strategies identified in the 2017 SWMPP. Changes may be necessitated by the reissued permit and will be addressed in the revised SWMPP.

10.2.5 *Responsible Party*

The Etowah County Engineering Department is responsible for overseeing, developing, and coordinating the IDDE program in the Etowah County regulated MS4 area.



10.3 Construction Site Storm Water Runoff

10.3.1 *Implementation Status*

During the April 1, 2020 to March 31, 2021 reporting period, Etowah County completed five (5) of the five (5) Construction Site Storm Water Runoff strategies identified in the previous Annual Report and the 2017 SWMPP.

A table identifying each Construction Site Storm Water Runoff strategy planned for the 2020-2021 reporting period, a description of actions taken by the Etowah County, and a description of activities planned for the next reporting period is provided in **Appendix J-2**. Supporting documentation is also included in **Appendix J-3**.

10.3.2 *Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period*

The 2016 Phase II General Permit will expire on September 30, 2021. Provided the reissued permit is finalized for an October 1, 2021 effective date, Etowah County will be required to submit a revised SWMPP by January 1, 2022. The City will evaluate the success of the current program to aid in preparing the revised SWMPP.

The County will implement the activities listed in the 2017 SWMPP and in the tables in **Appendix J-2** as part of their Construction Site Storm Water Runoff Program during the 2021-2022 reporting period. The County will evaluate the success of the program to aid in preparing the required Annual Report based on the evaluation criteria established for each strategy.

10.3.3 *Assessment of Control*

The strategies enacted during the reporting period appear to be effective in meeting the objectives of the Construction Site Storm Water Runoff Control Measure. The strategies are adequate to monitor and control pollutants associated with land disturbing activities.

10.3.4 *Proposed Changes*

Etowah County requests no changes to the Construction Site Storm Water Runoff strategies identified in the 2017 SWMPP. Changes may be necessitated by the reissued permit and will be addressed in the revised SWMPP.

10.3.5 *Responsible Party*

The Etowah County Engineering Department is responsible for implementing and tracking the construction site storm water provisions of the ordinance as well as other Construction Site Storm Water Runoff strategies.

10.4 Post-Construction Storm Water Management in New Development and Redevelopment

10.4.1 *Implementation Status*

During the April 1, 2020 to March 31, 2021 reporting period, Etowah County met seven (7) of the seven (7) Post-Construction Storm Water Management strategies identified in the previous Annual Report and the 2017 SWMPP.



Etowah County also completed three (3) strategies beyond those proposed in the previous Annual Report and the 2017 SWMPP. These strategies include:

- Etowah County worked to reduce runoff within our right-of way and monitor our areas for erosion using riprap and vegetation (Activity 8)
- Etowah County Partnered with Alabama Department of Conservation and Natural Resources to preserve the endangered Rush Darter on unnamed tributary to Bristow Creek (Activity 9)
- Etowah County Partnered with Alabama Department of Conservation and Natural Resources to preserve the endangered Trispot Darter on unnamed tributary to Ballplay Creek (Activity 10)

A table identifying each Post-Construction Storm Water Management strategy planned for the 2020-2021 reporting period, a description of actions taken by the Etowah County, and a description of activities planned for the next reporting period is provided in **Appendix J-2**. Supporting documentation is also included in **Appendix J-3**.

10.4.2 Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period

The 2016 Phase II General Permit will expire on September 30, 2021. Provided the reissued permit is finalized for an October 1, 2021 effective date, Etowah County will be required to submit a revised SWMPP by January 1, 2022. The City will evaluate the success of the current program to aid in preparing the revised SWMPP.

The County will implement the activities listed in the 2017 SWMPP and in the tables in **Appendix J-2** as part of their Post-Construction Storm Water Management Program during the 2021-2022 reporting period. The County will evaluate the success of the program to aid in preparing the required Annual Report based on the evaluation criteria established for each strategy.

10.4.3 Assessment of Control

The strategies enacted during the reporting period appear to be effective in meeting the objectives of the Post-Construction Storm Water Management Control Measure. The strategies are adequate to address post-construction storm water runoff from new development and re-development.

10.4.4 Proposed Changes

Etowah County requests no changes to the Post-Construction Storm Water Management strategies identified in the 2017 SWMPP. Changes may be necessitated by the reissued permit and will be addressed in the revised SWMPP.

10.4.5 Responsible Party

The Etowah County Engineer's Office is responsible for implementing the provisions of the ordinance pertaining to post construction storm water management as well as other Post-Construction Site Storm Water Runoff strategies.



10.5 Pollution Prevention and Good Housekeeping for County Operations

10.5.1 *Implementation Status*

During the April 1, 2020 to March 31, 2021 reporting period, Etowah County completed eight (8) of the eight (8) Pollution Prevention and Good Housekeeping for Municipal Operations strategies identified in the previous Annual Report and the 2017 SWMPP.

Etowah County also completed seven (7) strategies beyond those proposed in the previous Annual Report and the 2017 SWMPP. These strategies include:

- Etowah County removed dead animals from the roadside (Activity 9)
- Etowah County cleared and removed trees and brush from drainage ways as needed (Activity 10)
- Etowah County partnered with Advanced Disposal had open-top containers at several locations across County (Activity 11)
- Etowah County provided trash bags for cleanup, maintains the Adopt-A-Mile signs, and disposes of the garbage collected. (Activity 12)
- Etowah County maintained "No Dumping \$500 fine" signs and these No Dumping areas are under video surveillance signs (Activity 13)
- Etowah County utilized County inmates to collect trash along the County highways throughout the year (Activity 14)
- Etowah County removes and disposes tires as needed (Activity 15)

A table identifying each Pollution Prevention and Good Housekeeping for Municipal Operations strategy planned for the 2020-2021 reporting period, a description of actions taken by Etowah County, and a description of activities planned for the next reporting period is provided in **Appendix J-2**. Supporting documentation is also included in **Appendix J-3**.

10.5.2 *Proposed Activities for the April 1, 2021 to March 31, 2022 Reporting Period*

The 2016 Phase II General Permit will expire on September 30, 2021. Provided the reissued permit is finalized for an October 1, 2021 effective date, Etowah County will be required to submit a revised SWMPP by January 1, 2022. The City will evaluate the success of the current program to aid in preparing the revised SWMPP.

The County will implement the activities listed in the 2017 SWMPP and in the tables in **Appendix J-2** as part of their Pollution Prevention and Good Housekeeping for Municipal Operations Program during the 2021-2022 reporting period. The County will evaluate the success of the program to aid in preparing the required Annual Report based on the evaluation criteria established for each strategy.

10.5.3 *Assessment of Control*

The strategies enacted during the reporting period appear to be effective in meeting the objectives of the Pollution Prevention and Good Housekeeping for Municipal Operations Control Measure. The strategies are adequate to address storm water pollution prevention from municipal operations.



10.5.4 *Proposed Changes*

Etowah County requests no changes to the Pollution Prevention and Good Housekeeping for Municipal Operations Program strategies identified in the 2017 SWMPP. Changes may be necessitated by the reissued permit and will be addressed in the revised SWMPP.

10.5.5 *Responsible Party*

The Etowah County Engineer's Office is responsible for implementing and tracking Pollution Prevention and Good Housekeeping strategies within County operations.

10.6 **Overall Program Evaluation**

10.6.1 *Major Accomplishments*

The 2017 SWMPP included changes to strengthen, organize, and consolidate the Storm Water Management Program. Even with these more stringent changes the County was successful in accomplishing the goals set forth. The County completed 45 out of 48 planned strategies and 16 additional strategies. Two planned strategies were not completed were due to Covid-19 cancellations. The number of completed activities (61) demonstrates the City's commitment to implement the SWMPP and Phase II Permit by going beyond the strategies they committed to in the 2017 SWMPP.

Etowah County has completed the Storm Water System Map for Tillison Bend and Whorton Bend and 47 outfalls were identified. Thirteen major outfalls and zero minor outfalls were inspected during the reporting period and dry weather screening was conducted at each of the inspected outfalls. Nine dry weather flows were observed. No illicit discharges were observed, and no samples were collected.

The county re-evaluated their borders. As a result, some land that was previously designated county land was annexed to cities. Some of the land was also inundated with water. These two conditions will result in a decrease in stream mileage. No new miles of stream were walked.

Through County operations the County removes dead animals from the roadside, clears drainageways of trees and debris, offers free garbage disposal days, and disposes of tires. While not all collection services can be quantified, a total of 530 gallons of used oil and 7.64 tons of metal/aluminum were collected during the reporting period. This allows for proper disposal of waste streams.

The County used the previously-established SOPs and an associated checklist for inspections of the two municipal facilities that have the potential to discharge pollutants through storm water runoff. The inspections identified no deficiencies related to storm water. Vehicles are checked every day before being put into use. During the reporting period, fourteen vehicle or equipment leaks were identified and corrected.

10.6.2 *Overall Programs Strengths and Weaknesses*

The County continues to evaluate the processes and procedures in which it accomplishes the objectives of the SWMPP. Their strengths and weaknesses remain very similar to past years.



The biggest strength is Keep Etowah County Beautiful (KEB). The County created KEB to plan, coordinate, document, and complete public educational and involvement activities to create a love for the county and to increase participation in cleanup activities. KEB is a significant strength of the Public Education and Involvement Control Measure. KEB not only contributes to the County's success but also contributes to the success of the Cities within the County.

In Etowah County, Home Rule is limited by the State constitution. Counties have no general grant of power in the State Constitution and must go to the Alabama Legislature for authority to engage in any activity not currently authorized by the State Constitution. Authority may be granted through constitutional amendments or by an act of the legislature known as "local legislation." Etowah County currently does not have the authority to enact an illicit discharge ordinance and would require action from the Alabama Legislature to gain that ability. This is a weakness to the program that is unavoidable at this time.

Another weakness of the program is the small number of staff that can be dedicated exclusively to the performance of the duties required by the Phase II Permit. The County currently employs two individuals who are the primary executives of the storm water program. The County does have an Engineering Department to assist with the storm water program responsibilities. The County does not currently have the ability to expand the Engineering Department for the storm water program; therefore, this weakness is expected to remain for several years.

10.6.3 *Future Direction of the Program*

During the upcoming reporting period, the County will work to adapt their program to meet the requirements of the reissued Phase II general permit. A revised SWMPP will be developed to outline the modified or additional strategies the County plans to accomplish.

Etowah County is committed to educating the citizens about the SWMPP and how the actions of others can impact storm water and the Coosa River.

The County plans to update their UA map to show annexed areas and indicated which areas are inaccessible during the next reporting period. The County will determine the number of stream miles remaining and will identify outfalls through the stream walking program and map water bodies. The SWMP will be updated during the next reporting period with the obtained information.

10.6.4 *Overall Effectiveness of the SWMPP*

Etowah County is proud of their efforts to achieve the objectives of the SWMPP. Based on this evaluation, the SWMPP appears to be effective in meeting the objectives and requirements of the Phase II Permit.



10.7 Agency Certification

This Annual Report is produced jointly by the eight jurisdictions comprising the Gadsden-Etowah Phase II Small Municipal Separate Storm System. Implementation of the minimum control measures applicable to each jurisdiction is the responsibility of the individual jurisdiction. Implementation of the storm water monitoring component of the Storm Water Management Program is a joint responsibility of all jurisdictions.

I certify under penalty of law that this document and all attachments pertaining to Etowah County were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine or imprisonment for knowing violations.

A handwritten signature in blue ink, appearing to read 'Jamie W. Grant', written over a horizontal line.

Jamie W. Grant, Etowah County Commission Chairman
Etowah County, Alabama

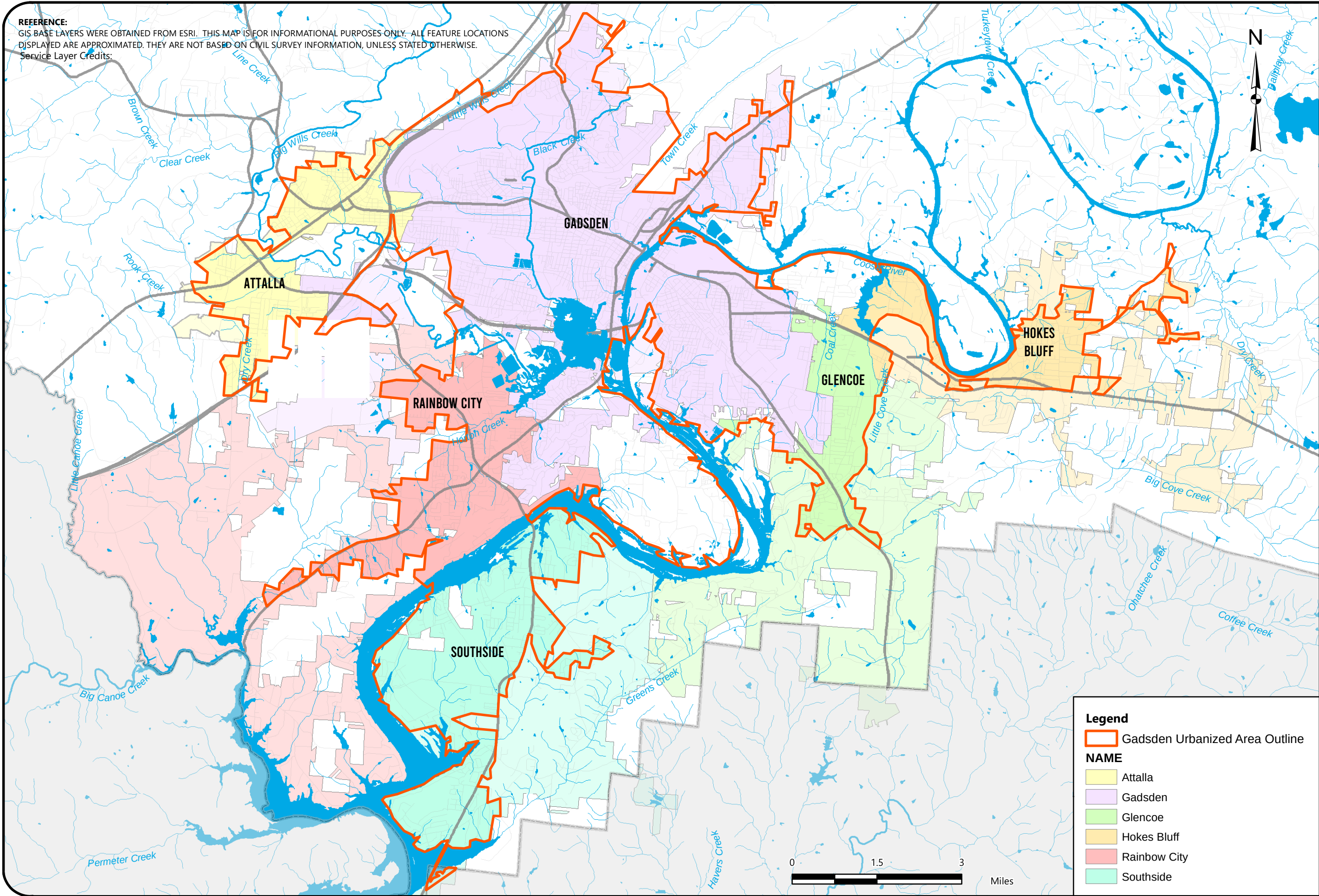
6-1-2021

Date

Appendices

Appendix A – Figures

REFERENCE:
GIS BASE LAYERS WERE OBTAINED FROM ESRI. THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS
DISPLAYED ARE APPROXIMATED. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.
Service Layer Credits:



Legend

Gadsden Urbanized Area Outline

NAME

Attalla

Gadsden

Glencoe

Hokes Bluff

Rainbow City

Southside

GADSDEN-ETOWAH MS4 BOUNDARIES

GADSDEN ALABAMA URBANIZED AREA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040009

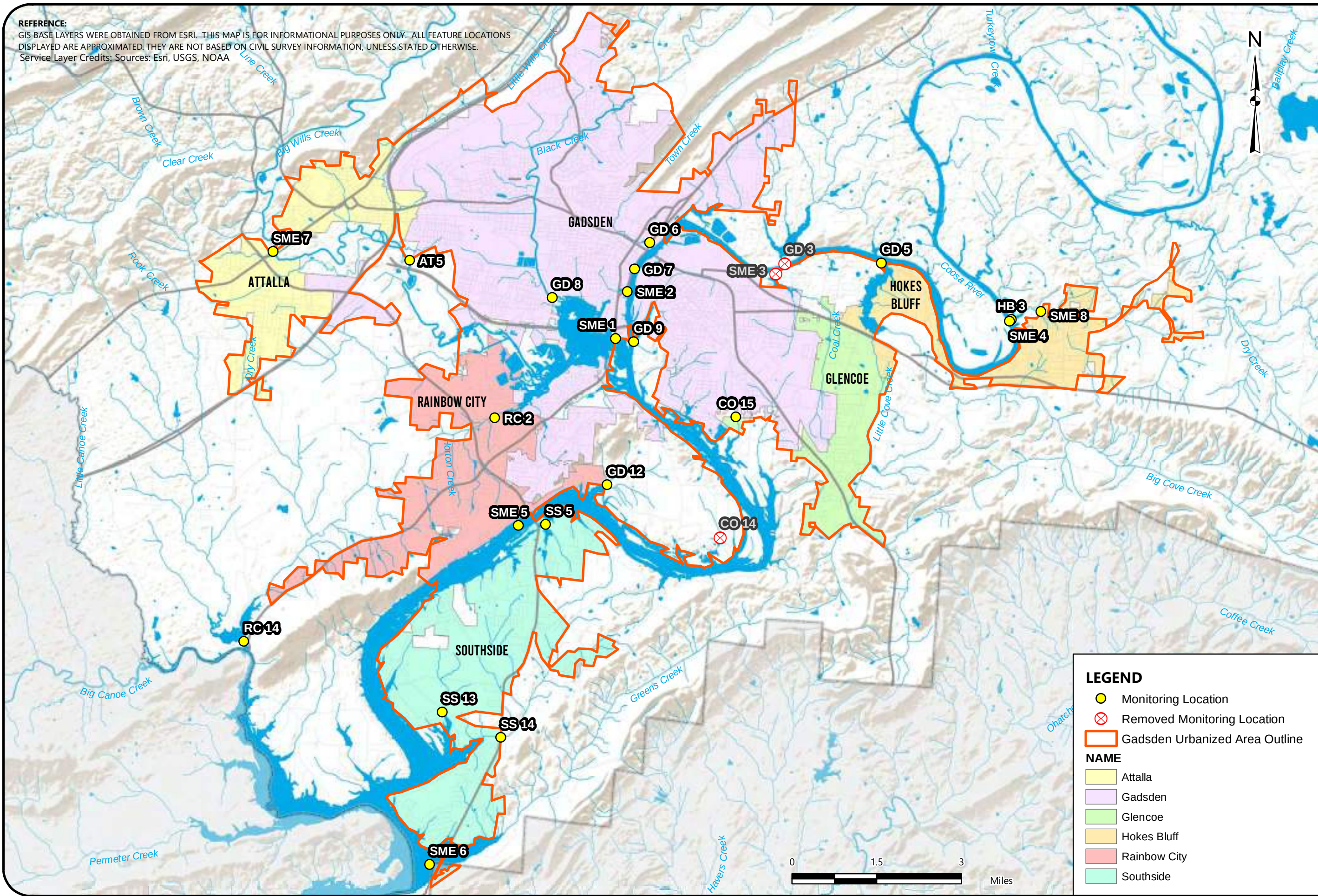
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DATE:
5-28-21

PROJECT NUMBER
4482-20-045

FIGURE NO.
1

REFERENCE:
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DISPLAYED ARE APPROXIMATED. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.
Service Layer Credits: Sources: Esri, USGS, NOAA



MS4 MONITORING LOCATIONS 2020-2021

GADSDEN ALABAMA URBANIZED AREA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040009

SCALE:
1:100,000

DATE:
5-28-21

PROJECT NUMBER
4482-20-045

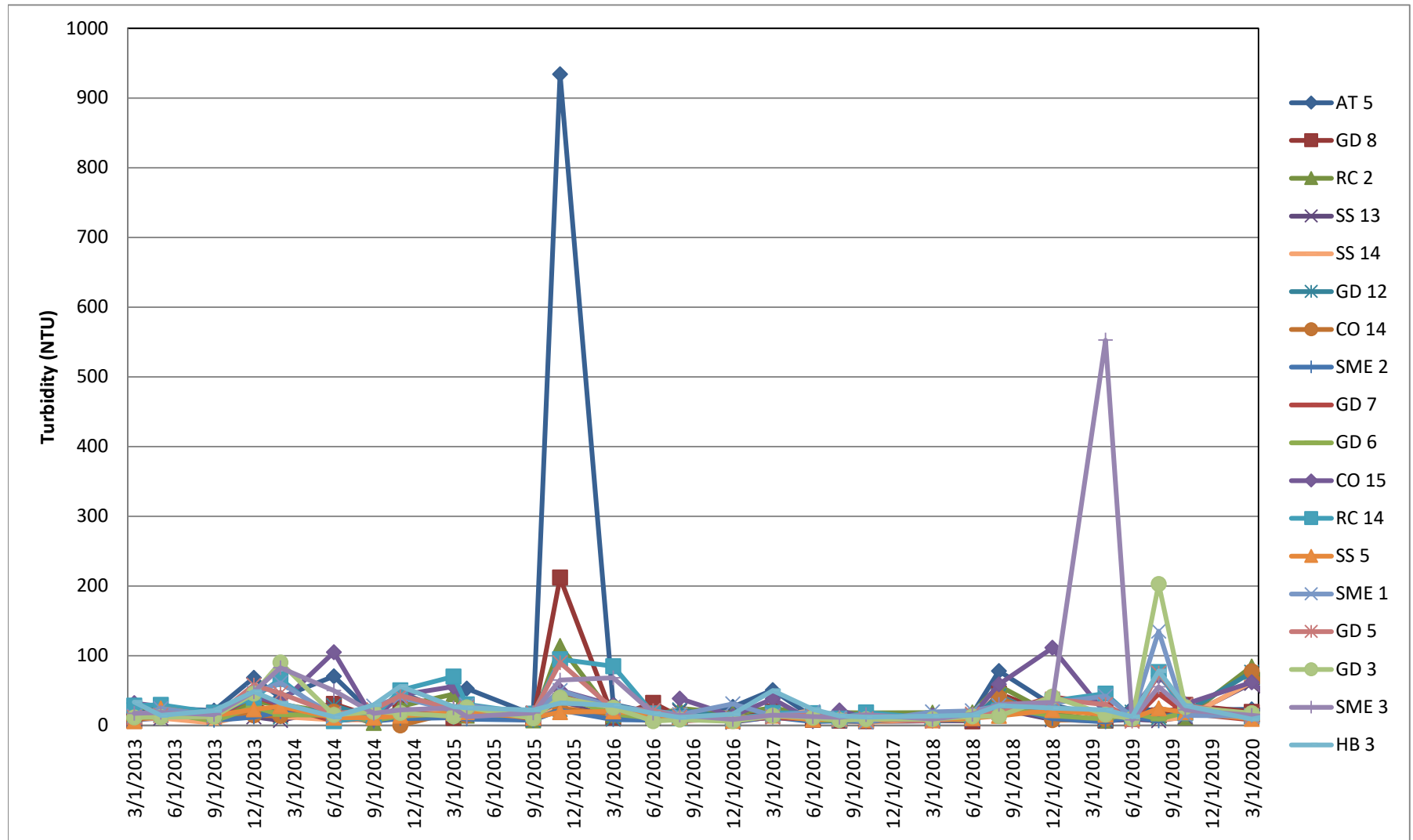
FIGURE NO.
2

Appendix B – Charts and Statistics

CHART 1 - TURBIDITY ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009



GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

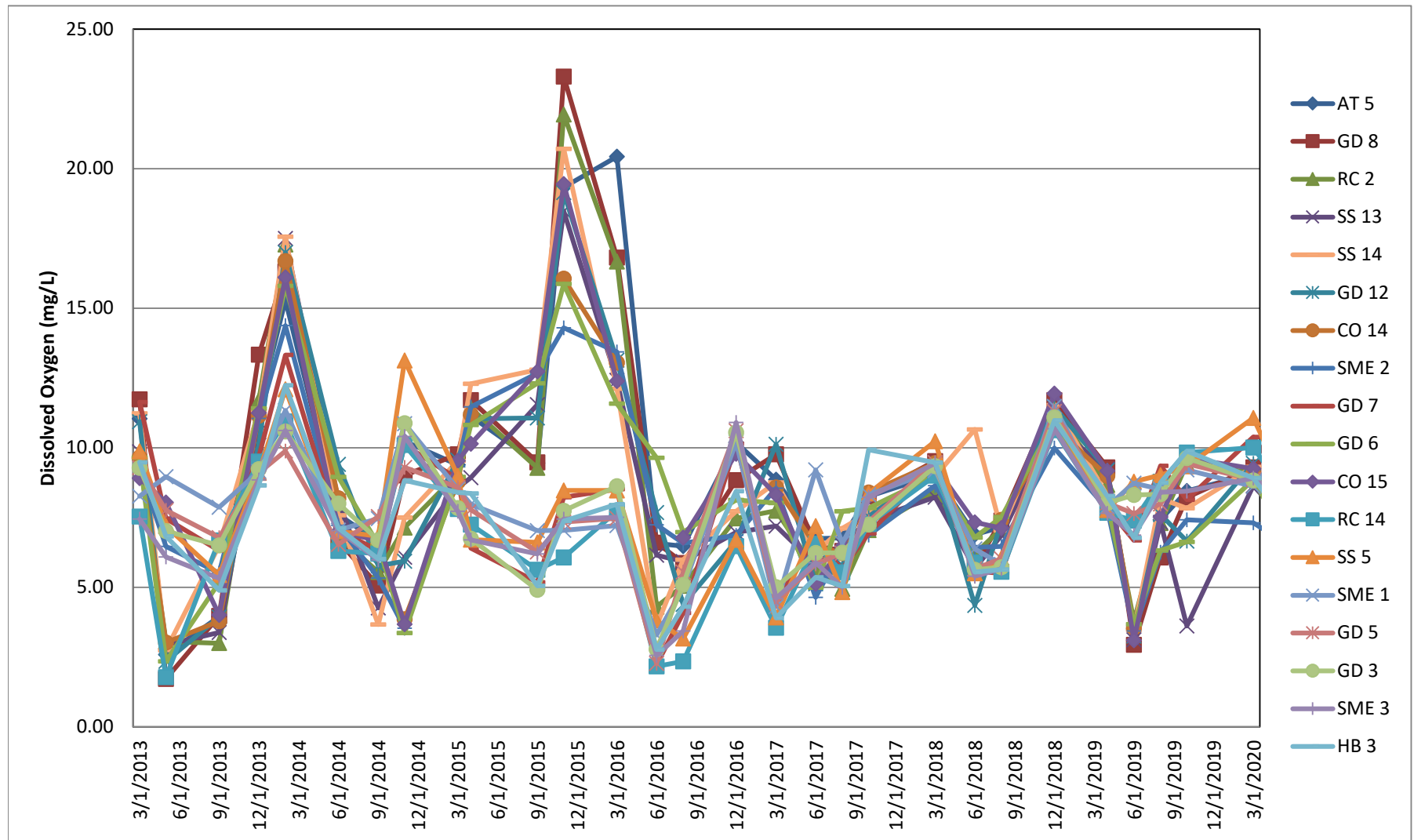


CHART 4 - TEMPERATURE ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

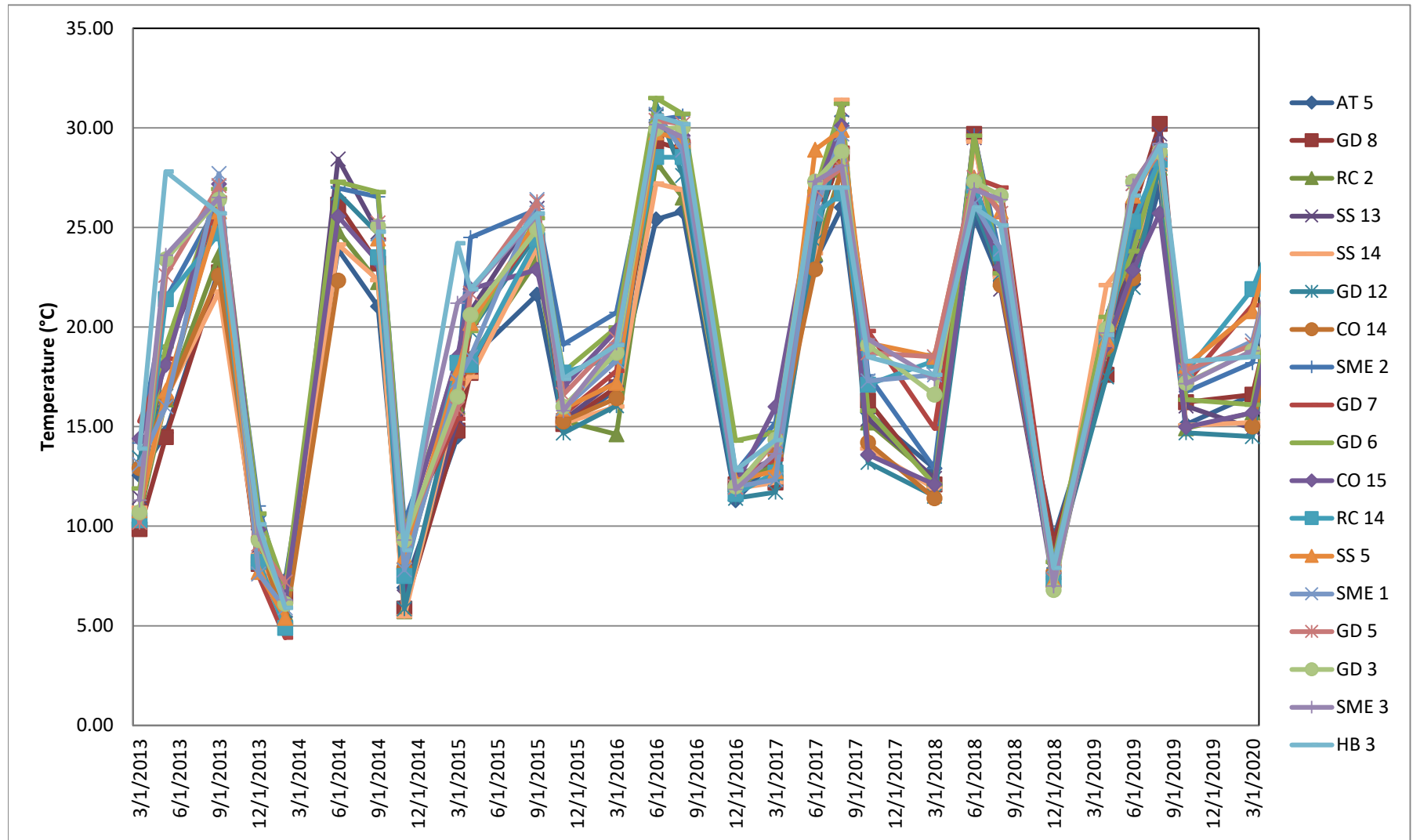
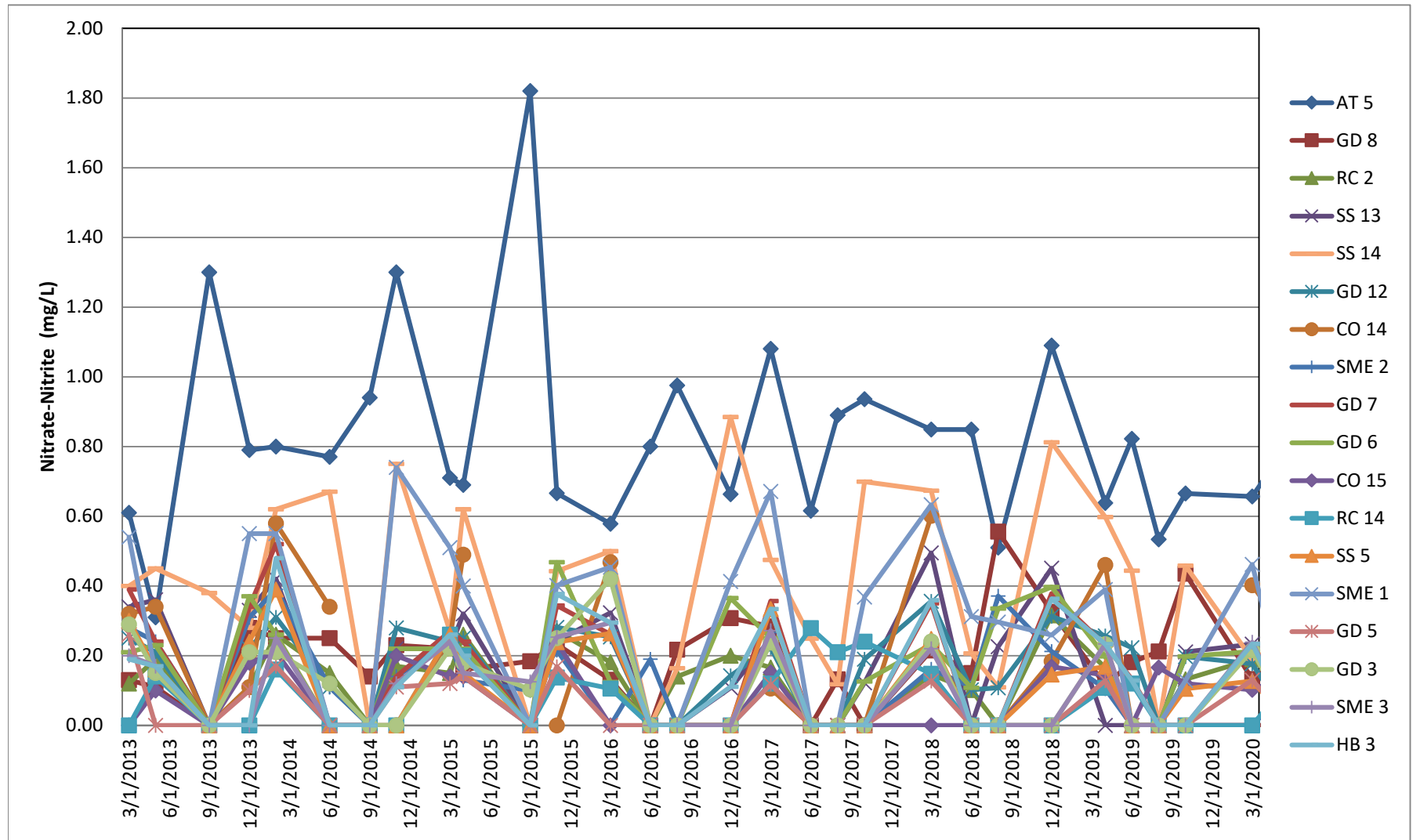


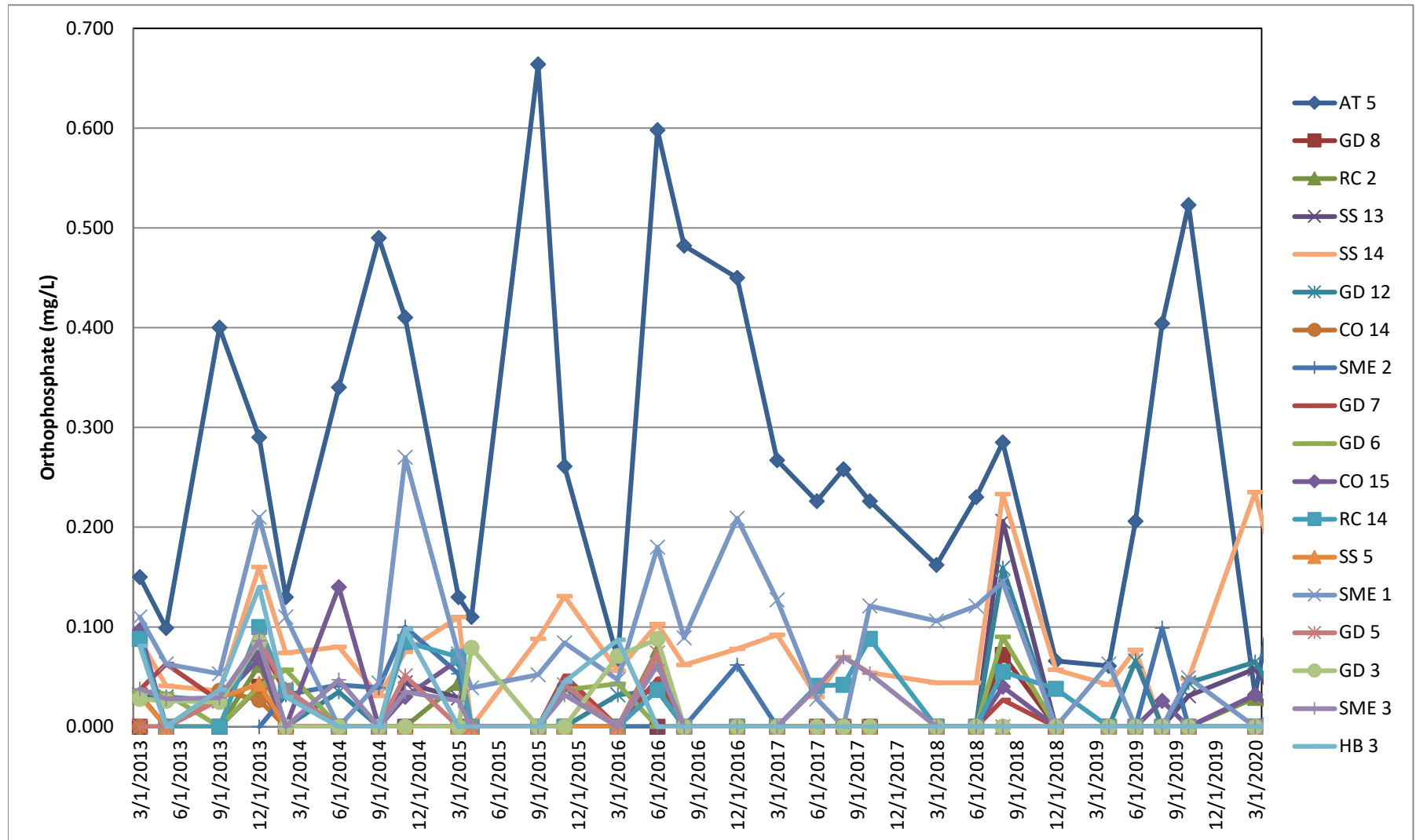
CHART 5 - NITRATE-NITRITE ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009



GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009



GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

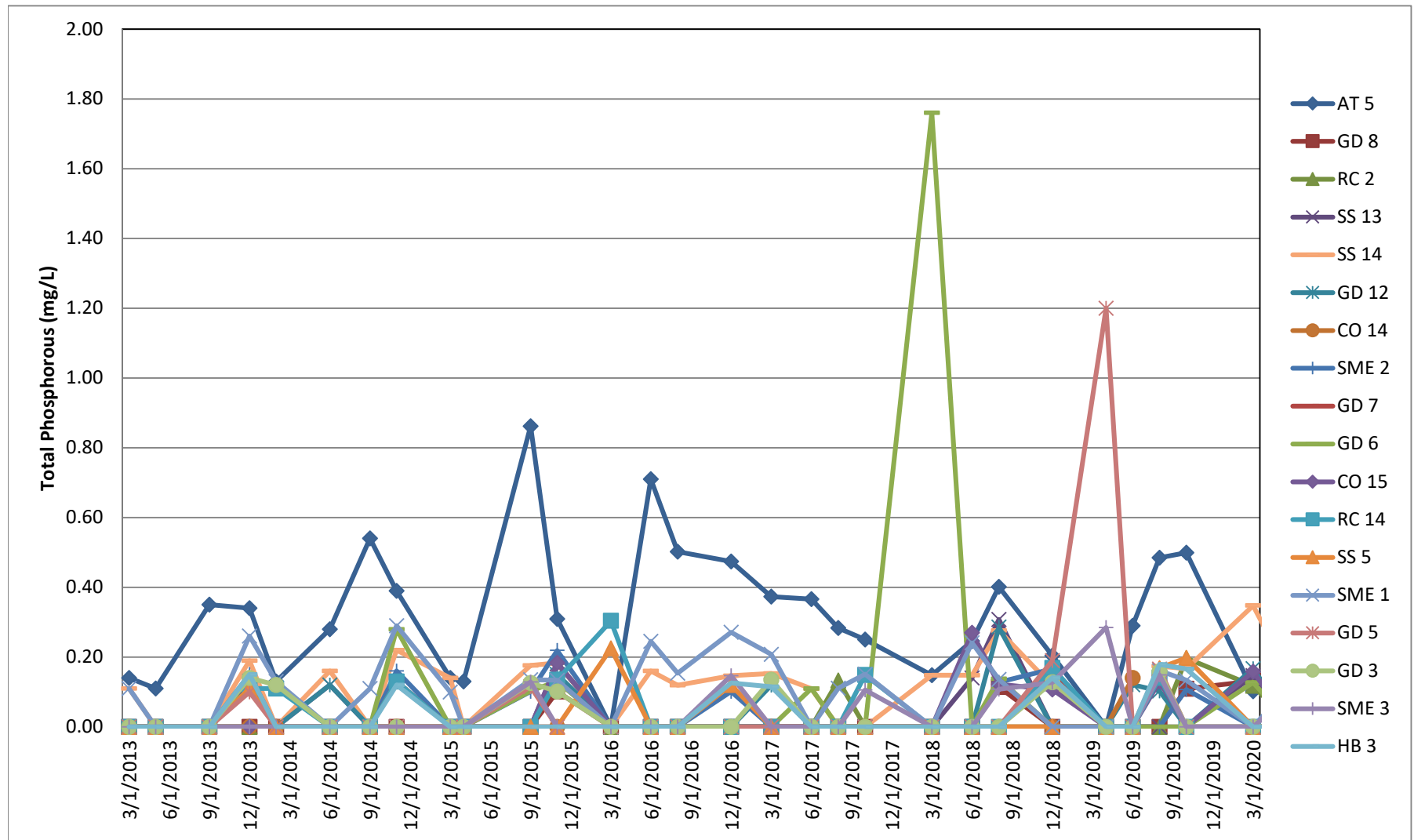
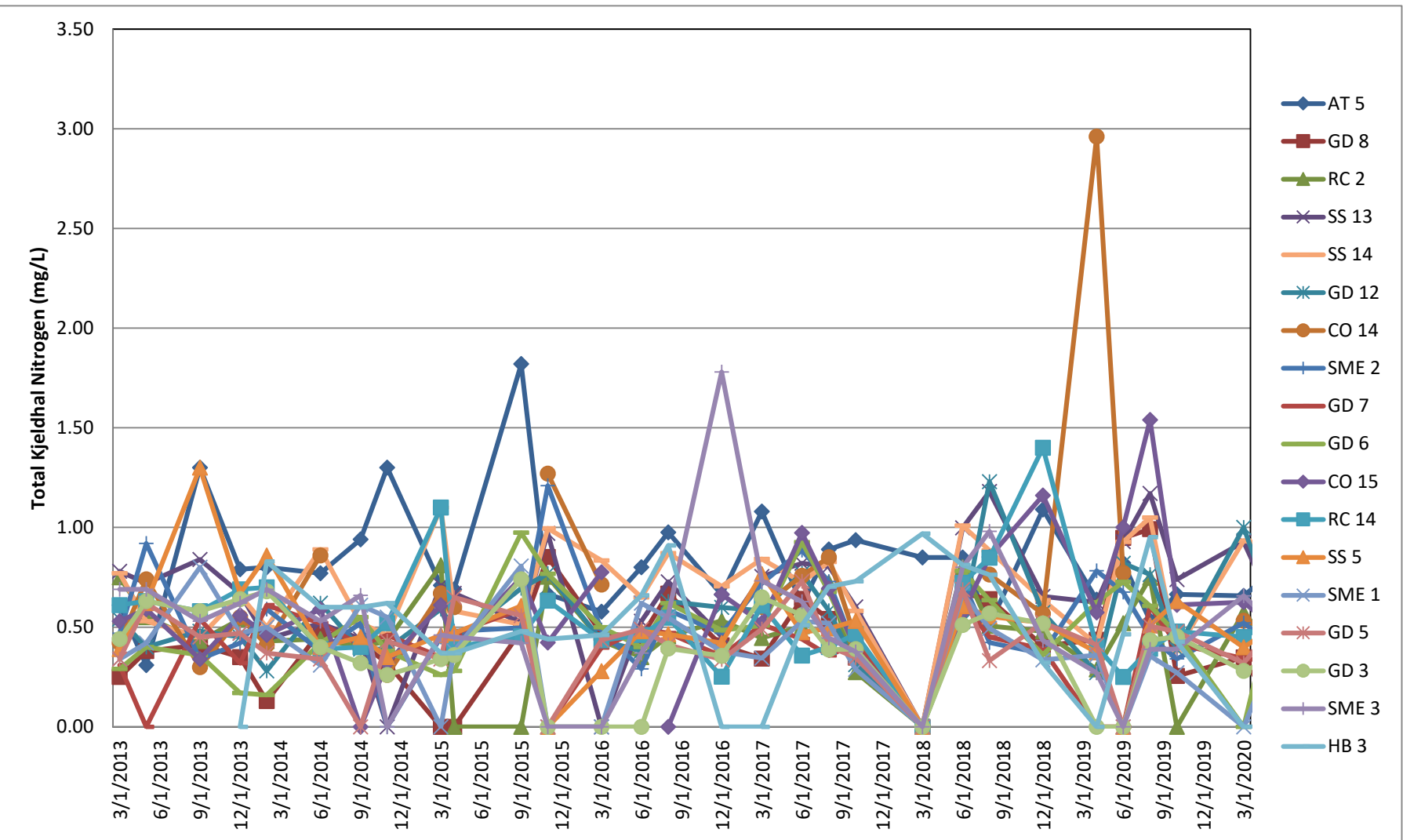


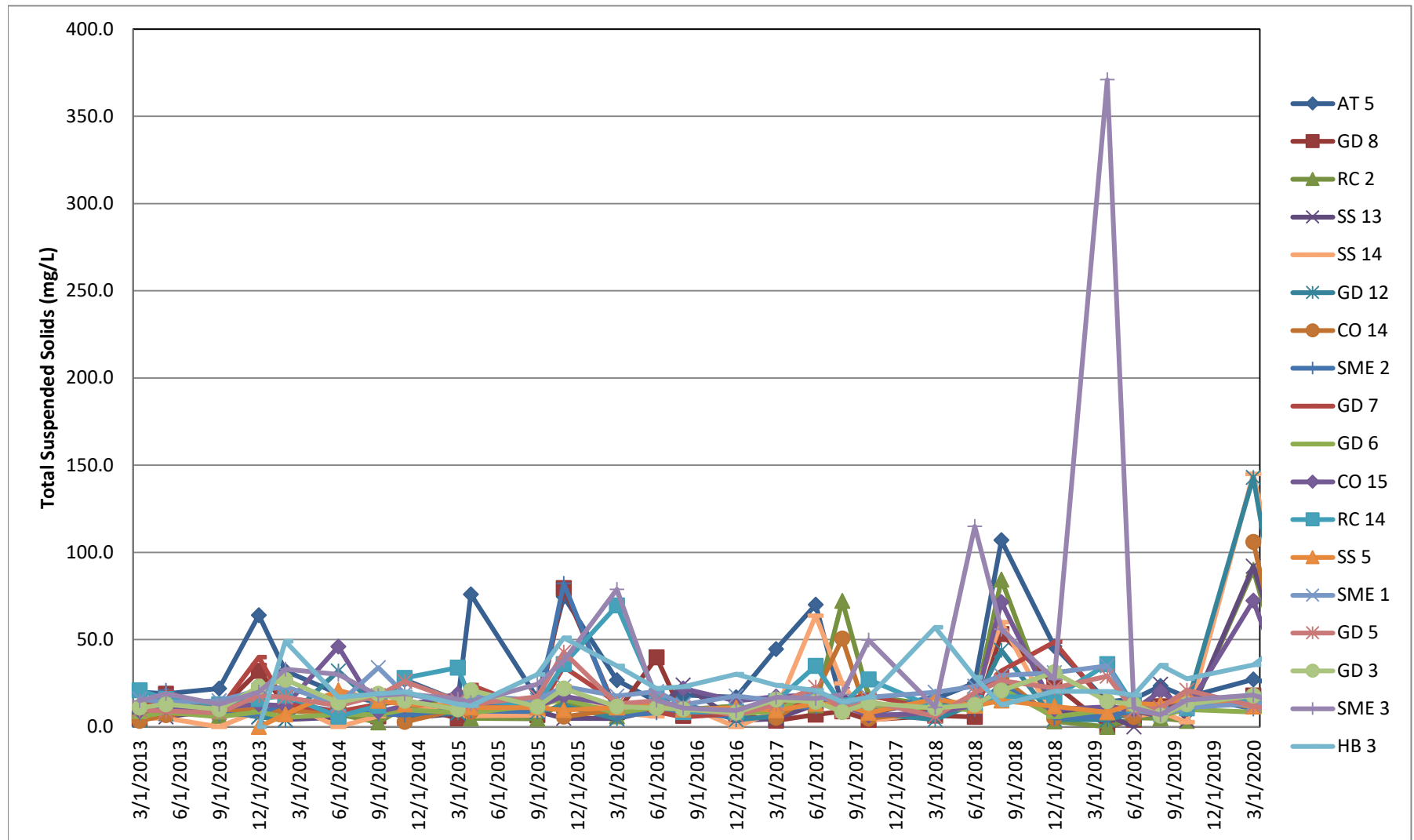
CHART 8 - TOTAL KJELDAHL NITROGEN ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009



**GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009**



Basic Statistics

Parameter: DO

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	614
Total Non-Detects	0 (0%)
Pooled Mean	8.21068
Pooled Std Dev	3.03929

Compliance Meas.	614
Compliance Mean	8.21068
Compliance Std Dev	3.03929

Background Meas.	0
Background Mean	0
Background Std Dev	0

Background Locations

There are 0 background location

Compliance Locations

There are 24 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	33	0	0	301.02
GD 6	33	0	0	277.91
HB 3	33	0	0	249.42
RC 2	33	0	0	279.85
GD 5	32	0	0	244.03
RC 14	33	0	0	239.11
CO 14	22	0	0	191.54
CO 15	32	0	0	290.02
SME 2	33	0	0	271.13
SS 5	33	0	0	266.47
GD 9	28	0	0	203.66
SME 4	2	0	0	20.02
SME 5	2	0	0	20.53
SME 6	2	0	0	20.73
SME 7	2	0	0	20.69
SME 8	2	0	0	21.26
SS 13	33	0	0	266.17
GD 12	33	0	0	279.9
SS 14	32	0	0	286.58
GD 7	33	0	0	263.75
SME 1	33	0	0	268.91
GD 3	31	0	0	237
SME 3	31	0	0	223.8
GD 8	33	0	0	297.856

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	9.12181	3.73574	9.12181	0	11655	353.182
GD 6	8.42152	3.02595	8.42152	0	10698	324.182
HB 3	7.55818	2.19405	7.55818	0	9134	276.788
RC 2	8.4803	4.06125	8.4803	0	9911	300.333
GD 5	7.62594	1.87666	7.62594	0	8946	279.563
RC 14	7.24576	2.41166	7.24576	0	8578	259.939
CO 14	8.70636	3.62918	8.70636	0	7410	336.818
CO 15	9.06313	3.56122	9.06313	0	11240	351.25

SME 2	8.21606	2.91025	8.21606	0	9862	298.848
SS 5	8.07485	2.46008	8.07485	0	10267	311.121
GD 9	7.27357	2.23249	7.27357	0	7093	253.321
SME 4	10.01	1.14551	10.01	0	930	465
SME 5	10.265	0.954594	10.265	0	984	492
SME 6	10.365	0.742462	10.365	0	995	497.5
SME 7	10.345	1.23744	10.345	0	992	496
SME 8	10.63	0.537401	10.63	0	1026	513
SS 13	8.06576	3.53084	8.06576	0	9429	285.727
GD 12	8.48182	3.63327	8.48182	0	10544	319.515
SS 14	8.95563	3.7846	8.95563	0	11072	346
GD 7	7.99242	2.50761	7.99242	0	10024	303.758
SME 1	8.14879	1.92087	8.14879	0	10598	321.152
GD 3	7.64516	1.96701	7.64516	0	8644	278.839
SME 3	7.21935	2.05474	7.21935	0	7623	245.903
GD 8	9.02594	4.23518	9.02594	0	11150	337.879

Analysis of Variance Statistics

SS Wells	270.738
SS Total	5662.44

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	0
Background Rank Mean	0
H Statistic	30.7986
H Adjusted for Ties	30.7986

Basic Statistics

Parameter: Nitrate-nitrite

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	617
Total Non-Detects	239 (38.7358%)
Pooled Mean	0.189373
Pooled Std Dev	0.229304

Compliance Meas.	617
Compliance Mean	0.189373
Compliance Std Dev	0.229304

Background Meas.	0
Background Mean	0
Background Std Dev	0

Background Locations

There are 0 background location

Compliance Locations

There are 24 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	33	0	0	26.427
GD 6	33	11	33.3333	5.421
HB 3	33	16	48.4848	4.409
RC 2	33	11	33.3333	3.991
GD 5	33	20	60.6061	1.82
RC 14	33	18	54.5455	2.63
CO 14	22	8	36.3636	4.895
CO 15	32	16	50	2.562
SME 2	33	13	39.3939	4.155
SS 5	33	17	51.5152	3.522
GD 9	29	14	48.2759	3.423
SME 4	2	0	0	0.706
SME 5	2	0	0	0.687
SME 6	2	0	0	0.726
SME 7	2	0	0	0.495
SME 8	2	0	0	1.313
SS 13	33	14	42.4242	5.438
GD 12	33	9	27.2727	5.227
SS 14	33	4	12.1212	12.788
GD 7	33	17	51.5152	4.877
SME 1	33	12	36.3636	9.068
GD 3	31	17	54.8387	3.08
SME 3	31	18	58.0645	2.768
GD 8	33	4	12.1212	6.415

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank	Mean
AT 5	0.800818		0.290609	0.800818	0	19464	589.818
GD 6	0.164273		0.140424	0.164273	0	10383	314.636
HB 3	0.133606		0.152026	0.133606	0	9084	275.273
RC 2	0.120939		0.0979732	0.120939	0	9041	273.97
GD 5	0.0551515		0.0739084	0.0551515	0	6309	191.182
RC 14	0.079697		0.0973256	0.079697	0	7324	221.939
CO 14	0.2225		0.213097	0.2225	0	7581	344.591
CO 15	0.0800625		0.0855196	0.0800625	0	7130	222.813
SME 2	0.125909		0.123499	0.125909	0	9078	275.091
SS 5	0.106727		0.124066	0.106727	0	8336	252.606

GD 9	0.118034	0.131117	0.118034	0	7679	264.793
SME 4	0.353	0.0480833	0.353	0	1029	514.5
SME 5	0.3435	0.0388909	0.3435	0	1023	511.5
SME 6	0.363	0.00707107	0.363	0	1039	519.5
SME 7	0.2475	0.0912168	0.2475	0	843	421.5
SME 8	0.6565	0.321734	0.6565	0	1154	577
SS 13	0.164788	0.165258	0.164788	0	10149	307.545
GD 12	0.158394	0.115236	0.158394	0	10519	318.758
SS 14	0.387515	0.250566	0.387515	0	15045	455.909
GD 7	0.147788	0.168738	0.147788	0	9537	289
SME 1	0.274788	0.247183	0.274788	0	12347	374.152
GD 3	0.0993548	0.122296	0.0993548	0	7526	242.774
SME 3	0.0892903	0.112497	0.0892903	0	7275	234.677
GD 8	0.194394	0.117148	0.194394	0	11758	356.303

Analysis of Variance Statistics

SS Wells	17.3315
SS Total	32.3895

Kruskal-Wallis Statistics

Non-Detect Rank	120
Background Rank Sum	0
Background Rank Mean	0
H Statistic	173.988
H Adjusted for Ties	184.725

Basic Statistics

Parameter: Ortho-phosphate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	616
Total Non-Detects	406 (65.9091%)
Pooled Mean	0.0334172
Pooled Std Dev	0.0782631

Compliance Meas.	616
Compliance Mean	0.0334172
Compliance Std Dev	0.0782631

Background Meas.	0
Background Mean	0
Background Std Dev	0

Background Locations

There are 0 background location

Compliance Locations

There are 24 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	33	0	0	8.894
GD 6	33	26	78.7879	0.337
HB 3	33	26	78.7879	0.518
RC 2	33	28	84.8485	0.3
GD 5	33	27	81.8182	0.32
RC 14	33	22	66.6667	0.68
CO 14	22	20	90.9091	0.063
CO 15	32	22	68.75	0.569
SME 2	33	23	69.697	0.54
SS 5	33	29	87.8788	0.169
GD 9	29	20	68.9655	0.487
SME 4	2	2	100	0
SME 5	2	2	100	0
SME 6	2	2	100	0
SME 7	2	2	100	0
SME 8	2	0	0	0.187
SS 13	33	25	75.7576	0.505
GD 12	32	21	65.625	0.602
SS 14	33	2	6.06061	2.489
GD 7	33	25	75.7576	0.37
SME 1	33	8	24.2424	2.496
GD 3	31	24	77.4194	0.402
SME 3	31	19	61.2903	0.545
GD 8	33	31	93.9394	0.112

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	0.269515	0.172881	0.269515	0	19197	581.727
GD 6	0.0102121	0.0217884	0.0102121	0	8637	261.727
HB 3	0.015697	0.0351323	0.015697	0	8895	269.545
RC 2	0.00909091	0.0234299	0.00909091	0	8190	248.182
GD 5	0.00969697	0.0228138	0.00969697	0	8412.5	254.924
RC 14	0.0206061	0.0326821	0.0206061	0	10024	303.758
CO 14	0.00286364	0.00937217	0.00286364	0	4935	224.318
CO 15	0.0177813	0.0334555	0.0177813	0	9291	290.344
SME 2	0.0163636	0.0286234	0.0163636	0	9564.5	289.833
SS 5	0.00512121	0.014939	0.00512121	0	7749.5	234.833

GD 9	0.0167931	0.0286523	0.0167931	0	8445	291.207
SME 4	0	0	0	0	407	203.5
SME 5	0	0	0	0	407	203.5
SME 6	0	0	0	0	407	203.5
SME 7	0	0	0	0	407	203.5
SME 8	0.0935	0.000707107	0.0935	0	1123	561.5
SS 13	0.015303	0.039349	0.015303	0	8912.5	270.076
GD 12	0.0188125	0.0344238	0.0188125	0	9517.5	297.422
SS 14	0.0754242	0.0524047	0.0754242	0	16560	501.818
GD 7	0.0112121	0.0221582	0.0112121	0	8857.5	268.409
SME 1	0.0756364	0.0695786	0.0756364	0	14996	454.424
GD 3	0.0129677	0.0277627	0.0129677	0	8294	267.548
SME 3	0.0175806	0.0252267	0.0175806	0	9505.5	306.629
GD 8	0.00339394	0.0141464	0.00339394	0	7301.5	221.258

Analysis of Variance Statistics

SS Wells	2.20115
SS Total	3.76695

Kruskal-Wallis Statistics

Non-Detect Rank	203.5
Background Rank Sum	0
Background Rank Mean	0
H Statistic	180.856
H Adjusted for Ties	253.41

Basic Statistics

Parameter: pH

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	614
Total Non-Detects	0 (0%)
Pooled Mean	.56458
Pooled Std Dev	0.769519

Compliance Meas.	614
Compliance Mean	7.56458
Compliance Std Dev	0.769519

Background Meas.	0
Background Mean	0
Background Std Dev	0

Background Locations

There are 0 background location

Compliance Locations

There are 24 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	33	0	0	240.07
GD 6	33	0	0	247.39
HB 3	33	0	0	257.2
RC 2	32	0	0	235.25
GD 5	33	0	0	258.38
RC 14	33	0	0	253.22
CO 14	21	0	0	142.82
CO 15	32	0	0	236.34
SME 2	33	0	0	246
SS 5	33	0	0	263.99
GD 9	29	0	0	226.64
SME 4	2	0	0	14.94
SME 5	2	0	0	15.63
SME 6	2	0	0	15.61
SME 7	2	0	0	15.89
SME 8	2	0	0	17.03
SS 13	33	0	0	235.07
GD 12	33	0	0	237.34
SS 14	33	0	0	237.48
GD 7	33	0	0	257.84
SME 1	33	0	0	262.86
GD 3	31	0	0	242.13
SME 3	30	0	0	233.39
GD 8	33	0	0	252.14

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	7.27485	1.10239	7.27485	0	9177	278.091
GD 6	7.49667	0.87305	7.49667	0	9992	302.788
HB 3	7.79394	0.371256	7.79394	0	11686	354.121
RC 2	7.35156	0.940546	7.35156	0	8688	271.5
GD 5	7.8297	0.370999	7.8297	0	11844	358.909
RC 14	7.67333	0.460426	7.67333	0	10282	311.576
CO 14	6.80095	0.893364	6.80095	0	2824	134.476
CO 15	7.38563	1.0277	7.38563	0	8712	272.25
SME 2	7.45455	0.804169	7.45455	0	9280	281.212
SS 5	7.9997	0.465413	7.9997	0	13893	421

GD 9	7.81517	0.369813	7.81517	0	10374	357.724
SME 4	7.47	0.311127	7.47	0	426	213
SME 5	7.815	0.0212132	7.815	0	689	344.5
SME 6	7.805	0.219203	7.805	0	699	349.5
SME 7	7.945	0.318198	7.945	0	820	410
SME 8	8.515	0.586899	8.515	0	1110	555
SS 13	7.12333	0.767201	7.12333	0	6025	182.576
GD 12	7.19212	0.831184	7.19212	0	6789	205.727
SS 14	7.19636	0.81942	7.19636	0	6720	203.636
GD 7	7.81333	0.373101	7.81333	0	11776	356.848
SME 1	7.96545	0.483387	7.96545	0	13376	405.333
GD 3	7.81065	0.319029	7.81065	0	11192	361.032
SME 3	7.77967	0.298969	7.77967	0	10346	344.867
GD 8	7.64061	1.07158	7.64061	0	12085	366.212

Analysis of Variance Statistics

SS Wells	59.192
SS Total	362.994

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	0
Background Rank Mean	0
H Statistic	109.348
H Adjusted for Ties	109.348

Basic Statistics

Parameter: Temperature

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	606
Total Non-Detects	0 (0%)
Pooled Mean	19.1121
Pooled Std Dev	7.11694

Compliance Meas.	606
Compliance Mean	19.1121
Compliance Std Dev	7.11694

Background Meas.	0
Background Mean	0
Background Std Dev	0

Background Locations

There are 0 background location

Compliance Locations

There are 24 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	33	0	0	584.27
GD 6	33	0	0	657.28
HB 3	32	0	0	649.32
RC 2	33	0	0	579.3
GD 5	32	0	0	639.21
RC 14	32	0	0	611.18
CO 14	22	0	0	364.16
CO 15	32	0	0	601.87
SME 2	33	0	0	675.3
SS 5	32	0	0	626.68
GD 9	28	0	0	559.67
SME 4	2	0	0	27.4
SME 5	2	0	0	25.9
SME 6	2	0	0	25.6
SME 7	2	0	0	27.1
SME 8	2	0	0	29.8
SS 13	33	0	0	631.73
GD 12	33	0	0	606.81
SS 14	33	0	0	601.62
GD 7	32	0	0	627.43
SME 1	32	0	0	618.23
GD 3	29	0	0	599.36
SME 3	30	0	0	615.31
GD 8	32	0	0	597.43

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	17.7052	5.98036	17.7052	0	8622	261.273
GD 6	19.9176	7.30019	19.9176	0	10647	322.636
HB 3	20.2912	7.11053	20.2912	0	10633	332.281
RC 2	17.5545	7.08107	17.5545	0	8650	262.121
GD 5	19.9753	7.25782	19.9753	0	10486	327.688
RC 14	19.0994	7.04309	19.0994	0	9750	304.688
CO 14	16.5527	6.05987	16.5527	0	5178	235.364
CO 15	18.8084	6.63491	18.8084	0	9415	294.219
SME 2	20.4636	7.17727	20.4636	0	11125	337.121
SS 5	19.5837	7.50768	19.5837	0	10209	319.031

GD 9	19.9882	7.22883	19.9882	0	9153	326.893
SME 4	13.7	5.51543	13.7	0	349	174.5
SME 5	12.95	4.17193	12.95	0	296	148
SME 6	12.8	3.81838	12.8	0	284	142
SME 7	13.55	6.29325	13.55	0	343	171.5
SME 8	14.9	4.80833	14.9	0	394	197
SS 13	19.1433	7.77232	19.1433	0	10033	304.03
GD 12	18.3882	7.31711	18.3882	0	9355	283.485
SS 14	18.2309	7.35137	18.2309	0	9228	279.636
GD 7	19.6072	7.40148	19.6072	0	10192	318.5
SME 1	19.3197	7.36174	19.3197	0	9964	311.375
GD 3	20.6676	7.14804	20.6676	0	10040	346.207
SME 3	20.5103	7.20272	20.5103	0	10248	341.6
GD 8	18.6697	7.45883	18.6697	0	9327	291.469

Analysis of Variance Statistics

SS Wells	969.904
SS Total	30643.8

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	0
Background Rank Mean	0
H Statistic	21.9081
H Adjusted for Ties	21.9081

Basic Statistics

Parameter: TKN

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	616
Total Non-Detects	92 (14.9351%)
Pooled Mean	0.474891
Pooled Std Dev	0.298087

Compliance Meas.	616
Compliance Mean	0.474891
Compliance Std Dev	0.298087

Background Meas.	0
Background Mean	0
Background Std Dev	0

Background Locations

There are 0 background location

Compliance Locations

There are 24 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	33	14	42.4242	11.269
GD 6	33	3	9.09091	15.294
HB 3	33	5	15.1515	16.012
RC 2	33	5	15.1515	14.503
GD 5	33	5	15.1515	13.054
RC 14	33	1	3.0303	17.716
CO 14	22	1	4.54545	15.521
CO 15	32	4	12.5	18.221
SME 2	33	3	9.09091	16.356
SS 5	33	3	9.09091	16.12
GD 9	29	7	24.1379	11.244
SME 4	2	0	0	0.594
SME 5	2	0	0	0.575
SME 6	2	2	100	0
SME 7	2	1	50	0.46
SME 8	2	0	0	0.948
SS 13	32	3	9.375	21.05
GD 12	33	3	9.09091	16.958
SS 14	33	1	3.0303	22.631
GD 7	33	7	21.2121	11.556
SME 1	33	7	21.2121	12.269
GD 3	31	7	22.5806	11.255
SME 3	31	5	16.129	15.684
GD 8	33	5	15.1515	13.243

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	0.341485	0.374923	0.341485	0	7428	225.091
GD 6	0.463455	0.251353	0.463455	0	9864.5	298.924
HB 3	0.485212	0.280717	0.485212	0	10662.5	323.106
RC 2	0.439485	0.235503	0.439485	0	9718.5	294.5
GD 5	0.395576	0.200134	0.395576	0	8424.5	255.288
RC 14	0.536848	0.251729	0.536848	0	11230.5	340.318
CO 14	0.7055	0.565059	0.7055	0	8935.5	406.159
CO 15	0.569406	0.329252	0.569406	0	11882	371.313
SME 2	0.495636	0.253973	0.495636	0	10494.5	318.015
SS 5	0.488485	0.238344	0.488485	0	10608.5	321.47

GD 9	0.387724	0.254955	0.387724	0	7741.5	266.948
SME 4	0.297	0.0480833	0.297	0	248	124
SME 5	0.2875	0.0417193	0.2875	0	234	117
SME 6	0	0	0	0	93	46.5
SME 7	0.23	0.325269	0.23	0	347.5	173.75
SME 8	0.474	0.0947523	0.474	0	622	311
SS 13	0.657813	0.293069	0.657813	0	14050.5	439.078
GD 12	0.513879	0.261022	0.513879	0	11099.5	336.348
SS 14	0.685788	0.24576	0.685788	0	14928.5	452.379
GD 7	0.350182	0.202656	0.350182	0	7464.5	226.197
SME 1	0.371788	0.236267	0.371788	0	8033.5	243.439
GD 3	0.363065	0.23179	0.363065	0	7443.5	240.113
SME 3	0.505935	0.346986	0.505935	0	10169.5	328.048
GD 8	0.401303	0.256989	0.401303	0	8311.5	251.864

Analysis of Variance Statistics

SS Wells	7.42068
SS Total	54.6463

Kruskal-Wallis Statistics

Non-Detect Rank	46.5
Background Rank Sum	0
Background Rank Mean	0
H Statistic	93.5488
H Adjusted for Ties	93.8615

Basic Statistics

Parameter: Total Phosphorus

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	617
Total Non-Detects	444 (71.9611%)
Pooled Mean	0.0560486
Pooled Std Dev	0.130783

Compliance Meas.	617
Compliance Mean	0.0560486
Compliance Std Dev	0.130783

Background Meas.	0
Background Mean	0
Background Std Dev	0

Background Locations

There are 0 background location

Compliance Locations

There are 24 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	33	4	12.1212	9.696
GD 6	33	25	75.7576	2.832
HB 3	33	25	75.7576	1.163
RC 2	33	29	87.8788	0.584
GD 5	33	27	81.8182	1.888
RC 14	33	24	72.7273	1.45
CO 14	22	21	95.4545	0.14
CO 15	32	26	81.25	0.97
SME 2	33	25	75.7576	1.132
SS 5	33	28	84.8485	0.825
GD 9	29	21	72.4138	1.247
SME 4	2	2	100	0
SME 5	2	2	100	0
SME 6	2	2	100	0
SME 7	2	2	100	0
SME 8	2	1	50	0.27
SS 13	33	26	78.7879	1.216
GD 12	33	24	72.7273	1.306
SS 14	33	13	39.3939	3.373
GD 7	33	29	87.8788	0.545
SME 1	33	13	39.3939	3.322
GD 3	31	23	74.1935	1.015
SME 3	31	23	74.1935	1.153
GD 8	33	29	87.8788	0.455

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	0.293818	0.20258	0.293818	0	17608	533.576
GD 6	0.0858182	0.308296	0.0858182	0	9780.5	296.379
HB 3	0.0352424	0.0642379	0.0352424	0	9753.5	295.561
RC 2	0.017697	0.0496761	0.017697	0	8529.5	258.47
GD 5	0.0572121	0.211614	0.0572121	0	9146.5	277.167
RC 14	0.0439394	0.0789533	0.0439394	0	10086	305.636
CO 14	0.00636364	0.0298481	0.00636364	0	5196.5	236.205
CO 15	0.0303125	0.0684348	0.0303125	0	8941	279.406
SME 2	0.034303	0.0644741	0.034303	0	9636.5	292.015
SS 5	0.025	0.0625999	0.025	0	8889	269.364

GD 9	0.043	0.0764218	0.043	0	8815.5	303.983
SME 4	0	0	0	0	445	222.5
SME 5	0	0	0	0	445	222.5
SME 6	0	0	0	0	445	222.5
SME 7	0	0	0	0	445	222.5
SME 8	0.135	0.190919	0.135	0	810.5	405.25
SS 13	0.0368485	0.0776262	0.0368485	0	9551	289.424
GD 12	0.0395758	0.0714384	0.0395758	0	9924	300.727
SS 14	0.102212	0.0947842	0.102212	0	13639.5	413.318
GD 7	0.0165152	0.0455989	0.0165152	0	8514.5	258.015
SME 1	0.100667	0.09516	0.100667	0	13452.5	407.652
GD 3	0.0327419	0.057146	0.0327419	0	9101.5	293.597
SME 3	0.0371935	0.070291	0.0371935	0	9149.5	295.145
GD 8	0.0137879	0.0379257	0.0137879	0	8347.5	252.955

Analysis of Variance Statistics

SS Wells	2.42356
SS Total	10.5362

Kruskal-Wallis Statistics

Non-Detect Rank	222.5
Background Rank Sum	0
Background Rank Mean	0
H Statistic	93.677
H Adjusted for Ties	149.32

Basic Statistics

Parameter: Total Suspended Solids

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	617
Total Non-Detects	7 (1.13452%)
Pooled Mean	18.3899
Pooled Std Dev	23.4695

Compliance Meas.	617
Compliance Mean	18.3899
Compliance Std Dev	23.4695

Background Meas.	0
Background Mean	0
Background Std Dev	0

Background Locations

There are 0 background location

Compliance Locations

There are 24 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	33	0	0	1011.91
GD 6	33	0	0	347.42
HB 3	33	0	0	815.2
RC 2	33	1	3.0303	527.7
GD 5	33	0	0	533.39
RC 14	33	0	0	648.78
CO 14	22	0	0	333.49
CO 15	32	0	0	569.45
SME 2	33	0	0	411.36
SS 5	33	0	0	390.21
GD 9	29	0	0	709.14
SME 4	2	0	0	39.4
SME 5	2	0	0	40.7
SME 6	2	0	0	63.9
SME 7	2	0	0	43.6
SME 8	2	0	0	97.6
SS 13	33	1	3.0303	401.38
GD 12	33	0	0	482.88
SS 14	33	3	9.09091	557.4
GD 7	33	0	0	524.05
SME 1	33	0	0	668.07
GD 3	31	0	0	449.16
SME 3	31	0	0	1127.38
GD 8	33	2	6.06061	553.01

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	30.6639	23.5281	30.6639	0	15452	468.242
GD 6	10.5279	5.37123	10.5279	0	6735	204.091
HB 3	24.703	12.6465	24.703	0	15167	459.606
RC 2	15.9909	22.0283	15.9909	0	7372	223.394
GD 5	16.1633	8.17357	16.1633	0	11255	341.061
RC 14	19.66	13.6501	19.66	0	12248	371.152
CO 14	15.1586	22.8209	15.1586	0	4282	194.636
CO 15	17.7953	15.9972	17.7953	0	10351	323.469
SME 2	12.4655	13.357	12.4655	0	7136	216.242
SS 5	11.8245	2.86225	11.8245	0	8955	271.364

GD 9	24.4531	31.8008	24.4531	0	11395	392.931
SME 4	19.7	2.68701	19.7	0	934	467
SME 5	20.35	3.74767	20.35	0	942	471
SME 6	31.95	21.5668	31.95	0	991	495.5
SME 7	21.8	5.79828	21.8	0	960	480
SME 8	48.8	41.5779	48.8	0	1073	536.5
SS 13	12.163	15.6498	12.163	0	6531	197.909
GD 12	14.6327	24.4492	14.6327	0	6868	208.121
SS 14	16.8909	27.4758	16.8909	0	7003	212.212
GD 7	15.8803	9.97626	15.8803	0	10547	319.606
SME 1	20.2445	14.3153	20.2445	0	13505	409.242
GD 3	14.489	5.77467	14.489	0	10179	328.355
SME 3	36.3671	66.1138	36.3671	0	13055	421.129
GD 8	16.7579	22.3079	16.7579	0	7717	233.848

Analysis of Variance Statistics

SS Wells	27591.8
SS Total	339303

Kruskal-Wallis Statistics

Non-Detect Rank	4
Background Rank Sum	0
Background Rank Mean	0
H Statistic	172.788
H Adjusted for Ties	172.788

Basic Statistics

Parameter: Turbidity

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	615
Total Non-Detects	9 (1.46341%)
Pooled Mean	24.3237
Pooled Std Dev	48.4443

Compliance Meas.	615
Compliance Mean	24.3237
Compliance Std Dev	48.4443

Background Meas.	0
Background Mean	0
Background Std Dev	0

Background Locations

There are 0 background location

Compliance Locations

There are 24 compliance location

Location	Obs.	Non-Detects	% ND	Total
AT 5	33	1	3.0303	1904.1
GD 6	33	1	3.0303	497.47
HB 3	33	0	0	821.34
RC 2	33	1	3.0303	854.25
GD 5	33	0	0	783.5
RC 14	33	0	0	952.58
CO 14	21	0	0	380.7
CO 15	32	1	3.125	1093.81
SME 2	33	1	3.0303	382.8
SS 5	32	0	0	437.72
GD 9	29	0	0	802.15
SME 4	2	0	0	19.9
SME 5	2	0	0	17.1
SME 6	2	0	0	16.9
SME 7	2	0	0	49.1
SME 8	2	0	0	127.76
SS 13	33	1	3.0303	444.67
GD 12	33	1	3.0303	550.66
SS 14	33	1	3.0303	473.64
GD 7	33	0	0	558.76
SME 1	33	0	0	878.79
GD 3	31	0	0	773.64
SME 3	31	0	0	1319.7
GD 8	33	1	3.0303	818.02

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
AT 5	57.7	159.189	57.7	0	13636	413.212
GD 6	15.0748	13.346	15.0748	0	7838	237.515
HB 3	24.8891	15.3708	24.8891	0	12903	391
RC 2	25.8864	23.7391	25.8864	0	11951	362.152
GD 5	23.7424	19.5699	23.7424	0	11263	341.303
RC 14	28.8661	24.1984	28.8661	0	12231	370.636
CO 14	18.1286	15.4387	18.1286	0	6005	285.952
CO 15	34.1816	26.9628	34.1816	0	13175	411.719
SME 2	11.6	7.13182	11.6	0	5956	180.485
SS 5	13.6787	6.20836	13.6787	0	7859	245.594

GD 9	27.6603	40.2521	27.6603	0	9673	333.552
SME 4	9.95	10.9602	9.95	0	386	193
SME 5	8.55	9.68736	8.55	0	340	170
SME 6	8.45	7.2832	8.45	0	284	142
SME 7	24.55	34.2947	24.55	0	573	286.5
SME 8	63.88	66.6377	63.88	0	951	475.5
SS 13	13.4748	11.0032	13.4748	0	6719	203.606
GD 12	16.6867	13.605	16.6867	0	8816	267.152
SS 14	14.3527	12.2122	14.3527	0	7149	216.636
GD 7	16.9321	12.0276	16.9321	0	8706	263.818
SME 1	26.63	23.2623	26.63	0	12818	388.424
GD 3	24.9561	36.9547	24.9561	0	9153	295.258
SME 3	42.571	96.6671	42.571	0	11578	373.484
GD 8	24.7885	39.1461	24.7885	0	9457	286.576

Analysis of Variance Statistics

SS Wells	79528.1
SS Total	1.44097e+006

Kruskal-Wallis Statistics

Non-Detect Rank	5
Background Rank Sum	0
Background Rank Mean	0
H Statistic	106.172
H Adjusted for Ties	106.172

Comparison of AT5 and SME 1

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	8.26	31
	5/8/2013	8.96	39
	9/23/2013	7.87	26
	12/10/2013	9.15	43
	2/6/2014	11.34	61
	6/26/2014	7.05	19
	9/30/2014	7.46	24
	11/19/2014	10.86	57
	3/23/2015	8.52	35
	4/22/2015	7.97	28
	9/30/2015	7.03	17
	11/19/2015	7.04	18
	3/15/2016	7.21	21
	6/29/2016	3.29	2
	8/9/2016	4.98	6
	12/7/2016	10.2	51
	3/2/2017	4.31	5
	6/29/2017	9.21	45
	8/16/2017	6.58	11
	10/25/2017	8.32	32
	3/28/2018	9.18	44
	6/29/2018	6.37	8
	8/2/2018	5.82	7
	12/10/2018	11.48	63
	4/15/2019	7.89	27
	6/12/2019	8.73	37
	8/27/2019	8.51	34
	10/29/2019	9.21	46
	3/30/2020	8.61	36
	6/16/2020	10.36	53
	9/21/2020	6.92	16
	12/17/2020	10.68	54
	3/18/2021	9.54	49
AT 5	3/12/2013	11.04	58
	5/8/2013	2.59	1
	9/23/2013	3.9498	4
	12/10/2013	11.43	62
	2/6/2014	15.29	64
	6/26/2014	7.61	25
	9/30/2014	6.63	12
	11/19/2014	10.23	52
	3/23/2015	9.39	47
	4/22/2015	11.13	59
	9/30/2015	9.45	48
	11/19/2015	19.33	65
	3/15/2016	20.43	66
	6/29/2016	6.57	10

8/9/2016	6.47	9
12/7/2016	10.19	50
3/2/2017	8.86	38
6/21/2017	6.74	13
8/17/2017	6.77	14
10/26/2017	8.25	30
3/27/2018	9.03	41
6/26/2018	6.89	15
8/1/2018	7.16	20
12/11/2018	10.73	56
4/17/2019	8.99	40
6/11/2019	3.48	3
8/28/2019	7.42	23
10/28/2019	8.45	33
3/31/2020	9.07	42
6/10/2020	7.35	22
9/21/2020	8.21	29
12/17/2020	11.21	60
3/18/2021	10.68	55

The Wilcoxon Statistic is 605

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 0.769468

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is 0.769468

0.769468 < 2.326 indicating no statistical significance at 1% level

0.769468 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 12

Non detect rank is 6.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	0.54	31
	5/8/2013	0.15	14
	9/23/2013	ND<0	6.5
	12/10/2013	0.55	32
	2/6/2014	0.55	33
	6/26/2014	ND<0	6.5
	9/30/2014	ND<0	6.5
	11/19/2014	0.74	48
	3/23/2015	0.51	28
	4/22/2015	0.4	23
	9/30/2015	ND<0	6.5
	11/19/2015	0.401	24
	3/15/2016	0.454	26
	6/29/2016	ND<0	6.5
	8/9/2016	ND<0	6.5
	12/7/2016	0.413	25
	3/2/2017	0.671	45
	6/29/2017	ND<0	6.5
	8/16/2017	ND<0	6.5
	10/25/2017	0.368	21
	3/28/2018	0.633	39
	6/29/2018	0.312	20
	8/2/2018	0.296	17
	12/10/2018	0.259	15
	4/15/2019	0.39	22
	6/12/2019	ND<0	6.5
	8/27/2019	ND<0	6.5
	10/29/2019	0.129	13
	3/30/2020	0.462	27
	6/16/2020	ND<0	6.5
	9/21/2020	ND<0	6.5
	12/17/2020	0.577	34
	3/18/2021	0.263	16
AT 5	3/12/2013	0.61	37
	5/8/2013	0.31	18
	9/23/2013	1.3	64
	12/10/2013	0.79	50
	2/6/2014	0.8	51
	6/26/2014	0.77	49
	9/30/2014	0.94	60
	11/19/2014	1.3	65
	3/23/2015	0.71	47
	4/22/2015	0.69	46
	9/30/2015	1.82	66
	11/19/2015	0.666	44
	3/15/2016	0.578	35
	6/29/2016	0.8	52
	8/9/2016	0.975	61
	12/7/2016	0.663	42
	3/2/2017	1.08	62

6/21/2017	0.616	38
8/17/2017	0.89	58
10/26/2017	0.936	59
3/27/2018	0.849	56
6/26/2018	0.849	57
8/1/2018	0.51	29
12/11/2018	1.09	63
4/17/2019	0.638	40
6/11/2019	0.822	53
8/28/2019	0.534	30
10/28/2019	0.665	43
3/31/2020	0.657	41
6/10/2020	0.825	54
9/21/2020	0.603	36
12/17/2020	0.831	55
3/18/2021	0.31	19

The Wilcoxon Statistic is 1019

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 6.0788

The Standard Deviation adjusted for ties is 77.7428

The Z Score adjusted for ties is 6.09702

6.0788 > 2.326 indicating statistical significance at 1% level

6.09702 > 2.326 indicating statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 8

Non detect rank is 4.5

Wilcoxon Ranks

Location	Date	Conc.	Rank	
SME 1	3/12/2013	0.11	31	
	5/8/2013	0.063	20	
	9/23/2013	0.053	18	
	12/10/2013	0.21	45	
	2/6/2014	0.11	32	
	6/26/2014	ND<0	4.5	
	9/30/2014	0.044	13	
	11/19/2014	0.27	53	
	3/23/2015	0.073	25	
	4/22/2015	0.039	12	
	9/30/2015	0.052	17	
	11/19/2015	0.084	26	
	3/15/2016	0.047	14	
	6/29/2016	0.18	42	
	8/9/2016	0.089	28	
	12/7/2016	0.209	44	
	3/2/2017	0.127	36	
	6/29/2017	0.028	9	
	8/16/2017	ND<0	4.5	
	10/25/2017	0.121	34	
	3/28/2018	0.106	30	
	6/29/2018	0.121	35	
	8/2/2018	0.145	39	
	12/10/2018	ND<0	4.5	
	4/15/2019	0.063	21	
	6/12/2019	ND<0	4.5	
	8/27/2019	ND<0	4.5	
	10/29/2019	0.049	15	
	3/30/2020	ND<0	4.5	
	6/16/2020	0.031	10	
	9/21/2020	ND<0	4.5	
	12/17/2020	0.072	24	
	3/18/2021	ND<0	4.5	
AT 5	3/12/2013	0.15	40	
	5/8/2013	0.099	29	
	9/23/2013	0.4	57	
	12/10/2013	0.29	55	
	2/6/2014	0.13	37	
	6/26/2014	0.34	56	
	9/30/2014	0.49	62	
	11/19/2014	0.41	59	
	3/23/2015	0.13	38	
	4/22/2015	0.11	33	
	9/30/2015	0.664	66	
	11/19/2015	0.261	51	
	3/15/2016	0.068	23	
	6/29/2016	0.598	65	
	8/9/2016	0.482	61	
	12/7/2016	0.45	60	
	3/2/2017	0.267	52	

6/21/2017	0.226	46
8/17/2017	0.258	50
10/26/2017	0.226	47
3/27/2018	0.162	41
6/26/2018	0.23	48
8/1/2018	0.285	54
12/11/2018	0.066	22
4/17/2019	0.061	19
6/11/2019	0.206	43
8/28/2019	0.404	58
10/28/2019	0.523	64
3/31/2020	0.032	11
6/10/2020	0.248	49
9/21/2020	0.491	63
12/17/2020	0.087	27
3/18/2021	0.05	16

The Wilcoxon Statistic is 941

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 5.07849

The Standard Deviation adjusted for ties is 77.9076

The Z Score adjusted for ties is 5.08295

5.07849 > 2.326 indicating statistical significance at 1% level

5.08295 > 2.326 indicating statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 4.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	8.19	54
	5/8/2013	7.64	24
	9/23/2013	8.26	56
	12/10/2013	8.05	46
	2/6/2014	7.22	12
	6/26/2014	8.49	61
	9/30/2014	8.25	55
	11/19/2014	8.31	58
	3/23/2015	8.26	57
	4/22/2015	7.14	10
	9/30/2015	8.34	59
	11/19/2015	7.92	38
	3/15/2016	8.44	60
	6/29/2016	8.8	65
	8/9/2016	8.55	62
	12/7/2016	7.96	42
	3/2/2017	7.75	27
	6/29/2017	9.11	66
	8/16/2017	8.12	52
	10/25/2017	8.02	45
	3/28/2018	8.1	51
	6/29/2018	7.84	31
	8/2/2018	7.48	20
	12/10/2018	7.45	18
	4/15/2019	7.89	35
	6/12/2019	7.34	15
	8/27/2019	7.45	19
	10/29/2019	7.95	40
	3/30/2020	7.35	16
	6/16/2020	8.58	63
	9/21/2020	7.71	26
	12/17/2020	7.66	25
	3/18/2021	7.24	13
AT 5	3/12/2013	7.8	29
	5/8/2013	5.08	2
	9/23/2013	5.96	6
	12/10/2013	5.32	4
	2/6/2014	4.06	1
	6/26/2014	7.85	34
	9/30/2014	5.78	5
	11/19/2014	5.08	3
	3/23/2015	8.69	64
	4/22/2015	6.93	8
	9/30/2015	6.37	7
	11/19/2015	7.38	17
	3/15/2016	7.93	39
	6/29/2016	7.99	44
	8/9/2016	7.89	36
	12/7/2016	7.08	9
	3/2/2017	8.14	53

6/21/2017	7.98	43
8/17/2017	8.09	49
10/26/2017	7.95	41
3/27/2018	7.79	28
6/26/2018	8.06	47
8/1/2018	7.33	14
12/11/2018	7.59	22
4/17/2019	7.63	23
6/11/2019	7.18	11
8/28/2019	7.84	32
10/28/2019	7.84	33
3/31/2020	8.09	50
6/10/2020	7.56	21
9/21/2020	8.08	48
12/17/2020	7.91	37
3/18/2021	7.82	30

The Wilcoxon Statistic is 329

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -2.77008

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is -2.77008

-2.77008 < 2.326 indicating no statistical significance at 1% level

-2.77008 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 4.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	13.1	16
	5/8/2013	16	25
	9/23/2013	27.7	61
	12/10/2013	7.6	4
	2/6/2014	5.9	1
	9/30/2014	24.67	50
	11/19/2014	7.8	5
	3/23/2015	17.3	29
	4/22/2015	18.5	36
	9/30/2015	26.4	57
	11/19/2015	15.9	24
	3/15/2016	18.3	34
	6/29/2016	30.67	65
	8/9/2016	28.87	63
	12/7/2016	11.98	12
	3/2/2017	12.34	13
	6/29/2017	25.8	53
	8/16/2017	29.7	64
	10/25/2017	17.3	30
	3/28/2018	17.6	31
	6/29/2018	26.2	56
	8/2/2018	23.9	49
	12/10/2018	8	6
	4/15/2019	19.7	38
	6/12/2019	27.2	60
	8/27/2019	28.8	62
	10/29/2019	17.6	32
	3/30/2020	19.3	37
	6/16/2020	27	58
	9/21/2020	22.2	43
	12/17/2020	9.2	8
	3/18/2021	15.7	22
AT 5	3/12/2013	12.55	14
	5/8/2013	14.69	19
	9/23/2013	22.88	45
	12/10/2013	8.21	7
	2/6/2014	7.28	3
	6/26/2014	23.89	48
	9/30/2014	21.03	40
	11/19/2014	6.91	2
	3/23/2015	14.5	18
	4/22/2015	18.4	35
	9/30/2015	21.63	41
	11/19/2015	14.98	20
	3/15/2016	16.86	27
	6/29/2016	25.4	51
	8/9/2016	25.8	54
	12/7/2016	11.3	11
	3/2/2017	13.4	17
	6/21/2017	23.3	47

8/17/2017	26	55
10/26/2017	15.7	23
3/27/2018	12.9	15
6/26/2018	25.5	52
8/1/2018	22.3	44
12/11/2018	9.4	9
4/17/2019	17.9	33
6/11/2019	22.16	42
8/28/2019	27.1	59
10/28/2019	15.1	21
3/31/2020	16.6	26
6/10/2020	23.2	46
9/21/2020	20.6	39
12/17/2020	9.6	10
3/18/2021	17.2	28

The Wilcoxon Statistic is 440

The Expected value is 528

The Standard Deviation is 76.2102

The Z Score is -1.16126

The Standard Deviation adjusted for ties is 76.2102

The Z Score adjusted for ties is -1.16126

-1.16126 < 2.326 indicating no statistical significance at 1% level

-1.16126 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 21

Non detect rank is 11

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	0.34	29
	5/8/2013	0.42	40
	9/23/2013	0.8	62
	12/10/2013	0.47	41
	2/6/2014	0.5	45
	6/26/2014	0.31	27
	9/30/2014	0.61	56
	11/19/2014	0.55	52
	3/23/2015	ND<0	11
	4/22/2015	0.38	37
	9/30/2015	0.807	63
	11/19/2015	ND<0	11
	3/15/2016	ND<0	11
	6/29/2016	0.62	57
	8/9/2016	0.547	51
	12/7/2016	0.378	36
	3/2/2017	0.345	30
	6/29/2017	0.53	49
	8/16/2017	0.52	47
	10/25/2017	0.288	25
	3/28/2018	ND<0	11
	6/29/2018	0.67	58
	8/2/2018	0.495	44
	12/10/2018	0.336	28
	4/15/2019	0.36	33
	6/12/2019	ND<0	11
	8/27/2019	0.356	32
	10/29/2019	0.272	24
	3/30/2020	ND<0	11
	6/16/2020	0.485	42
	9/21/2020	ND<0	11
	12/17/2020	0.3	26
	3/18/2021	0.58	55
AT 5	3/12/2013	0.37	34
	5/8/2013	0.56	53
	9/23/2013	0.37	35
	12/10/2013	0.97	64
	2/6/2014	0.35	31
	6/26/2014	0.38	38
	9/30/2014	ND<0	11
	11/19/2014	0.5	46
	3/23/2015	0.27	23
	4/22/2015	ND<0	11
	9/30/2015	ND<0	11
	11/19/2015	1.47	66
	3/15/2016	0.772	61
	6/29/2016	ND<0	11
	8/9/2016	0.268	22
	12/7/2016	ND<0	11
	3/2/2017	0.529	48

6/21/2017	0.544	50
8/17/2017	0.69	60
10/26/2017	ND<0	11
3/27/2018	ND<0	11
6/26/2018	0.411	39
8/1/2018	0.68	59
12/11/2018	0.579	54
4/17/2019	ND<0	11
6/11/2019	0.486	43
8/28/2019	1.07	65
10/28/2019	ND<0	11
3/31/2020	ND<0	11
6/10/2020	ND<0	11
9/21/2020	ND<0	11
12/17/2020	ND<0	11
3/18/2021	ND<0	11

The Wilcoxon Statistic is 484

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -0.782292

The Standard Deviation adjusted for ties is 76.7124

The Z Score adjusted for ties is -0.795178

-0.782292 < 2.326 indicating no statistical significance at 1% level

-0.795178 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 17

Non detect rank is 9

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	0.11	20
	5/8/2013	ND<0	9
	9/23/2013	ND<0	9
	12/10/2013	0.26	46
	2/6/2014	0.13	26
	6/26/2014	ND<0	9
	9/30/2014	0.11	21
	11/19/2014	0.29	50
	3/23/2015	0.1	18
	4/22/2015	ND<0	9
	9/30/2015	0.135	31
	11/19/2015	0.134	29
	3/15/2016	ND<0	9
	6/29/2016	0.245	43
	8/9/2016	0.154	37
	12/7/2016	0.271	47
	3/2/2017	0.208	40
	6/29/2017	ND<0	9
	8/16/2017	0.111	23
	10/25/2017	0.151	36
	3/28/2018	ND<0	9
	6/29/2018	0.241	41
	8/2/2018	0.136	32
	12/10/2018	ND<0	9
	4/15/2019	ND<0	9
	6/12/2019	ND<0	9
	8/27/2019	0.161	38
	10/29/2019	0.134	30
	3/30/2020	ND<0	9
	6/16/2020	0.129	25
	9/21/2020	ND<0	9
	12/17/2020	ND<0	9
	3/18/2021	0.112	24
AT 5	3/12/2013	0.14	33
	5/8/2013	0.11	22
	9/23/2013	0.35	54
	12/10/2013	0.34	53
	2/6/2014	0.13	27
	6/26/2014	0.28	48
	9/30/2014	0.54	64
	11/19/2014	0.39	57
	3/23/2015	0.14	34
	4/22/2015	0.13	28
	9/30/2015	0.862	66
	11/19/2015	0.309	52
	3/15/2016	ND<0	9
	6/29/2016	0.71	65
	8/9/2016	0.502	63
	12/7/2016	0.474	60
	3/2/2017	0.373	56

6/21/2017	0.366	55
8/17/2017	0.283	49
10/26/2017	0.25	45
3/27/2018	0.148	35
6/26/2018	0.246	44
8/1/2018	0.401	59
12/11/2018	0.204	39
4/17/2019	ND<0	9
6/11/2019	0.29	51
8/28/2019	0.485	61
10/28/2019	0.499	62
3/31/2020	0.102	19
6/10/2020	0.243	42
9/21/2020	0.399	58
12/17/2020	ND<0	9
3/18/2021	ND<0	9

The Wilcoxon Statistic is 876

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 4.2449

The Standard Deviation adjusted for ties is 77.309

The Z Score adjusted for ties is 4.28152

4.2449 > 2.326 indicating statistical significance at 1% level

4.28152 > 2.326 indicating statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 9

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	16	24
	5/8/2013	14	13
	9/23/2013	15	18
	12/10/2013	21	42
	2/6/2014	23	45
	6/26/2014	13	11
	9/30/2014	34	56
	11/19/2014	19	35
	3/23/2015	14	14
	4/22/2015	18	31
	9/30/2015	15.3	21
	11/19/2015	23.2	46
	3/15/2016	17.7	29
	6/29/2016	20.3	40
	8/9/2016	12.6	9
	12/7/2016	17.7	30
	3/2/2017	15	19
	6/29/2017	18.3	32
	8/16/2017	12.7	10
	10/25/2017	16.9	26
	3/28/2018	19.8	38
	6/29/2018	23.3	47
	8/2/2018	29.5	53
	12/10/2018	31	54
	4/15/2019	35	57
	6/12/2019	9.67	4
	8/27/2019	7.1	1
	10/29/2019	11	5
	3/30/2020	13.3	12
	6/16/2020	11.4	7
	9/21/2020	9	2
	12/17/2020	20.9	41
	3/18/2021	90.4	65
AT 5	3/12/2013	20	39
	5/8/2013	19	36
	9/23/2013	22	43
	12/10/2013	64	61
	2/6/2014	32	55
	6/26/2014	19	37
	9/30/2014	14	15
	11/19/2014	27	51
	3/23/2015	15	20
	4/22/2015	76	64
	9/30/2015	16.4	25
	11/19/2015	74.6	63
	3/15/2016	26.7	50
	6/29/2016	14.5	17
	8/9/2016	18.3	33
	12/7/2016	16.9	27
	3/2/2017	44.6	58

6/21/2017	70	62
8/17/2017	12	8
10/26/2017	9.41	3
3/27/2018	15.9	22
6/26/2018	25.2	49
8/1/2018	107	66
12/11/2018	46.2	59
4/17/2019	14.4	16
6/11/2019	15.9	23
8/28/2019	23.5	48
10/28/2019	17	28
3/31/2020	27.1	52
6/10/2020	22.8	44
9/21/2020	11.3	6
12/17/2020	18.6	34
3/18/2021	55.6	60

The Wilcoxon Statistic is 713

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 2.15451

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is 2.15451

2.15451 < 2.326 indicating no statistical significance at 1% level

2.15451 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: AT 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 1

Non detect rank is 1

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	13.1	10
	5/8/2013	24	39
	9/23/2013	14.2	16
	12/10/2013	46.3	55
	2/6/2014	61	60
	6/26/2014	14	13
	9/30/2014	27.6	44
	11/19/2014	40.1	53
	3/23/2015	21	33
	4/22/2015	29	47
	9/30/2015	15	20
	11/19/2015	50	57
	3/15/2016	26.2	42
	6/29/2016	21.2	34
	8/9/2016	15.3	21
	12/7/2016	31	50
	3/2/2017	14	14
	6/29/2017	19.2	28
	8/16/2017	10.6	5
	10/25/2017	5.4	2
	3/28/2018	19.3	29
	6/29/2018	20.7	31
	8/2/2018	28.5	45
	12/10/2018	32	51
	4/15/2019	42.2	54
	6/12/2019	12.2	8
	8/27/2019	135.2	65
	10/29/2019	14.5	17
	3/30/2020	13.3	11
	6/16/2020	11.6	6
	9/21/2020	13.8	12
	12/17/2020	23.19	38
	3/18/2021	14.1	15
AT 5	3/12/2013	15.4	22
	5/8/2013	25.3	41
	9/23/2013	21.3	35
	12/10/2013	68.4	61
	2/6/2014	39.8	52
	6/26/2014	70.4	62
	9/30/2014	14.9	19
	11/19/2014	47.1	56
	3/23/2015	17.1	25
	4/22/2015	52.8	59
	9/30/2015	15.4	23
	11/19/2015	934	66
	3/15/2016	30.2	49
	6/29/2016	18.1	27
	8/9/2016	17.1	26
	12/7/2016	26.5	43
	3/2/2017	50.8	58

6/21/2017	11.7	7
8/17/2017	9.5	3
10/26/2017	9.8	4
3/27/2018	14.5	18
6/26/2018	16.4	24
8/1/2018	77.9	63
12/11/2018	29.2	48
4/17/2019	12.2	9
6/11/2019	24.6	40
8/28/2019	20.7	32
10/28/2019	22.5	36
3/31/2020	23.1	37
6/10/2020	19.4	30
9/21/2020	ND<0.3	1
12/17/2020	28.7	46
3/18/2021	119	64

The Wilcoxon Statistic is 625

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 1.02596

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is 1.02596

1.02596 < 2.326 indicating no statistical significance at 1% level

1.02596 < 2.326 indicating no statistical significance at 1% level

Comparison of GD5 and GD3

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: GD 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 3	3/13/2013	9.28	50
	5/20/2013	7.01	24
	9/23/2013	6.5	18
	12/10/2013	9.23	49
	2/6/2014	10.58	59
	6/26/2014	8	37
	9/30/2014	6.69	20
	11/19/2014	10.88	61
	3/23/2015	7.84	35
	4/22/2015	6.74	22
	9/30/2015	4.91	4
	11/19/2015	7.74	31
	3/15/2016	8.62	44
	6/29/2016	2.78	2
	8/9/2016	5.09	6
	12/7/2016	10.55	58
	3/2/2017	5.01	5
	7/5/2017	6.23	14
	8/16/2017	6.24	15
	10/25/2017	7.25	25
	3/28/2018	9.34	52
	6/29/2018	5.63	8
	8/2/2018	5.72	10
	12/10/2018	11.09	62
	4/15/2019	8.02	38
	6/12/2019	8.31	41
	8/27/2019	8.33	42
	10/29/2019	9.63	55
	3/30/2020	8.83	45
	6/16/2020	8.2	40
	9/21/2020	6.73	21
GD 5	3/13/2013	9.29	51
	5/20/2013	7.76	33
	9/23/2013	6.78	23
	12/10/2013	9.1	48
	2/6/2014	9.88	56
	6/26/2014	6.54	19
	9/30/2014	7.53	29
	3/23/2015	8.58	43
	4/22/2015	7.78	34
	9/30/2015	6.27	16
	11/19/2015	7.34	26
	3/15/2016	7.47	28
	6/29/2016	2.27	1
	8/9/2016	5.55	7
	12/7/2016	10.61	60

3/2/2017	4.49	3
7/5/2017	5.83	11
8/16/2017	6.22	13
10/25/2017	7.35	27
3/28/2018	9.47	54
6/29/2018	5.66	9
8/2/2018	6.02	12
12/10/2018	11.3	63
4/15/2019	8.02	39
6/12/2019	7.64	30
8/27/2019	7.98	36
10/29/2019	9.42	53
3/30/2020	8.86	46
6/16/2020	7.75	32
9/21/2020	6.33	17
12/17/2020	9.96	57
3/18/2021	8.98	47

The Wilcoxon Statistic is 495

The Expected value is 496

The Standard Deviation is 72.737

The Z Score is -0.0206223

The Standard Deviation adjusted for ties is 72.737

The Z Score adjusted for ties is -0.0206223

-0.0206223 < 2.326 indicating no statistical significance at 1% level

-0.0206223 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: GD 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 37

Non detect rank is 19

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 3	3/13/2013	0.29	63
	5/20/2013	0.15	50
	9/23/2013	ND<0	19
	12/10/2013	0.21	54
	2/6/2014	0.21	55
	6/26/2014	0.12	42
	9/30/2014	ND<0	19
	11/19/2014	ND<0	19
	3/23/2015	0.22	57
	4/22/2015	0.18	53
	9/30/2015	0.103	39
	11/19/2015	0.25	61
	3/15/2016	0.42	64
	6/29/2016	ND<0	19
	8/9/2016	ND<0	19
	12/7/2016	ND<0	19
	3/2/2017	0.237	59
	7/5/2017	ND<0	19
	8/16/2017	ND<0	19
	10/25/2017	ND<0	19
	3/28/2018	0.241	60
	6/29/2018	ND<0	19
	8/2/2018	ND<0	19
	12/10/2018	ND<0	19
	4/15/2019	0.233	58
	6/12/2019	ND<0	19
	8/27/2019	ND<0	19
	10/29/2019	ND<0	19
	3/30/2020	0.216	56
	6/16/2020	ND<0	19
	9/21/2020	ND<0	19
GD 5	3/13/2013	0.26	62
	5/20/2013	ND<0	19
	9/23/2013	ND<0	19
	12/10/2013	0.1	38
	2/6/2014	0.17	52
	6/26/2014	ND<0	19
	9/30/2014	ND<0	19
	11/19/2014	0.11	40
	3/23/2015	0.12	43
	4/22/2015	0.14	49
	9/30/2015	ND<0	19
	11/19/2015	0.168	51
	3/15/2016	ND<0	19
	6/29/2016	ND<0	19
	8/9/2016	ND<0	19
	12/7/2016	ND<0	19
	3/2/2017	0.118	41
	7/5/2017	ND<0	19
	8/16/2017	ND<0	19

10/25/2017	ND<0	19
3/28/2018	0.127	45
6/29/2018	ND<0	19
8/2/2018	ND<0	19
12/10/2018	ND<0	19
4/15/2019	0.128	47
6/12/2019	ND<0	19
8/27/2019	ND<0	19
10/29/2019	ND<0	19
3/30/2020	0.13	48
6/16/2020	ND<0	19
9/21/2020	ND<0	19
12/17/2020	0.122	44
3/18/2021	0.127	46

The Wilcoxon Statistic is 425

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is -1.16873

The Standard Deviation adjusted for ties is 66.866

The Z Score adjusted for ties is -1.30111

-1.16873 < 2.326 indicating no statistical significance at 1% level

-1.30111 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: GD 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 51

Non detect rank is 26

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 3	3/13/2013	0.028	55
	5/20/2013	0.026	53
	9/23/2013	0.025	52
	12/10/2013	0.085	62
	2/6/2014	ND<0	26
	6/26/2014	ND<0	26
	9/30/2014	ND<0	26
	11/19/2014	ND<0	26
	3/23/2015	ND<0	26
	4/22/2015	0.079	61
	9/30/2015	ND<0	26
	11/19/2015	ND<0	26
	3/15/2016	0.071	59
	6/29/2016	0.088	63
	8/9/2016	ND<0	26
	12/7/2016	ND<0	26
	3/2/2017	ND<0	26
	7/5/2017	ND<0	26
	8/16/2017	ND<0	26
	10/25/2017	ND<0	26
	3/28/2018	ND<0	26
	6/29/2018	ND<0	26
	8/2/2018	ND<0	26
	12/10/2018	ND<0	26
	4/15/2019	ND<0	26
	6/12/2019	ND<0	26
	8/27/2019	ND<0	26
	10/29/2019	ND<0	26
	3/30/2020	ND<0	26
	6/16/2020	ND<0	26
	9/21/2020	ND<0	26
GD 5	3/13/2013	ND<0	26
	5/20/2013	ND<0	26
	9/23/2013	0.027	54
	12/10/2013	0.088	64
	2/6/2014	0.038	56
	6/26/2014	ND<0	26
	9/30/2014	ND<0	26
	11/19/2014	0.051	58
	3/23/2015	ND<0	26
	4/22/2015	ND<0	26
	9/30/2015	ND<0	26
	11/19/2015	0.042	57
	3/15/2016	ND<0	26
	6/29/2016	0.074	60
	8/9/2016	ND<0	26
	12/7/2016	ND<0	26
	3/2/2017	ND<0	26
	7/5/2017	ND<0	26
	8/16/2017	ND<0	26

10/25/2017	ND<0	26
3/28/2018	ND<0	26
6/29/2018	ND<0	26
8/2/2018	ND<0	26
12/10/2018	ND<0	26
4/15/2019	ND<0	26
6/12/2019	ND<0	26
8/27/2019	ND<0	26
10/29/2019	ND<0	26
3/30/2020	ND<0	26
6/16/2020	ND<0	26
9/21/2020	ND<0	26
12/17/2020	ND<0	26
3/18/2021	ND<0	26

The Wilcoxon Statistic is 490

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is -0.295542

The Standard Deviation adjusted for ties is 52.3225

The Z Score adjusted for ties is -0.420469

-0.295542 < 2.326 indicating no statistical significance at 1% level

-0.420469 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: GD 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 26

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 3	3/13/2013	8	43
	5/20/2013	8.09	51
	9/23/2013	7.8	28
	12/10/2013	7.85	33
	2/6/2014	7.13	1
	6/26/2014	8.13	53
	9/30/2014	8.11	52
	11/19/2014	8.36	63
	3/23/2015	8.32	61
	4/22/2015	7.86	35
	9/30/2015	7.94	40
	11/19/2015	7.61	15
	3/15/2016	8.04	49
	6/29/2016	7.84	31
	8/9/2016	7.98	42
	12/7/2016	7.91	39
	3/2/2017	8.21	57
	7/5/2017	7.48	10
	8/16/2017	8.01	44
	10/25/2017	7.54	12
	3/28/2018	8.06	50
	6/29/2018	7.68	21
	8/2/2018	7.69	22
	12/10/2018	7.4	9
	4/15/2019	7.71	25
	6/12/2019	7.24	6
	8/27/2019	7.18	5
	10/29/2019	7.84	32
	3/30/2020	7.58	13
	6/16/2020	8.03	47
	9/21/2020	7.51	11
GD 5	3/13/2013	8.33	62
	5/20/2013	8.28	59
	9/23/2013	7.67	20
	12/10/2013	7.97	41
	2/6/2014	7.14	2
	6/26/2014	7.9	38
	9/30/2014	8.28	60
	11/19/2014	8.15	55
	3/23/2015	8.14	54
	4/22/2015	7.81	29
	9/30/2015	8.03	48
	11/19/2015	7.63	17
	3/15/2016	8.8	64
	6/29/2016	8.02	45
	8/9/2016	8.25	58
	12/7/2016	7.73	26
	3/2/2017	7.81	30
	7/5/2017	7.32	7
	8/16/2017	7.89	37

10/25/2017	7.36	8
3/28/2018	8.18	56
6/29/2018	7.76	27
8/2/2018	7.59	14
12/10/2018	7.87	36
4/15/2019	7.69	23
6/12/2019	8.02	46
8/27/2019	7.15	3
10/29/2019	7.85	34
3/30/2020	7.65	18
6/16/2020	7.69	24
9/21/2020	7.65	19
12/17/2020	7.62	16
3/18/2021	7.15	4

The Wilcoxon Statistic is 519

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is 0.094036

The Standard Deviation adjusted for ties is 74.4396

The Z Score adjusted for ties is 0.094036

0.094036 < 2.326 indicating no statistical significance at 1% level

0.094036 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: GD 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 26

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 3	3/13/2013	10.7	10
	5/20/2013	23.4	36
	9/23/2013	26.4	43
	12/10/2013	9.3	6
	2/6/2014	6.1	1
	9/30/2014	25.06	39
	3/23/2015	16.5	17
	4/22/2015	20.6	32
	9/30/2015	24.9	38
	11/19/2015	16	16
	3/15/2016	18.7	24
	6/29/2016	29.94	58
	8/9/2016	30.01	59
	12/7/2016	12	12
	3/2/2017	14.35	14
	7/5/2017	27.3	49
	8/16/2017	28.8	56
	10/25/2017	19.1	27
	3/28/2018	16.6	18
	6/29/2018	27.3	50
	8/2/2018	26.6	44
	12/10/2018	6.8	2
	4/15/2019	19.9	31
	6/12/2019	27.3	51
	8/27/2019	28.8	57
	10/29/2019	17.2	21
	3/30/2020	18.8	26
	6/16/2020	27.5	52
	9/21/2020	23.4	37
GD 5	3/13/2013	10.2	9
	5/20/2013	22.6	34
	9/23/2013	27.1	46
	12/10/2013	9.1	5
	2/6/2014	7.2	3
	9/30/2014	25.22	40
	11/19/2014	9.4	7
	3/23/2015	15.9	15
	4/22/2015	21.7	33
	9/30/2015	26.3	42
	11/19/2015	16.6	19
	3/15/2016	19.4	30
	6/29/2016	30.37	61
	8/9/2016	30.2	60
	12/7/2016	11.96	11
	3/2/2017	14.26	13
	7/5/2017	26.9	45
	8/16/2017	28	54
	10/25/2017	18.7	25
	3/28/2018	18.5	23
	6/29/2018	27.5	53

8/2/2018	25.7	41
12/10/2018	7.3	4
4/15/2019	19.3	29
6/12/2019	27.2	47
8/27/2019	28.7	55
10/29/2019	17.8	22
3/30/2020	19.1	28
6/16/2020	27.2	48
9/21/2020	23.2	35
12/17/2020	9.7	8
3/18/2021	16.9	20

The Wilcoxon Statistic is 437

The Expected value is 464

The Standard Deviation is 69.2435

The Z Score is -0.397149

The Standard Deviation adjusted for ties is 69.2435

The Z Score adjusted for ties is -0.397149

-0.397149 < 2.326 indicating no statistical significance at 1% level

-0.397149 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: GD 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 12

Non detect rank is 6.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 3	3/13/2013	0.44	39
	5/20/2013	0.63	57
	9/23/2013	0.58	54
	12/10/2013	0.64	58
	2/6/2014	0.68	61
	6/26/2014	0.4	31
	9/30/2014	0.32	15
	11/19/2014	0.26	13
	3/23/2015	0.34	19
	4/22/2015	0.36	25
	9/30/2015	0.74	64
	11/19/2015	ND<0	6.5
	3/15/2016	ND<0	6.5
	6/29/2016	ND<0	6.5
	8/9/2016	0.393	30
	12/7/2016	0.356	24
	3/2/2017	0.649	59
	7/5/2017	0.56	51
	8/16/2017	0.387	28
	10/25/2017	0.39	29
	3/28/2018	ND<0	6.5
	6/29/2018	0.511	47
	8/2/2018	0.569	53
	12/10/2018	0.519	48
	4/15/2019	ND<0	6.5
	6/12/2019	ND<0	6.5
	8/27/2019	0.434	37
	10/29/2019	0.453	41
	3/30/2020	0.281	14
	6/16/2020	0.363	26
	9/21/2020	ND<0	6.5
GD 5	3/13/2013	0.34	20
	5/20/2013	0.62	56
	9/23/2013	0.45	40
	12/10/2013	0.47	42
	2/6/2014	0.37	27
	6/26/2014	0.34	21
	9/30/2014	ND<0	6.5
	11/19/2014	0.43	36
	3/23/2015	0.34	22
	4/22/2015	0.65	60
	9/30/2015	0.557	50
	11/19/2015	ND<0	6.5
	3/15/2016	0.435	38
	6/29/2016	0.49	44
	8/9/2016	0.412	34
	12/7/2016	0.337	18
	3/2/2017	0.491	45
	7/5/2017	0.73	63
	8/16/2017	0.404	32

10/25/2017	0.347	23
3/28/2018	ND<0	6.5
6/29/2018	0.689	62
8/2/2018	0.332	17
12/10/2018	0.523	49
4/15/2019	0.411	33
6/12/2019	ND<0	6.5
8/27/2019	0.506	46
10/29/2019	0.477	43
3/30/2020	0.32	16
6/16/2020	0.561	52
9/21/2020	ND<0	6.5
12/17/2020	0.422	35
3/18/2021	0.6	55

The Wilcoxon Statistic is 550.5

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is 0.517198

The Standard Deviation adjusted for ties is 74.1955

The Z Score adjusted for ties is 0.5189

0.517198 < 2.326 indicating no statistical significance at 1% level

0.5189 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: GD 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 50

Non detect rank is 25.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 3	3/13/2013	ND<0	25.5
	5/20/2013	ND<0	25.5
	9/23/2013	ND<0	25.5
	12/10/2013	0.14	60
	2/6/2014	0.12	56
	6/26/2014	ND<0	25.5
	9/30/2014	ND<0	25.5
	11/19/2014	ND<0	25.5
	3/23/2015	ND<0	25.5
	4/22/2015	ND<0	25.5
	9/30/2015	0.126	57
	11/19/2015	0.101	52
	3/15/2016	ND<0	25.5
	6/29/2016	ND<0	25.5
	8/9/2016	ND<0	25.5
	12/7/2016	ND<0	25.5
	3/2/2017	0.135	59
	7/5/2017	ND<0	25.5
	8/16/2017	ND<0	25.5
	10/25/2017	ND<0	25.5
	3/28/2018	ND<0	25.5
	6/29/2018	ND<0	25.5
	8/2/2018	ND<0	25.5
	12/10/2018	0.128	58
	4/15/2019	ND<0	25.5
	6/12/2019	ND<0	25.5
	8/27/2019	0.159	61
	10/29/2019	ND<0	25.5
	3/30/2020	ND<0	25.5
	6/16/2020	ND<0	25.5
	9/21/2020	0.106	53
GD 5	3/13/2013	ND<0	25.5
	5/20/2013	ND<0	25.5
	9/23/2013	ND<0	25.5
	12/10/2013	0.1	51
	2/6/2014	ND<0	25.5
	6/26/2014	ND<0	25.5
	9/30/2014	ND<0	25.5
	11/19/2014	ND<0	25.5
	3/23/2015	ND<0	25.5
	4/22/2015	ND<0	25.5
	9/30/2015	0.115	55
	11/19/2015	ND<0	25.5
	3/15/2016	ND<0	25.5
	6/29/2016	ND<0	25.5
	8/9/2016	ND<0	25.5
	12/7/2016	ND<0	25.5
	3/2/2017	ND<0	25.5
	7/5/2017	ND<0	25.5
	8/16/2017	ND<0	25.5

10/25/2017	ND<0	25.5
3/28/2018	ND<0	25.5
6/29/2018	ND<0	25.5
8/2/2018	ND<0	25.5
12/10/2018	0.19	63
4/15/2019	1.2	64
6/12/2019	ND<0	25.5
8/27/2019	0.17	62
10/29/2019	ND<0	25.5
3/30/2020	ND<0	25.5
6/16/2020	ND<0	25.5
9/21/2020	ND<0	25.5
12/17/2020	0.113	54
3/18/2021	ND<0	25.5

The Wilcoxon Statistic is 476.5

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is -0.476897

The Standard Deviation adjusted for ties is 53.846

The Z Score adjusted for ties is -0.659288

-0.476897 < 2.326 indicating no statistical significance at 1% level

-0.659288 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: GD 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 25.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 3	3/13/2013	11	21
	5/20/2013	13	28
	9/23/2013	10	15
	12/10/2013	23	57
	2/6/2014	27	60
	6/26/2014	14	35
	9/30/2014	19	48
	11/19/2014	15	39
	3/23/2015	10	16
	4/22/2015	21	52
	9/30/2015	11.5	23
	11/19/2015	22	54
	3/15/2016	11.7	24
	6/29/2016	10.7	18
	8/9/2016	10	17
	12/7/2016	8.13	7
	3/2/2017	15.6	42
	7/5/2017	14.4	36
	8/16/2017	8.46	8
	10/25/2017	13.6	34
	3/28/2018	10.8	19
	6/29/2018	12.7	27
	8/2/2018	20.8	51
	12/10/2018	31.3	63
	4/15/2019	14.7	38
	6/12/2019	13	29
	8/27/2019	6.5	2
	10/29/2019	13	30
	3/30/2020	18	45
	6/16/2020	9.47	12
	9/21/2020	9.8	14
GD 5	3/13/2013	9.6	13
	5/20/2013	9	9
	9/23/2013	8	6
	12/10/2013	18	46
	2/6/2014	17	43
	6/26/2014	12	25
	9/30/2014	18	47
	11/19/2014	26	58
	3/23/2015	15	40
	4/22/2015	13	31
	9/30/2015	17.3	44
	11/19/2015	42.8	64
	3/15/2016	13.2	33
	6/29/2016	15	41
	8/9/2016	11	22
	12/7/2016	6.8	3
	3/2/2017	13	32
	7/5/2017	22.7	56
	8/16/2017	9	10

10/25/2017	14.6	37
3/28/2018	6.06	1
6/29/2018	19.6	49
8/2/2018	26.4	59
12/10/2018	22.3	55
4/15/2019	29	61
6/12/2019	9.33	11
8/27/2019	10.9	20
10/29/2019	21	53
3/30/2020	12.1	26
6/16/2020	7.4	4
9/21/2020	7.9	5
12/17/2020	19.8	50
3/18/2021	30.6	62

The Wilcoxon Statistic is 555

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is 0.57765

The Standard Deviation adjusted for ties is 74.4396

The Z Score adjusted for ties is 0.57765

0.57765 < 2.326 indicating no statistical significance at 1% level

0.57765 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: GD 5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 25.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 3	3/13/2013	11.6	18
	5/20/2013	11.7	21
	9/23/2013	12.4	24
	12/10/2013	45.7	58
	2/6/2014	90.2	63
	6/26/2014	15	32
	9/30/2014	19.5	42
	11/19/2014	18.1	40
	3/23/2015	13	26
	4/22/2015	26	49
	9/30/2015	10	13
	11/19/2015	40	55
	3/15/2016	25.5	48
	6/29/2016	6	3
	8/9/2016	8.34	8
	12/7/2016	5.9	2
	3/2/2017	14	29
	7/5/2017	11.2	16
	8/16/2017	7.4	6
	10/25/2017	8.9	9
	3/28/2018	9.1	10
	6/29/2018	12.9	25
	8/2/2018	13.4	27
	12/10/2018	41.4	56
	4/15/2019	15.3	34
	6/12/2019	9.6	12
	8/27/2019	202.8	64
	10/29/2019	26.2	50
	3/30/2020	17.4	38
	6/16/2020	11.6	19
	9/21/2020	13.5	28
GD 5	3/13/2013	11.6	20
	5/20/2013	14	30
	9/23/2013	11.5	17
	12/10/2013	57.9	60
	2/6/2014	45.9	59
	6/26/2014	17	37
	9/30/2014	22.5	44
	11/19/2014	42.9	57
	3/23/2015	24	46
	4/22/2015	25	47
	9/30/2015	18	39
	11/19/2015	90	62
	3/15/2016	23.7	45
	6/29/2016	21	43
	8/9/2016	11.8	22
	12/7/2016	10	14
	3/2/2017	12.3	23
	7/5/2017	15	33
	8/16/2017	8	7

10/25/2017	9.2	11
3/28/2018	6.1	5
6/29/2018	16.3	35
8/2/2018	18.4	41
12/10/2018	37.7	54
4/15/2019	29.7	53
6/12/2019	6	4
8/27/2019	75.2	61
10/29/2019	29	52
3/30/2020	14.5	31
6/16/2020	16.4	36
9/21/2020	10.8	15
12/17/2020	28.7	51
3/18/2021	3.4	1

The Wilcoxon Statistic is 594

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is 1.10156

The Standard Deviation adjusted for ties is 74.4396

The Z Score adjusted for ties is 1.10156

1.10156 < 2.326 indicating no statistical significance at 1% level

1.10156 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Comparison of GD6 and GD8

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: GD 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 1.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 8	3/12/2013	11.73	59
	5/8/2013	1.72	1
	9/23/2013	3.9759	6
	12/10/2013	13.33	61
	2/6/2014	16.32	64
	6/26/2014	6.64	21
	9/30/2014	5.06	8
	11/19/2014	9.01	40
	3/23/2015	9.76	48
	4/22/2015	11.71	57
	9/30/2015	9.48	44
	11/19/2015	23.3	66
	3/15/2016	16.81	65
	6/29/2016	6.6	19
	8/9/2016	5.87	11
	12/7/2016	8.84	35
	3/2/2017	9.76	49
	6/21/2017	6.5	17
	8/17/2017	6.3	13
	10/26/2017	8.25	33
	3/27/2018	9.52	45
	6/26/2018	5.74	10
	8/1/2018	7.39	25
	12/11/2018	11.71	58
	4/17/2019	9.3	42
	6/11/2019	2.94	3
	8/28/2019	6.07	12
	10/28/2019	8.22	32
	3/31/2020	9.3	43
	6/10/2020	7.13	24
	9/21/2020	6.36	15
	12/17/2020	11.68	56
	3/18/2021	11.53	54
GD 6	3/12/2013	9.65	47
	5/8/2013	2.35	2
	9/23/2013	5.17	9
	12/10/2013	11.41	53
	2/6/2014	15.8	62
	6/26/2014	8.95	37
	9/30/2014	6.53	18
	11/19/2014	3.36	4
	3/23/2015	8.95	38
	4/22/2015	10.82	51
	9/30/2015	12.31	60
	11/19/2015	15.87	63
	3/15/2016	11.58	55
	6/29/2016	9.64	46

8/9/2016	6.98	23
12/7/2016	8.13	31
3/2/2017	8.02	30
6/21/2017	4.99	7
8/17/2017	7.72	27
10/26/2017	7.84	28
3/27/2018	9	39
6/26/2018	6.78	22
8/1/2018	7.52	26
12/11/2018	10.92	52
4/17/2019	8	29
6/11/2019	3.68	5
8/28/2019	6.32	14
10/28/2019	6.63	20
3/31/2020	8.86	36
6/10/2020	6.36	16
9/21/2020	8.48	34
12/17/2020	10.08	50
3/18/2021	9.21	41

The Wilcoxon Statistic is 514

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -0.397558

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is -0.397558

-0.397558 < 2.326 indicating no statistical significance at 1% level

-0.397558 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: GD 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 15

Non detect rank is 8

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 8	3/12/2013	0.13	22
	5/8/2013	0.11	17
	9/23/2013	ND<0	8
	12/10/2013	0.28	55
	2/6/2014	0.25	50
	6/26/2014	0.25	51
	9/30/2014	0.14	26
	11/19/2014	0.23	45
	3/23/2015	0.22	41
	4/22/2015	0.16	28
	9/30/2015	0.184	32
	11/19/2015	0.233	47
	3/15/2016	0.131	23
	6/29/2016	ND<0	8
	8/9/2016	0.217	40
	12/7/2016	0.308	57
	3/2/2017	0.284	56
	6/21/2017	ND<0	8
	8/17/2017	0.132	24
	10/26/2017	ND<0	8
	3/27/2018	0.215	39
	6/26/2018	0.15	27
	8/1/2018	0.556	66
	12/11/2018	0.326	59
	4/17/2019	0.115	18
	6/11/2019	0.181	31
	8/28/2019	0.212	37
	10/28/2019	0.435	64
	3/31/2020	0.133	25
	6/10/2020	0.211	36
	9/21/2020	0.171	29
	12/17/2020	0.273	54
	3/18/2021	0.178	30
GD 6	3/12/2013	0.21	35
	5/8/2013	0.23	46
	9/23/2013	ND<0	8
	12/10/2013	0.37	62
	2/6/2014	0.26	53
	6/26/2014	ND<0	8
	9/30/2014	ND<0	8
	11/19/2014	0.22	42
	3/23/2015	0.22	43
	4/22/2015	0.22	44
	9/30/2015	ND<0	8
	11/19/2015	0.468	65
	3/15/2016	0.124	19
	6/29/2016	ND<0	8
	8/9/2016	ND<0	8
	12/7/2016	0.365	61
	3/2/2017	0.25	52

6/21/2017	ND<0	8
8/17/2017	ND<0	8
10/26/2017	0.126	20
3/27/2018	0.233	48
6/26/2018	0.108	16
8/1/2018	0.335	60
12/11/2018	0.397	63
4/17/2019	0.198	33
6/11/2019	ND<0	8
8/28/2019	ND<0	8
10/28/2019	0.198	34
3/31/2020	0.212	38
6/10/2020	0.127	21
9/21/2020	ND<0	8
12/17/2020	0.309	58
3/18/2021	0.241	49

The Wilcoxon Statistic is 489

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -0.71817

The Standard Deviation adjusted for ties is 77.5189

The Z Score adjusted for ties is -0.722405

-0.71817 < 2.326 indicating no statistical significance at 1% level

-0.722405 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: GD 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 57

Non detect rank is 29

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 8	3/12/2013	ND<0	29
	5/8/2013	ND<0	29
	9/23/2013	ND<0	29
	12/10/2013	0.04	61
	2/6/2014	ND<0	29
	6/26/2014	ND<0	29
	9/30/2014	ND<0	29
	11/19/2014	ND<0	29
	3/23/2015	ND<0	29
	4/22/2015	ND<0	29
	9/30/2015	ND<0	29
	11/19/2015	ND<0	29
	3/15/2016	ND<0	29
	6/29/2016	ND<0	29
	8/9/2016	ND<0	29
	12/7/2016	ND<0	29
	3/2/2017	ND<0	29
	6/21/2017	ND<0	29
	8/17/2017	ND<0	29
	10/26/2017	ND<0	29
	3/27/2018	ND<0	29
	6/26/2018	ND<0	29
	8/1/2018	0.072	65
	12/11/2018	ND<0	29
	4/17/2019	ND<0	29
	6/11/2019	ND<0	29
	8/28/2019	ND<0	29
	10/28/2019	ND<0	29
	3/31/2020	ND<0	29
	6/10/2020	ND<0	29
	9/21/2020	ND<0	29
	12/17/2020	ND<0	29
	3/18/2021	ND<0	29
GD 6	3/12/2013	0.036	59
	5/8/2013	0.033	58
	9/23/2013	ND<0	29
	12/10/2013	0.041	62
	2/6/2014	0.057	64
	6/26/2014	ND<0	29
	9/30/2014	ND<0	29
	11/19/2014	ND<0	29
	3/23/2015	ND<0	29
	4/22/2015	ND<0	29
	9/30/2015	ND<0	29
	11/19/2015	0.037	60
	3/15/2016	0.043	63
	6/29/2016	ND<0	29
	8/9/2016	ND<0	29
	12/7/2016	ND<0	29
	3/2/2017	ND<0	29

6/21/2017	ND<0	29
8/17/2017	ND<0	29
10/26/2017	ND<0	29
3/27/2018	ND<0	29
6/26/2018	ND<0	29
8/1/2018	0.09	66
12/11/2018	ND<0	29
4/17/2019	ND<0	29
6/11/2019	ND<0	29
8/28/2019	ND<0	29
10/28/2019	ND<0	29
3/31/2020	ND<0	29
6/10/2020	ND<0	29
9/21/2020	ND<0	29
12/17/2020	ND<0	29
3/18/2021	ND<0	29

The Wilcoxon Statistic is 625

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 1.02596

The Standard Deviation adjusted for ties is 46.5179

The Z Score adjusted for ties is 1.71977

1.02596 < 2.326 indicating no statistical significance at 1% level

1.71977 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: GD 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 29

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 8	3/12/2013	7.65	25
	5/8/2013	6.71	9
	9/23/2013	6.22	7
	12/10/2013	6.04	5
	2/6/2014	3.87	1
	6/26/2014	8.19	51
	9/30/2014	7.32	20
	11/19/2014	5.16	3
	3/23/2015	8.67	63
	4/22/2015	7.4	21
	9/30/2015	7.79	30
	11/19/2015	6.94	12
	3/15/2016	7.88	33
	6/29/2016	8.5	60
	8/9/2016	8.9	66
	12/7/2016	7.75	29
	3/2/2017	8.14	49
	6/21/2017	8.73	64
	8/17/2017	8.55	62
	10/26/2017	8.17	50
	3/27/2018	8.09	48
	6/26/2018	8.5	61
	8/1/2018	6.89	11
	12/11/2018	7.87	32
	4/17/2019	8.05	46
	6/11/2019	7.19	18
	8/28/2019	8.26	54
	10/28/2019	7.83	31
	3/31/2020	7.97	38
	6/10/2020	7.97	39
	9/21/2020	8.19	52
	12/17/2020	8.3	56
	3/18/2021	8.45	59
GD 6	3/12/2013	8.03	45
	5/8/2013	6.81	10
	9/23/2013	7.28	19
	12/10/2013	5.98	4
	2/6/2014	4.34	2
	6/26/2014	8.31	57
	9/30/2014	8.35	58
	11/19/2014	7.17	17
	3/23/2015	7.95	35
	4/22/2015	7.59	24
	9/30/2015	8.19	53
	11/19/2015	6.97	13
	3/15/2016	7.68	28
	6/29/2016	8.86	65
	8/9/2016	8.26	55
	12/7/2016	7.43	22
	3/2/2017	8.05	47

6/21/2017	7.67	27
8/17/2017	8.02	43
10/26/2017	6.25	8
3/27/2018	7.97	40
6/26/2018	8.02	44
8/1/2018	7.66	26
12/11/2018	7.97	41
4/17/2019	7.1	16
6/11/2019	7.07	15
8/28/2019	7.94	34
10/28/2019	7.48	23
3/31/2020	6.06	6
6/10/2020	7.04	14
9/21/2020	7.96	36
12/17/2020	7.96	37
3/18/2021	7.97	42

The Wilcoxon Statistic is 445

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -1.28245

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is -1.28245

-1.28245 < 2.326 indicating no statistical significance at 1% level

-1.28245 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: GD 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 29

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 8	3/12/2013	9.85	10
	5/8/2013	14.47	18
	9/23/2013	22.74	40
	12/10/2013	8.1	4
	2/6/2014	6.48	2
	6/26/2014	26.15	50
	9/30/2014	23.19	43
	11/19/2014	5.87	1
	4/22/2015	17.7	31
	9/30/2015	24.33	45
	11/19/2015	15.13	20
	3/15/2016	16.98	28
	6/29/2016	29.3	59
	8/9/2016	28.9	58
	12/7/2016	12.1	13
	3/2/2017	12.2	16
	6/21/2017	25	47
	8/17/2017	28.7	57
	10/26/2017	16.3	24
	3/27/2018	12.1	14
	6/26/2018	29.7	61
	8/1/2018	22.9	42
	12/11/2018	9.2	7
	4/17/2019	17.6	30
	6/11/2019	25.84	49
	8/28/2019	30.2	62
	10/28/2019	16.2	23
	3/31/2020	16.6	27
	6/10/2020	24.9	46
	9/21/2020	22.8	41
	12/17/2020	9.4	8
	3/18/2021	16.5	26
GD 6	3/12/2013	11.9	12
	5/8/2013	19.02	34
	9/23/2013	26.93	54
	12/10/2013	10.64	11
	2/6/2014	6.85	3
	6/26/2014	27.29	55
	9/30/2014	26.78	52
	11/19/2014	9.67	9
	3/23/2015	18.4	33
	4/22/2015	19.8	35
	9/30/2015	25.47	48
	11/19/2015	17.75	32
	3/15/2016	19.98	36
	6/29/2016	31.5	65
	8/9/2016	30.7	63
	12/7/2016	14.3	17
	3/2/2017	14.7	19
	6/21/2017	26.8	53

8/17/2017	31.2	64
10/26/2017	15.8	21
3/27/2018	12.1	15
6/26/2018	29.6	60
8/1/2018	22.7	39
12/11/2018	8.2	5
4/17/2019	20.5	37
6/11/2019	23.8	44
8/28/2019	28.5	56
10/28/2019	16.4	25
3/31/2020	16.1	22
6/10/2020	26.5	51
9/21/2020	21.4	38
12/17/2020	9	6
3/18/2021	17	29

The Wilcoxon Statistic is 582

The Expected value is 528

The Standard Deviation is 76.2102

The Z Score is 0.702005

The Standard Deviation adjusted for ties is 76.2102

The Z Score adjusted for ties is 0.702005

0.702005 < 2.326 indicating no statistical significance at 1% level

0.702005 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: GD 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 8

Non detect rank is 4.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 8	3/12/2013	0.25	12
	5/8/2013	0.38	28
	9/23/2013	0.41	35
	12/10/2013	0.35	23
	2/6/2014	0.13	9
	6/26/2014	0.48	42
	9/30/2014	0.42	36
	11/19/2014	0.32	19
	3/23/2015	ND<0	4.5
	4/22/2015	ND<0	4.5
	9/30/2015	0.483	43
	11/19/2015	0.852	62
	3/15/2016	0.47	41
	6/29/2016	0.45	39
	8/9/2016	0.668	55
	12/7/2016	0.409	34
	3/2/2017	0.342	20
	6/21/2017	0.642	54
	8/17/2017	0.541	47
	10/26/2017	0.347	21
	3/27/2018	ND<0	4.5
	6/26/2018	0.67	56
	8/1/2018	0.641	53
	12/11/2018	0.406	33
	4/17/2019	0.437	38
	6/11/2019	0.948	64
	8/28/2019	0.992	66
	10/28/2019	0.255	13
	3/31/2020	0.348	22
	6/10/2020	ND<0	4.5
	9/21/2020	0.29	16
	12/17/2020	ND<0	4.5
	3/18/2021	0.312	18
GD 6	3/12/2013	0.29	17
	5/8/2013	0.4	31
	9/23/2013	0.36	24
	12/10/2013	0.17	11
	2/6/2014	0.16	10
	6/26/2014	0.42	37
	9/30/2014	0.55	48
	11/19/2014	0.38	29
	3/23/2015	0.26	14
	4/22/2015	0.28	15
	9/30/2015	0.974	65
	11/19/2015	0.768	59
	3/15/2016	0.5	45
	6/29/2016	0.4	32
	8/9/2016	0.621	50
	12/7/2016	0.485	44
	3/2/2017	0.509	46

6/21/2017	0.926	63
8/17/2017	0.677	57
10/26/2017	0.385	30
3/27/2018	ND<0	4.5
6/26/2018	0.782	60
8/1/2018	0.636	52
12/11/2018	0.362	25
4/17/2019	0.624	51
6/11/2019	0.728	58
8/28/2019	0.607	49
10/28/2019	0.467	40
3/31/2020	ND<0	4.5
6/10/2020	0.832	61
9/21/2020	ND<0	4.5
12/17/2020	0.377	27
3/18/2021	0.364	26

The Wilcoxon Statistic is 628.5

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 1.07084

The Standard Deviation adjusted for ties is 77.9076

The Z Score adjusted for ties is 1.07178

1.07084 < 2.326 indicating no statistical significance at 1% level

1.07178 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: GD 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 54

Non detect rank is 27.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 8	3/12/2013	ND<0	27.5
	5/8/2013	ND<0	27.5
	9/23/2013	ND<0	27.5
	12/10/2013	ND<0	27.5
	2/6/2014	ND<0	27.5
	6/26/2014	ND<0	27.5
	9/30/2014	ND<0	27.5
	11/19/2014	ND<0	27.5
	3/23/2015	ND<0	27.5
	4/22/2015	ND<0	27.5
	9/30/2015	ND<0	27.5
	11/19/2015	0.1	55
	3/15/2016	ND<0	27.5
	6/29/2016	ND<0	27.5
	8/9/2016	ND<0	27.5
	12/7/2016	ND<0	27.5
	3/2/2017	ND<0	27.5
	6/21/2017	ND<0	27.5
	8/17/2017	ND<0	27.5
	10/26/2017	ND<0	27.5
	3/27/2018	ND<0	27.5
	6/26/2018	ND<0	27.5
	8/1/2018	0.114	59
	12/11/2018	ND<0	27.5
	4/17/2019	ND<0	27.5
	6/11/2019	ND<0	27.5
	8/28/2019	ND<0	27.5
	10/28/2019	0.109	57
	3/31/2020	0.132	62
	6/10/2020	ND<0	27.5
	9/21/2020	ND<0	27.5
	12/17/2020	ND<0	27.5
	3/18/2021	ND<0	27.5
GD 6	3/12/2013	ND<0	27.5
	5/8/2013	ND<0	27.5
	9/23/2013	ND<0	27.5
	12/10/2013	ND<0	27.5
	2/6/2014	ND<0	27.5
	6/26/2014	ND<0	27.5
	9/30/2014	ND<0	27.5
	11/19/2014	0.28	65
	3/23/2015	ND<0	27.5
	4/22/2015	ND<0	27.5
	9/30/2015	0.103	56
	11/19/2015	0.131	61
	3/15/2016	ND<0	27.5
	6/29/2016	ND<0	27.5
	8/9/2016	ND<0	27.5
	12/7/2016	ND<0	27.5
	3/2/2017	ND<0	27.5

6/21/2017	0.11	58
8/17/2017	ND<0	27.5
10/26/2017	ND<0	27.5
3/27/2018	1.76	66
6/26/2018	ND<0	27.5
8/1/2018	0.138	63
12/11/2018	ND<0	27.5
4/17/2019	ND<0	27.5
6/11/2019	ND<0	27.5
8/28/2019	ND<0	27.5
10/28/2019	ND<0	27.5
3/31/2020	0.127	60
6/10/2020	ND<0	27.5
9/21/2020	ND<0	27.5
12/17/2020	ND<0	27.5
3/18/2021	0.183	64

The Wilcoxon Statistic is 619.5

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 0.955423

The Standard Deviation adjusted for ties is 52.4445

The Z Score adjusted for ties is 1.42055

0.955423 < 2.326 indicating no statistical significance at 1% level

1.42055 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: GD 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 2

Non detect rank is 1.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 8	3/12/2013	4.5	6
	5/8/2013	19	57
	9/23/2013	9.6	37
	12/10/2013	32	62
	2/6/2014	13	51
	6/26/2014	7.3	22
	9/30/2014	6	13
	11/19/2014	13	52
	3/23/2015	4.8	7
	4/22/2015	15	54
	9/30/2015	6.77	17
	11/19/2015	79.6	65
	3/15/2016	8.3	29
	6/29/2016	39.8	63
	8/9/2016	6.3	14
	12/7/2016	7	18
	3/2/2017	3.6	3
	6/21/2017	7	19
	8/17/2017	8.9	34
	10/26/2017	3.98	4
	3/27/2018	6.5	15
	6/26/2018	5.76	9
	8/1/2018	53.2	64
	12/11/2018	24.4	60
	4/17/2019	ND<0	1.5
	6/11/2019	4.1	5
	8/28/2019	11.8	46
	10/28/2019	12.9	50
	3/31/2020	18	56
	6/10/2020	ND<0	1.5
	9/21/2020	7.4	23
	12/17/2020	11.5	45
	3/18/2021	102	66
GD 6	3/12/2013	5.8	10
	5/8/2013	8.3	30
	9/23/2013	5.8	11
	12/10/2013	8.6	32
	2/6/2014	5.5	8
	6/26/2014	7	20
	9/30/2014	7	21
	11/19/2014	9.8	39
	3/23/2015	8.2	28
	4/22/2015	8	27
	9/30/2015	12.4	48
	11/19/2015	16	55
	3/15/2016	7.89	26
	6/29/2016	11.2	44
	8/9/2016	10.3	41
	12/7/2016	7.5	25
	3/2/2017	8.96	35

6/21/2017	21	58
8/17/2017	13.2	53
10/26/2017	12	47
3/27/2018	10.9	43
6/26/2018	9.57	36
8/1/2018	21.9	59
12/11/2018	5.8	12
4/17/2019	9.6	38
6/11/2019	12.4	49
8/28/2019	6.5	16
10/28/2019	9.9	40
3/31/2020	8.4	31
6/10/2020	10.4	42
9/21/2020	8.6	33
12/17/2020	7.4	24
3/18/2021	31.6	61

The Wilcoxon Statistic is 581

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 0.461681

The Standard Deviation adjusted for ties is 77.9751

The Z Score adjusted for ties is 0.461686

0.461681 < 2.326 indicating no statistical significance at 1% level

0.461686 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: GD 6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 2

Non detect rank is 1.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 8	3/12/2013	6.6	7
	5/8/2013	18.7	51
	9/23/2013	17.8	47
	12/10/2013	30.7	59
	2/6/2014	15.5	40
	6/26/2014	30.8	60
	9/30/2014	11.9	31
	11/19/2014	25.3	55
	3/23/2015	10.6	27
	4/22/2015	20.2	54
	9/30/2015	8.99	18
	11/19/2015	212	66
	3/15/2016	11.4	29
	6/29/2016	32.5	61
	8/9/2016	12.7	32
	12/7/2016	10.1	22
	3/2/2017	19.7	53
	6/21/2017	7.9	14
	8/17/2017	6.8	9
	10/26/2017	6.1	6
	3/27/2018	8.9	17
	6/26/2018	5.8	4
	8/1/2018	45.8	63
	12/11/2018	16	42
	4/17/2019	6.7	8
	6/11/2019	9.43	21
	8/28/2019	14.2	36
	10/28/2019	29.6	58
	3/31/2020	19.3	52
	6/10/2020	10.8	28
	9/21/2020	ND<0.7	1.5
	12/17/2020	17.5	46
	3/18/2021	117	65
GD 6	3/12/2013	10.3	24
	5/8/2013	18.5	50
	9/23/2013	6	5
	12/10/2013	26.4	57
	2/6/2014	15.5	41
	6/26/2014	14.4	38
	9/30/2014	7.07	11
	11/19/2014	13.4	33
	3/23/2015	16.5	45
	4/22/2015	14.9	39
	9/30/2015	14.1	35
	11/19/2015	42.5	62
	3/15/2016	16.1	44
	6/29/2016	10.4	25
	8/9/2016	10.4	26
	12/7/2016	11.5	30
	3/2/2017	14.3	37

6/21/2017	7.7	13
8/17/2017	7	10
10/26/2017	8.3	16
3/27/2018	10.1	23
6/26/2018	8	15
8/1/2018	25.4	56
12/11/2018	13.8	34
4/17/2019	9	19
6/11/2019	17.9	48
8/28/2019	9.1	20
10/28/2019	18.4	49
3/31/2020	16	43
6/10/2020	7.4	12
9/21/2020	ND<1	1.5
12/17/2020	0.5	3
3/18/2021	75.6	64

The Wilcoxon Statistic is 467.5

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -0.993896

The Standard Deviation adjusted for ties is 77.9751

The Z Score adjusted for ties is -0.993906

-0.993896 < 2.326 indicating no statistical significance at 1% level

-0.993906 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Comparison of GD8 and SME1

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: GD 8

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	8.26	32
	5/8/2013	8.96	39
	9/23/2013	7.87	27
	12/10/2013	9.15	41
	2/6/2014	11.34	56
	6/26/2014	7.05	22
	9/30/2014	7.46	26
	11/19/2014	10.86	55
	3/23/2015	8.52	35
	4/22/2015	7.97	29
	9/30/2015	7.03	20
	11/19/2015	7.04	21
	3/15/2016	7.21	24
	6/29/2016	3.29	3
	8/9/2016	4.98	6
	12/7/2016	10.2	52
	3/2/2017	4.31	5
	6/29/2017	9.21	43
	8/16/2017	6.58	16
	10/25/2017	8.32	33
	3/28/2018	9.18	42
	6/29/2018	6.37	14
	8/2/2018	5.82	9
	12/10/2018	11.48	57
	4/15/2019	7.89	28
	6/12/2019	8.73	37
	8/27/2019	8.51	34
	10/29/2019	9.21	44
	3/30/2020	8.61	36
	6/16/2020	10.36	53
	9/21/2020	6.92	19
	12/17/2020	10.68	54
	3/18/2021	9.54	49
GD 8	3/12/2013	11.73	62
	5/8/2013	1.72	1
	9/23/2013	3.9759	4
	12/10/2013	13.33	63
	2/6/2014	16.32	64
	6/26/2014	6.64	18
	9/30/2014	5.06	7
	11/19/2014	9.01	40
	3/23/2015	9.76	50
	4/22/2015	11.71	60
	9/30/2015	9.48	47
	11/19/2015	23.3	66
	3/15/2016	16.81	65

6/29/2016	6.6	17
8/9/2016	5.87	10
12/7/2016	8.84	38
3/2/2017	9.76	51
6/21/2017	6.5	15
8/17/2017	6.3	12
10/26/2017	8.25	31
3/27/2018	9.52	48
6/26/2018	5.74	8
8/1/2018	7.39	25
12/11/2018	11.71	61
4/17/2019	9.3	45
6/11/2019	2.94	2
8/28/2019	6.07	11
10/28/2019	8.22	30
3/31/2020	9.3	46
6/10/2020	7.13	23
9/21/2020	6.36	13
12/17/2020	11.68	59
3/18/2021	11.53	58

The Wilcoxon Statistic is 589

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 0.564276

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is 0.564276

0.564276 < 2.326 indicating no statistical significance at 1% level

0.564276 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: GD 8

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 16

Non detect rank is 8.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	0.54	59
	5/8/2013	0.15	25
	9/23/2013	ND<0	8.5
	12/10/2013	0.55	60
	2/6/2014	0.55	61
	6/26/2014	ND<0	8.5
	9/30/2014	ND<0	8.5
	11/19/2014	0.74	66
	3/23/2015	0.51	58
	4/22/2015	0.4	52
	9/30/2015	ND<0	8.5
	11/19/2015	0.401	53
	3/15/2016	0.454	56
	6/29/2016	ND<0	8.5
	8/9/2016	ND<0	8.5
	12/7/2016	0.413	54
	3/2/2017	0.671	65
	6/29/2017	ND<0	8.5
	8/16/2017	ND<0	8.5
	10/25/2017	0.368	50
	3/28/2018	0.633	64
	6/29/2018	0.312	48
	8/2/2018	0.296	46
	12/10/2018	0.259	41
	4/15/2019	0.39	51
	6/12/2019	ND<0	8.5
	8/27/2019	ND<0	8.5
	10/29/2019	0.129	19
	3/30/2020	0.462	57
	6/16/2020	ND<0	8.5
	9/21/2020	ND<0	8.5
	12/17/2020	0.577	63
	3/18/2021	0.263	42
GD 8	3/12/2013	0.13	20
	5/8/2013	0.11	17
	9/23/2013	ND<0	8.5
	12/10/2013	0.28	44
	2/6/2014	0.25	39
	6/26/2014	0.25	40
	9/30/2014	0.14	24
	11/19/2014	0.23	37
	3/23/2015	0.22	36
	4/22/2015	0.16	27
	9/30/2015	0.184	31
	11/19/2015	0.233	38
	3/15/2016	0.131	21
	6/29/2016	ND<0	8.5
	8/9/2016	0.217	35
	12/7/2016	0.308	47
	3/2/2017	0.284	45

6/21/2017	ND<0	8.5
8/17/2017	0.132	22
10/26/2017	ND<0	8.5
3/27/2018	0.215	34
6/26/2018	0.15	26
8/1/2018	0.556	62
12/11/2018	0.326	49
4/17/2019	0.115	18
6/11/2019	0.181	30
8/28/2019	0.212	33
10/28/2019	0.435	55
3/31/2020	0.133	23
6/10/2020	0.211	32
9/21/2020	0.171	28
12/17/2020	0.273	43
3/18/2021	0.178	29

The Wilcoxon Statistic is 458

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -1.11573

The Standard Deviation adjusted for ties is 77.4206

The Z Score adjusted for ties is -1.12373

-1.11573 < 2.326 indicating no statistical significance at 1% level

-1.12373 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: GD 8

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 39

Non detect rank is 20

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	0.11	57
	5/8/2013	0.063	49
	9/23/2013	0.053	48
	12/10/2013	0.21	65
	2/6/2014	0.11	58
	6/26/2014	ND<0	20
	9/30/2014	0.044	44
	11/19/2014	0.27	66
	3/23/2015	0.073	53
	4/22/2015	0.039	42
	9/30/2015	0.052	47
	11/19/2015	0.084	54
	3/15/2016	0.047	45
	6/29/2016	0.18	63
	8/9/2016	0.089	55
	12/7/2016	0.209	64
	3/2/2017	0.127	61
	6/29/2017	0.028	40
	8/16/2017	ND<0	20
	10/25/2017	0.121	59
	3/28/2018	0.106	56
	6/29/2018	0.121	60
	8/2/2018	0.145	62
	12/10/2018	ND<0	20
	4/15/2019	0.063	50
	6/12/2019	ND<0	20
	8/27/2019	ND<0	20
	10/29/2019	0.049	46
	3/30/2020	ND<0	20
	6/16/2020	0.031	41
	9/21/2020	ND<0	20
	12/17/2020	0.072	51
	3/18/2021	ND<0	20
GD 8	3/12/2013	ND<0	20
	5/8/2013	ND<0	20
	9/23/2013	ND<0	20
	12/10/2013	0.04	43
	2/6/2014	ND<0	20
	6/26/2014	ND<0	20
	9/30/2014	ND<0	20
	11/19/2014	ND<0	20
	3/23/2015	ND<0	20
	4/22/2015	ND<0	20
	9/30/2015	ND<0	20
	11/19/2015	ND<0	20
	3/15/2016	ND<0	20
	6/29/2016	ND<0	20
	8/9/2016	ND<0	20
	12/7/2016	ND<0	20
	3/2/2017	ND<0	20

6/21/2017	ND<0	20
8/17/2017	ND<0	20
10/26/2017	ND<0	20
3/27/2018	ND<0	20
6/26/2018	ND<0	20
8/1/2018	0.072	52
12/11/2018	ND<0	20
4/17/2019	ND<0	20
6/11/2019	ND<0	20
8/28/2019	ND<0	20
10/28/2019	ND<0	20
3/31/2020	ND<0	20
6/10/2020	ND<0	20
9/21/2020	ND<0	20
12/17/2020	ND<0	20
3/18/2021	ND<0	20

The Wilcoxon Statistic is 154

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -5.01437

The Standard Deviation adjusted for ties is 69.4712

The Z Score adjusted for ties is -5.62823

-5.01437 < 2.326 indicating no statistical significance at 1% level

-5.62823 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: GD 8

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 20

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	8.19	44
	5/8/2013	7.64	19
	9/23/2013	8.26	48
	12/10/2013	8.05	37
	2/6/2014	7.22	10
	6/26/2014	8.49	56
	9/30/2014	8.25	47
	11/19/2014	8.31	52
	3/23/2015	8.26	49
	4/22/2015	7.14	8
	9/30/2015	8.34	53
	11/19/2015	7.92	31
	3/15/2016	8.44	54
	6/29/2016	8.8	64
	8/9/2016	8.55	59
	12/7/2016	7.96	33
	3/2/2017	7.75	23
	6/29/2017	9.11	66
	8/16/2017	8.12	41
	10/25/2017	8.02	36
	3/28/2018	8.1	40
	6/29/2018	7.84	27
	8/2/2018	7.48	18
	12/10/2018	7.45	16
	4/15/2019	7.89	30
	6/12/2019	7.34	13
	8/27/2019	7.45	17
	10/29/2019	7.95	32
	3/30/2020	7.35	14
	6/16/2020	8.58	61
	9/21/2020	7.71	22
	12/17/2020	7.66	21
	3/18/2021	7.24	11
GD 8	3/12/2013	7.65	20
	5/8/2013	6.71	5
	9/23/2013	6.22	4
	12/10/2013	6.04	3
	2/6/2014	3.87	1
	6/26/2014	8.19	45
	9/30/2014	7.32	12
	11/19/2014	5.16	2
	3/23/2015	8.67	62
	4/22/2015	7.4	15
	9/30/2015	7.79	25
	11/19/2015	6.94	7
	3/15/2016	7.88	29
	6/29/2016	8.5	57
	8/9/2016	8.9	65
	12/7/2016	7.75	24
	3/2/2017	8.14	42

6/21/2017	8.73	63
8/17/2017	8.55	60
10/26/2017	8.17	43
3/27/2018	8.09	39
6/26/2018	8.5	58
8/1/2018	6.89	6
12/11/2018	7.87	28
4/17/2019	8.05	38
6/11/2019	7.19	9
8/28/2019	8.26	50
10/28/2019	7.83	26
3/31/2020	7.97	34
6/10/2020	7.97	35
9/21/2020	8.19	46
12/17/2020	8.3	51
3/18/2021	8.45	55

The Wilcoxon Statistic is 498

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -0.60275

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is -0.60275

-0.60275 < 2.326 indicating no statistical significance at 1% level

-0.60275 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: GD 8

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 20

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	13.1	17
	5/8/2013	16	22
	9/23/2013	27.7	55
	12/10/2013	7.6	4
	2/6/2014	5.9	2
	9/30/2014	24.67	45
	11/19/2014	7.8	5
	3/23/2015	17.3	28
	4/22/2015	18.5	35
	9/30/2015	26.4	52
	11/19/2015	15.9	21
	3/15/2016	18.3	34
	6/29/2016	30.67	64
	8/9/2016	28.87	58
	12/7/2016	11.98	12
	3/2/2017	12.34	16
	6/29/2017	25.8	48
	8/16/2017	29.7	61
	10/25/2017	17.3	29
	3/28/2018	17.6	30
	6/29/2018	26.2	51
	8/2/2018	23.9	43
	12/10/2018	8	6
	4/15/2019	19.7	37
	6/12/2019	27.2	54
	8/27/2019	28.8	57
	10/29/2019	17.6	31
	3/30/2020	19.3	36
	6/16/2020	27	53
	9/21/2020	22.2	38
	12/17/2020	9.2	8
	3/18/2021	15.7	20
GD 8	3/12/2013	9.85	11
	5/8/2013	14.47	18
	9/23/2013	22.74	39
	12/10/2013	8.1	7
	2/6/2014	6.48	3
	6/26/2014	26.15	50
	9/30/2014	23.19	42
	11/19/2014	5.87	1
	4/22/2015	17.7	33
	9/30/2015	24.33	44
	11/19/2015	15.13	19
	3/15/2016	16.98	27
	6/29/2016	29.3	60
	8/9/2016	28.9	59
	12/7/2016	12.1	13
	3/2/2017	12.2	15
	6/21/2017	25	47
	8/17/2017	28.7	56

10/26/2017	16.3	24
3/27/2018	12.1	14
6/26/2018	29.7	62
8/1/2018	22.9	41
12/11/2018	9.2	9
4/17/2019	17.6	32
6/11/2019	25.84	49
8/28/2019	30.2	63
10/28/2019	16.2	23
3/31/2020	16.6	26
6/10/2020	24.9	46
9/21/2020	22.8	40
12/17/2020	9.4	10
3/18/2021	16.5	25

The Wilcoxon Statistic is 480

The Expected value is 512

The Standard Deviation is 74.4759

The Z Score is -0.436383

The Standard Deviation adjusted for ties is 74.4759

The Z Score adjusted for ties is -0.436383

-0.436383 < 2.326 indicating no statistical significance at 1% level

-0.436383 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: GD 8

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 12

Non detect rank is 6.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	0.34	24
	5/8/2013	0.42	38
	9/23/2013	0.8	62
	12/10/2013	0.47	42
	2/6/2014	0.5	48
	6/26/2014	0.31	20
	9/30/2014	0.61	55
	11/19/2014	0.55	53
	3/23/2015	ND<0	6.5
	4/22/2015	0.38	33
	9/30/2015	0.807	63
	11/19/2015	ND<0	6.5
	3/15/2016	ND<0	6.5
	6/29/2016	0.62	56
	8/9/2016	0.547	52
	12/7/2016	0.378	32
	3/2/2017	0.345	26
	6/29/2017	0.53	50
	8/16/2017	0.52	49
	10/25/2017	0.288	17
	3/28/2018	ND<0	6.5
	6/29/2018	0.67	60
	8/2/2018	0.495	47
	12/10/2018	0.336	23
	4/15/2019	0.36	31
	6/12/2019	ND<0	6.5
	8/27/2019	0.356	30
	10/29/2019	0.272	16
	3/30/2020	ND<0	6.5
	6/16/2020	0.485	46
	9/21/2020	ND<0	6.5
	12/17/2020	0.3	19
	3/18/2021	0.58	54
GD 8	3/12/2013	0.25	14
	5/8/2013	0.38	34
	9/23/2013	0.41	37
	12/10/2013	0.35	29
	2/6/2014	0.13	13
	6/26/2014	0.48	44
	9/30/2014	0.42	39
	11/19/2014	0.32	22
	3/23/2015	ND<0	6.5
	4/22/2015	ND<0	6.5
	9/30/2015	0.483	45
	11/19/2015	0.852	64
	3/15/2016	0.47	43
	6/29/2016	0.45	41
	8/9/2016	0.668	59
	12/7/2016	0.409	36
	3/2/2017	0.342	25

6/21/2017	0.642	58
8/17/2017	0.541	51
10/26/2017	0.347	27
3/27/2018	ND<0	6.5
6/26/2018	0.67	61
8/1/2018	0.641	57
12/11/2018	0.406	35
4/17/2019	0.437	40
6/11/2019	0.948	65
8/28/2019	0.992	66
10/28/2019	0.255	15
3/31/2020	0.348	28
6/10/2020	ND<0	6.5
9/21/2020	0.29	18
12/17/2020	ND<0	6.5
3/18/2021	0.312	21

The Wilcoxon Statistic is 558.5

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 0.17313

The Standard Deviation adjusted for ties is 77.7428

The Z Score adjusted for ties is 0.173649

0.17313 < 2.326 indicating no statistical significance at 1% level

0.173649 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: GD 8

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 42

Non detect rank is 21.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	0.11	46
	5/8/2013	ND<0	21.5
	9/23/2013	ND<0	21.5
	12/10/2013	0.26	64
	2/6/2014	0.13	52
	6/26/2014	ND<0	21.5
	9/30/2014	0.11	47
	11/19/2014	0.29	66
	3/23/2015	0.1	43
	4/22/2015	ND<0	21.5
	9/30/2015	0.135	56
	11/19/2015	0.134	54
	3/15/2016	ND<0	21.5
	6/29/2016	0.245	63
	8/9/2016	0.154	59
	12/7/2016	0.271	65
	3/2/2017	0.208	61
	6/29/2017	ND<0	21.5
	8/16/2017	0.111	48
	10/25/2017	0.151	58
	3/28/2018	ND<0	21.5
	6/29/2018	0.241	62
	8/2/2018	0.136	57
	12/10/2018	ND<0	21.5
	4/15/2019	ND<0	21.5
	6/12/2019	ND<0	21.5
	8/27/2019	0.161	60
	10/29/2019	0.134	55
	3/30/2020	ND<0	21.5
	6/16/2020	0.129	51
	9/21/2020	ND<0	21.5
	12/17/2020	ND<0	21.5
	3/18/2021	0.112	49
GD 8	3/12/2013	ND<0	21.5
	5/8/2013	ND<0	21.5
	9/23/2013	ND<0	21.5
	12/10/2013	ND<0	21.5
	2/6/2014	ND<0	21.5
	6/26/2014	ND<0	21.5
	9/30/2014	ND<0	21.5
	11/19/2014	ND<0	21.5
	3/23/2015	ND<0	21.5
	4/22/2015	ND<0	21.5
	9/30/2015	ND<0	21.5
	11/19/2015	0.1	44
	3/15/2016	ND<0	21.5
	6/29/2016	ND<0	21.5
	8/9/2016	ND<0	21.5
	12/7/2016	ND<0	21.5
	3/2/2017	ND<0	21.5

6/21/2017	ND<0	21.5
8/17/2017	ND<0	21.5
10/26/2017	ND<0	21.5
3/27/2018	ND<0	21.5
6/26/2018	ND<0	21.5
8/1/2018	0.114	50
12/11/2018	ND<0	21.5
4/17/2019	ND<0	21.5
6/11/2019	ND<0	21.5
8/28/2019	ND<0	21.5
10/28/2019	0.109	45
3/31/2020	0.132	53
6/10/2020	ND<0	21.5
9/21/2020	ND<0	21.5
12/17/2020	ND<0	21.5
3/18/2021	ND<0	21.5

The Wilcoxon Statistic is 254.5

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -3.72551

The Standard Deviation adjusted for ties is 67.1855

The Z Score adjusted for ties is -4.32385

-3.72551 < 2.326 indicating no statistical significance at 1% level

-4.32385 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: GD 8

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 2

Non detect rank is 1.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	16	40
	5/8/2013	14	34
	9/23/2013	15	36
	12/10/2013	21	52
	2/6/2014	23	53
	6/26/2014	13	30
	9/30/2014	34	60
	11/19/2014	19	47
	3/23/2015	14	35
	4/22/2015	18	44
	9/30/2015	15.3	39
	11/19/2015	23.2	54
	3/15/2016	17.7	42
	6/29/2016	20.3	50
	8/9/2016	12.6	27
	12/7/2016	17.7	43
	3/2/2017	15	37
	6/29/2017	18.3	46
	8/16/2017	12.7	28
	10/25/2017	16.9	41
	3/28/2018	19.8	49
	6/29/2018	23.3	55
	8/2/2018	29.5	57
	12/10/2018	31	58
	4/15/2019	35	61
	6/12/2019	9.67	22
	8/27/2019	7.1	15
	10/29/2019	11	23
	3/30/2020	13.3	33
	6/16/2020	11.4	24
	9/21/2020	9	20
	12/17/2020	20.9	51
	3/18/2021	90.4	65
GD 8	3/12/2013	4.5	6
	5/8/2013	19	48
	9/23/2013	9.6	21
	12/10/2013	32	59
	2/6/2014	13	31
	6/26/2014	7.3	16
	9/30/2014	6	9
	11/19/2014	13	32
	3/23/2015	4.8	7
	4/22/2015	15	38
	9/30/2015	6.77	12
	11/19/2015	79.6	64
	3/15/2016	8.3	18
	6/29/2016	39.8	62
	8/9/2016	6.3	10
	12/7/2016	7	13
	3/2/2017	3.6	3

6/21/2017	7	14
8/17/2017	8.9	19
10/26/2017	3.98	4
3/27/2018	6.5	11
6/26/2018	5.76	8
8/1/2018	53.2	63
12/11/2018	24.4	56
4/17/2019	ND<0	1.5
6/11/2019	4.1	5
8/28/2019	11.8	26
10/28/2019	12.9	29
3/31/2020	18	45
6/10/2020	ND<0	1.5
9/21/2020	7.4	17
12/17/2020	11.5	25
3/18/2021	102	66

The Wilcoxon Statistic is 279

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -3.41131

The Standard Deviation adjusted for ties is 77.9751

The Z Score adjusted for ties is -3.41134

-3.41131 < 2.326 indicating no statistical significance at 1% level

-3.41134 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: GD 8

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 1

Non detect rank is 1

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	13.1	21
	5/8/2013	24	46
	9/23/2013	14.2	27
	12/10/2013	46.3	61
	2/6/2014	61	63
	6/26/2014	14	24
	9/30/2014	27.6	49
	11/19/2014	40.1	58
	3/23/2015	21	43
	4/22/2015	29	51
	9/30/2015	15	30
	11/19/2015	50	62
	3/15/2016	26.2	48
	6/29/2016	21.2	44
	8/9/2016	15.3	31
	12/7/2016	31	55
	3/2/2017	14	25
	6/29/2017	19.2	37
	8/16/2017	10.6	13
	10/25/2017	5.4	2
	3/28/2018	19.3	38
	6/29/2018	20.7	42
	8/2/2018	28.5	50
	12/10/2018	32	56
	4/15/2019	42.2	59
	6/12/2019	12.2	19
	8/27/2019	135.2	65
	10/29/2019	14.5	29
	3/30/2020	13.3	22
	6/16/2020	11.6	17
	9/21/2020	13.8	23
	12/17/2020	23.19	45
	3/18/2021	14.1	26
GD 8	3/12/2013	6.6	5
	5/8/2013	18.7	36
	9/23/2013	17.8	35
	12/10/2013	30.7	53
	2/6/2014	15.5	32
	6/26/2014	30.8	54
	9/30/2014	11.9	18
	11/19/2014	25.3	47
	3/23/2015	10.6	14
	4/22/2015	20.2	41
	9/30/2015	8.99	10
	11/19/2015	212	66
	3/15/2016	11.4	16
	6/29/2016	32.5	57
	8/9/2016	12.7	20
	12/7/2016	10.1	12
	3/2/2017	19.7	40

6/21/2017	7.9	8
8/17/2017	6.8	7
10/26/2017	6.1	4
3/27/2018	8.9	9
6/26/2018	5.8	3
8/1/2018	45.8	60
12/11/2018	16	33
4/17/2019	6.7	6
6/11/2019	9.43	11
8/28/2019	14.2	28
10/28/2019	29.6	52
3/31/2020	19.3	39
6/10/2020	10.8	15
9/21/2020	ND<0.7	1
12/17/2020	17.5	34
3/18/2021	117	64

The Wilcoxon Statistic is 369

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -2.25711

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is -2.25711

-2.25711 < 2.326 indicating no statistical significance at 1% level

-2.25711 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Comparison of HB3 and GD3

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 3	3/13/2013	9.28	50
	5/20/2013	7.01	25
	9/23/2013	6.5	19
	12/10/2013	9.23	49
	2/6/2014	10.58	60
	6/26/2014	8	34
	9/30/2014	6.69	20
	11/19/2014	10.88	61
	3/23/2015	7.84	32
	4/22/2015	6.74	22
	9/30/2015	4.91	6
	11/19/2015	7.74	31
	3/15/2016	8.62	43
	6/29/2016	2.78	2
	8/9/2016	5.09	10
	12/7/2016	10.55	59
	3/2/2017	5.01	7
	7/5/2017	6.23	17
	8/16/2017	6.24	18
	10/25/2017	7.25	28
	3/28/2018	9.34	51
	6/29/2018	5.63	13
	8/2/2018	5.72	15
	12/10/2018	11.09	63
	4/15/2019	8.02	35
	6/12/2019	8.31	38
	8/27/2019	8.33	39
	10/29/2019	9.63	55
	3/30/2020	8.83	46
	6/16/2020	8.2	36
	9/21/2020	6.73	21
HB 3	3/12/2013	9.48	53
	5/20/2013	6.82	24
	9/23/2013	4.89	5
	12/10/2013	8.65	44
	2/6/2014	12.24	64
	6/26/2014	7.12	27
	9/30/2014	6.01	16
	11/19/2014	8.83	47
	3/23/2015	8.4	41
	4/22/2015	8.36	40
	9/30/2015	5.05	9
	11/19/2015	7.37	29
	3/15/2016	7.97	33
	6/29/2016	2.77	1
	8/9/2016	4.31	4

12/7/2016	8.44	42
3/2/2017	3.9	3
7/5/2017	5.36	11
8/16/2017	5.04	8
10/25/2017	9.93	57
3/28/2018	9.47	52
6/29/2018	5.55	12
8/2/2018	5.64	14
12/10/2018	10.98	62
4/15/2019	8.27	37
6/12/2019	6.77	23
8/27/2019	8.75	45
10/29/2019	9.88	56
3/30/2020	8.91	48
6/16/2020	7.01	26
9/21/2020	7.69	30
12/17/2020	9.94	58
3/18/2021	9.62	54

The Wilcoxon Statistic is 514

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is 0.0268674

The Standard Deviation adjusted for ties is 74.4396

The Z Score adjusted for ties is 0.0268674

0.0268674 < 2.326 indicating no statistical significance at 1% level

0.0268674 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 33

Non detect rank is 17

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 3	3/13/2013	0.29	56
	5/20/2013	0.15	39
	9/23/2013	ND<0	17
	12/10/2013	0.21	45
	2/6/2014	0.21	46
	6/26/2014	0.12	37
	9/30/2014	ND<0	17
	11/19/2014	ND<0	17
	3/23/2015	0.22	48
	4/22/2015	0.18	41
	9/30/2015	0.103	34
	11/19/2015	0.25	54
	3/15/2016	0.42	63
	6/29/2016	ND<0	17
	8/9/2016	ND<0	17
	12/7/2016	ND<0	17
	3/2/2017	0.237	52
	7/5/2017	ND<0	17
	8/16/2017	ND<0	17
	10/25/2017	ND<0	17
	3/28/2018	0.241	53
	6/29/2018	ND<0	17
	8/2/2018	ND<0	17
	12/10/2018	ND<0	17
	4/15/2019	0.233	49
	6/12/2019	ND<0	17
	8/27/2019	ND<0	17
	10/29/2019	ND<0	17
	3/30/2020	0.216	47
	6/16/2020	ND<0	17
	9/21/2020	ND<0	17
HB 3	3/12/2013	0.19	42
	5/20/2013	0.17	40
	9/23/2013	ND<0	17
	12/10/2013	ND<0	17
	2/6/2014	0.48	64
	6/26/2014	ND<0	17
	9/30/2014	ND<0	17
	11/19/2014	0.11	35
	3/23/2015	0.26	55
	4/22/2015	0.2	44
	9/30/2015	ND<0	17
	11/19/2015	0.377	62
	3/15/2016	0.295	57
	6/29/2016	ND<0	17
	8/9/2016	ND<0	17
	12/7/2016	0.111	36
	3/2/2017	0.334	58
	7/5/2017	ND<0	17
	8/16/2017	ND<0	17

10/25/2017	ND<0	17
3/28/2018	0.359	59
6/29/2018	ND<0	17
8/2/2018	ND<0	17
12/10/2018	0.363	60
4/15/2019	0.233	50
6/12/2019	0.129	38
8/27/2019	ND<0	17
10/29/2019	ND<0	17
3/30/2020	0.234	51
6/16/2020	ND<0	17
9/21/2020	ND<0	17
12/17/2020	0.195	43
3/18/2021	0.369	61

The Wilcoxon Statistic is 566

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is 0.725421

The Standard Deviation adjusted for ties is 69.1529

The Z Score adjusted for ties is 0.780879

0.725421 < 2.326 indicating no statistical significance at 1% level

0.780879 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 50

Non detect rank is 25.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 3	3/13/2013	0.028	53
	5/20/2013	0.026	52
	9/23/2013	0.025	51
	12/10/2013	0.085	60
	2/6/2014	ND<0	25.5
	6/26/2014	ND<0	25.5
	9/30/2014	ND<0	25.5
	11/19/2014	ND<0	25.5
	3/23/2015	ND<0	25.5
	4/22/2015	0.079	58
	9/30/2015	ND<0	25.5
	11/19/2015	ND<0	25.5
	3/15/2016	0.071	57
	6/29/2016	0.088	62
	8/9/2016	ND<0	25.5
	12/7/2016	ND<0	25.5
	3/2/2017	ND<0	25.5
	7/5/2017	ND<0	25.5
	8/16/2017	ND<0	25.5
	10/25/2017	ND<0	25.5
	3/28/2018	ND<0	25.5
	6/29/2018	ND<0	25.5
	8/2/2018	ND<0	25.5
	12/10/2018	ND<0	25.5
	4/15/2019	ND<0	25.5
	6/12/2019	ND<0	25.5
	8/27/2019	ND<0	25.5
	10/29/2019	ND<0	25.5
	3/30/2020	ND<0	25.5
	6/16/2020	ND<0	25.5
	9/21/2020	ND<0	25.5
HB 3	3/12/2013	0.081	59
	5/20/2013	ND<0	25.5
	9/23/2013	0.037	55
	12/10/2013	0.14	64
	2/6/2014	0.03	54
	6/26/2014	ND<0	25.5
	9/30/2014	ND<0	25.5
	11/19/2014	0.098	63
	3/23/2015	ND<0	25.5
	4/22/2015	ND<0	25.5
	9/30/2015	ND<0	25.5
	11/19/2015	0.045	56
	3/15/2016	0.087	61
	6/29/2016	ND<0	25.5
	8/9/2016	ND<0	25.5
	12/7/2016	ND<0	25.5
	3/2/2017	ND<0	25.5
	7/5/2017	ND<0	25.5
	8/16/2017	ND<0	25.5

10/25/2017	ND<0	25.5
3/28/2018	ND<0	25.5
6/29/2018	ND<0	25.5
8/2/2018	ND<0	25.5
12/10/2018	ND<0	25.5
4/15/2019	ND<0	25.5
6/12/2019	ND<0	25.5
8/27/2019	ND<0	25.5
10/29/2019	ND<0	25.5
3/30/2020	ND<0	25.5
6/16/2020	ND<0	25.5
9/21/2020	ND<0	25.5
12/17/2020	ND<0	25.5
3/18/2021	ND<0	25.5

The Wilcoxon Statistic is 514

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is 0.0268674

The Standard Deviation adjusted for ties is 53.846

The Z Score adjusted for ties is 0.037143

0.0268674 < 2.326 indicating no statistical significance at 1% level

0.037143 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 25.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 3	3/13/2013	8	44
	5/20/2013	8.09	53
	9/23/2013	7.8	26
	12/10/2013	7.85	32
	2/6/2014	7.13	2
	6/26/2014	8.13	55
	9/30/2014	8.11	54
	11/19/2014	8.36	63
	3/23/2015	8.32	62
	4/22/2015	7.86	34
	9/30/2015	7.94	41
	11/19/2015	7.61	18
	3/15/2016	8.04	49
	6/29/2016	7.84	30
	8/9/2016	7.98	42
	12/7/2016	7.91	37
	3/2/2017	8.21	58
	7/5/2017	7.48	12
	8/16/2017	8.01	45
	10/25/2017	7.54	14
	3/28/2018	8.06	51
	6/29/2018	7.68	20
	8/2/2018	7.69	21
	12/10/2018	7.4	9
	4/15/2019	7.71	22
	6/12/2019	7.24	5
	8/27/2019	7.18	3
	10/29/2019	7.84	31
	3/30/2020	7.58	17
	6/16/2020	8.03	48
	9/21/2020	7.51	13
HB 3	3/12/2013	7.54	15
	5/20/2013	8.21	59
	9/23/2013	8.02	46
	12/10/2013	7.9	36
	2/6/2014	7.22	4
	6/26/2014	8.2	57
	9/30/2014	8.05	50
	11/19/2014	7.85	33
	3/23/2015	8.21	60
	4/22/2015	7.91	38
	9/30/2015	7.89	35
	11/19/2015	7.83	29
	3/15/2016	8.52	64
	6/29/2016	8.02	47
	8/9/2016	7.91	39
	12/7/2016	7.93	40
	3/2/2017	7.75	24
	7/5/2017	7.29	6
	8/16/2017	7.35	8

10/25/2017	6.64	1
3/28/2018	7.99	43
6/29/2018	7.67	19
8/2/2018	7.4	10
12/10/2018	7.55	16
4/15/2019	7.73	23
6/12/2019	8.13	56
8/27/2019	8.21	61
10/29/2019	7.82	28
3/30/2020	7.79	25
6/16/2020	7.33	7
9/21/2020	7.8	27
12/17/2020	8.07	52
3/18/2021	7.47	11

The Wilcoxon Statistic is 508

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is -0.0537349

The Standard Deviation adjusted for ties is 74.4396

The Z Score adjusted for ties is -0.0537349

-0.0537349 < 2.326 indicating no statistical significance at 1% level

-0.0537349 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 25.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 3	3/13/2013	10.7	9
	5/20/2013	23.4	33
	9/23/2013	26.4	45
	12/10/2013	9.3	7
	2/6/2014	6.1	2
	9/30/2014	25.06	39
	3/23/2015	16.5	17
	4/22/2015	20.6	31
	9/30/2015	24.9	38
	11/19/2015	16	15
	3/15/2016	18.7	25
	6/29/2016	29.94	58
	8/9/2016	30.01	59
	12/7/2016	12	10
	3/2/2017	14.35	14
	7/5/2017	27.3	50
	8/16/2017	28.8	55
	10/25/2017	19.1	27
	3/28/2018	16.6	18
	6/29/2018	27.3	51
	8/2/2018	26.6	46
	12/10/2018	6.8	3
	4/15/2019	19.9	30
	6/12/2019	27.3	52
	8/27/2019	28.8	56
	10/29/2019	17.2	19
	3/30/2020	18.8	26
	6/16/2020	27.5	53
	9/21/2020	23.4	34
HB 3	3/12/2013	13.9	12
	5/20/2013	27.8	54
	9/23/2013	25.7	41
	12/10/2013	10.1	8
	2/6/2014	5.9	1
	9/30/2014	24.78	37
	11/19/2014	8.8	5
	3/23/2015	24.2	36
	4/22/2015	21.9	32
	9/30/2015	25.7	42
	11/19/2015	17.4	20
	3/15/2016	19.1	28
	6/29/2016	30.61	61
	8/9/2016	30.19	60
	12/7/2016	12.81	11
	3/2/2017	14.33	13
	7/5/2017	27	48
	8/16/2017	27	49
	10/25/2017	18.5	23
	3/28/2018	17.6	21
	6/29/2018	26	43

8/2/2018	25.1	40
12/10/2018	7.9	4
4/15/2019	19.6	29
6/12/2019	26.6	47
8/27/2019	29.1	57
10/29/2019	18.3	22
3/30/2020	18.5	24
6/16/2020	26.3	44
9/21/2020	23.5	35
12/17/2020	9.1	6
3/18/2021	16	16

The Wilcoxon Statistic is 441

The Expected value is 464

The Standard Deviation is 69.2435

The Z Score is -0.339382

The Standard Deviation adjusted for ties is 69.2435

The Z Score adjusted for ties is -0.339382

-0.339382 < 2.326 indicating no statistical significance at 1% level

-0.339382 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 12

Non detect rank is 6.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 3	3/13/2013	0.44	32
	5/20/2013	0.63	50
	9/23/2013	0.58	45
	12/10/2013	0.64	52
	2/6/2014	0.68	55
	6/26/2014	0.4	29
	9/30/2014	0.32	18
	11/19/2014	0.26	14
	3/23/2015	0.34	20
	4/22/2015	0.36	22
	9/30/2015	0.74	58
	11/19/2015	ND<0	6.5
	3/15/2016	ND<0	6.5
	6/29/2016	ND<0	6.5
	8/9/2016	0.393	28
	12/7/2016	0.356	21
	3/2/2017	0.649	53
	7/5/2017	0.56	43
	8/16/2017	0.387	26
	10/25/2017	0.39	27
	3/28/2018	ND<0	6.5
	6/29/2018	0.511	40
	8/2/2018	0.569	44
	12/10/2018	0.519	42
	4/15/2019	ND<0	6.5
	6/12/2019	ND<0	6.5
	8/27/2019	0.434	31
	10/29/2019	0.453	35
	3/30/2020	0.281	16
	6/16/2020	0.363	23
	9/21/2020	ND<0	6.5
HB 3	3/12/2013	0.83	61
	5/20/2013	0.6	47
	9/23/2013	0.6	48
	12/10/2013	0.62	49
	2/6/2014	0.37	24
	6/26/2014	0.37	25
	9/30/2014	0.48	38
	11/19/2014	0.44	33
	3/23/2015	0.46	36
	4/22/2015	0.66	54
	9/30/2015	0.91	62
	11/19/2015	ND<0	6.5
	3/15/2016	ND<0	6.5
	6/29/2016	0.51	39
	8/9/2016	0.703	56
	12/7/2016	0.73	57
	3/2/2017	0.969	64
	7/5/2017	0.812	60
	8/16/2017	0.763	59

10/25/2017	0.322	19
3/28/2018	ND<0	6.5
6/29/2018	0.464	37
8/2/2018	0.952	63
12/10/2018	0.426	30
4/15/2019	ND<0	6.5
6/12/2019	ND<0	6.5
8/27/2019	0.634	51
10/29/2019	0.517	41
3/30/2020	0.452	34
6/16/2020	0.299	17
9/21/2020	0.279	15
12/17/2020	0.588	46
3/18/2021	0.252	13

The Wilcoxon Statistic is 649.5

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is 1.84714

The Standard Deviation adjusted for ties is 74.1955

The Z Score adjusted for ties is 1.85321

1.84714 < 2.326 indicating no statistical significance at 1% level

1.85321 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 48

Non detect rank is 24.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 3	3/13/2013	ND<0	24.5
	5/20/2013	ND<0	24.5
	9/23/2013	ND<0	24.5
	12/10/2013	0.14	58
	2/6/2014	0.12	52
	6/26/2014	ND<0	24.5
	9/30/2014	ND<0	24.5
	11/19/2014	ND<0	24.5
	3/23/2015	ND<0	24.5
	4/22/2015	ND<0	24.5
	9/30/2015	0.126	54
	11/19/2015	0.101	49
	3/15/2016	ND<0	24.5
	6/29/2016	ND<0	24.5
	8/9/2016	ND<0	24.5
	12/7/2016	ND<0	24.5
	3/2/2017	0.135	57
	7/5/2017	ND<0	24.5
	8/16/2017	ND<0	24.5
	10/25/2017	ND<0	24.5
	3/28/2018	ND<0	24.5
	6/29/2018	ND<0	24.5
	8/2/2018	ND<0	24.5
	12/10/2018	0.128	56
	4/15/2019	ND<0	24.5
	6/12/2019	ND<0	24.5
	8/27/2019	0.159	61
	10/29/2019	ND<0	24.5
	3/30/2020	ND<0	24.5
	6/16/2020	ND<0	24.5
	9/21/2020	0.106	50
HB 3	3/12/2013	ND<0	24.5
	5/20/2013	ND<0	24.5
	9/23/2013	ND<0	24.5
	12/10/2013	0.15	60
	2/6/2014	ND<0	24.5
	6/26/2014	ND<0	24.5
	9/30/2014	ND<0	24.5
	11/19/2014	0.12	53
	3/23/2015	ND<0	24.5
	4/22/2015	ND<0	24.5
	9/30/2015	ND<0	24.5
	11/19/2015	ND<0	24.5
	3/15/2016	ND<0	24.5
	6/29/2016	ND<0	24.5
	8/9/2016	ND<0	24.5
	12/7/2016	0.126	55
	3/2/2017	0.115	51
	7/5/2017	ND<0	24.5
	8/16/2017	ND<0	24.5

10/25/2017	ND<0	24.5
3/28/2018	ND<0	24.5
6/29/2018	ND<0	24.5
8/2/2018	ND<0	24.5
12/10/2018	0.141	59
4/15/2019	ND<0	24.5
6/12/2019	ND<0	24.5
8/27/2019	0.179	64
10/29/2019	0.166	62
3/30/2020	0.166	63
6/16/2020	ND<0	24.5
9/21/2020	ND<0	24.5
12/17/2020	ND<0	24.5
3/18/2021	ND<0	24.5

The Wilcoxon Statistic is 518.5

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is 0.0873191

The Standard Deviation adjusted for ties is 56.6037

The Z Score adjusted for ties is 0.114833

0.0873191 < 2.326 indicating no statistical significance at 1% level

0.114833 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 24.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 3	3/13/2013	11	13
	5/20/2013	13	19
	9/23/2013	10	8
	12/10/2013	23	48
	2/6/2014	27	52
	6/26/2014	14	24
	9/30/2014	19	36
	11/19/2014	15	29
	3/23/2015	10	9
	4/22/2015	21	45
	9/30/2015	11.5	14
	11/19/2015	22	46
	3/15/2016	11.7	15
	6/29/2016	10.7	11
	8/9/2016	10	10
	12/7/2016	8.13	3
	3/2/2017	15.6	30
	7/5/2017	14.4	26
	8/16/2017	8.46	5
	10/25/2017	13.6	23
	3/28/2018	10.8	12
	6/29/2018	12.7	17
	8/2/2018	20.8	43
	12/10/2018	31.3	57
	4/15/2019	14.7	28
	6/12/2019	13	20
	8/27/2019	6.5	1
	10/29/2019	13	21
	3/30/2020	18	34
	6/16/2020	9.47	6
	9/21/2020	9.8	7
HB 3	3/12/2013	49	61
	5/20/2013	17	31
	9/23/2013	19	37
	12/10/2013	20	39
	2/6/2014	13	22
	6/26/2014	12	16
	9/30/2014	30	55
	11/19/2014	51	62
	3/23/2015	35	58
	4/22/2015	22	47
	9/30/2015	23	49
	11/19/2015	30.2	56
	3/15/2016	23.8	51
	6/29/2016	20.9	44
	8/9/2016	14.3	25
	12/7/2016	17	32
	3/2/2017	57.1	64
	7/5/2017	28.5	54
	8/16/2017	12.7	18

10/25/2017	20.4	41
3/28/2018	20.2	40
6/29/2018	18.2	35
8/2/2018	35.3	59
12/10/2018	27.6	53
4/15/2019	35.5	60
6/12/2019	52.3	63
8/27/2019	7.3	2
10/29/2019	17.6	33
3/30/2020	19	38
6/16/2020	14.6	27
9/21/2020	8.3	4
12/17/2020	20.4	42
3/18/2021	23	50

The Wilcoxon Statistic is 807

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is 3.96295

The Standard Deviation adjusted for ties is 74.4396

The Z Score adjusted for ties is 3.96295

3.96295 > 2.326 indicating statistical significance at 1% level

3.96295 > 2.326 indicating statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 24.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 3	3/13/2013	11.6	13
	5/20/2013	11.7	15
	9/23/2013	12.4	19
	12/10/2013	45.7	58
	2/6/2014	90.2	63
	6/26/2014	15	30
	9/30/2014	19.5	36
	11/19/2014	18.1	35
	3/23/2015	13	22
	4/22/2015	26	45
	9/30/2015	10	10
	11/19/2015	40	56
	3/15/2016	25.5	44
	6/29/2016	6	3
	8/9/2016	8.34	5
	12/7/2016	5.9	2
	3/2/2017	14	27
	7/5/2017	11.2	11
	8/16/2017	7.4	4
	10/25/2017	8.9	7
	3/28/2018	9.1	8
	6/29/2018	12.9	21
	8/2/2018	13.4	24
	12/10/2018	41.4	57
	4/15/2019	15.3	31
	6/12/2019	9.6	9
	8/27/2019	202.8	64
	10/29/2019	26.2	46
	3/30/2020	17.4	34
	6/16/2020	11.6	14
	9/21/2020	13.5	25
HB 3	3/12/2013	33.3	55
	5/20/2013	14.5	28
	9/23/2013	21.3	38
	12/10/2013	48.4	59
	2/6/2014	32	53
	6/26/2014	12	17
	9/30/2014	29.5	51
	11/19/2014	56.1	61
	3/23/2015	27	47
	4/22/2015	25	43
	9/30/2015	22	39
	11/19/2015	32	54
	3/15/2016	28.8	50
	6/29/2016	17.3	33
	8/9/2016	11.3	12
	12/7/2016	16	32
	3/2/2017	50	60
	7/5/2017	23.1	41
	8/16/2017	13.7	26

10/25/2017	11.7	16
3/28/2018	13.2	23
6/29/2018	14.6	29
8/2/2018	28.3	49
12/10/2018	24.8	42
4/15/2019	22.4	40
6/12/2019	12.4	20
8/27/2019	78.1	62
10/29/2019	28.2	48
3/30/2020	8.88	6
6/16/2020	20.4	37
9/21/2020	12.1	18
12/17/2020	31.16	52
3/18/2021	1.8	1

The Wilcoxon Statistic is 681

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is 2.2703

The Standard Deviation adjusted for ties is 74.4396

The Z Score adjusted for ties is 2.2703

2.2703 < 2.326 indicating no statistical significance at 1% level

2.2703 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Comparison of HB3 and GD5

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 5	3/13/2013	9.29	51
	5/20/2013	7.76	34
	9/23/2013	6.78	22
	12/10/2013	9.1	50
	2/6/2014	9.88	57
	6/26/2014	6.54	20
	9/30/2014	7.53	30
	3/23/2015	8.58	43
	4/22/2015	7.78	35
	9/30/2015	6.27	18
	11/19/2015	7.34	26
	3/15/2016	7.47	29
	6/29/2016	2.27	1
	8/9/2016	5.55	10
	12/7/2016	10.61	62
	3/2/2017	4.49	5
	7/5/2017	5.83	14
	8/16/2017	6.22	17
	10/25/2017	7.35	27
	3/28/2018	9.47	53
	6/29/2018	5.66	13
	8/2/2018	6.02	16
	12/10/2018	11.3	64
	4/15/2019	8.02	38
	6/12/2019	7.64	31
	8/27/2019	7.98	37
	10/29/2019	9.42	52
	3/30/2020	8.86	47
	6/16/2020	7.75	33
	9/21/2020	6.33	19
	12/17/2020	9.96	61
	3/18/2021	8.98	49
HB 3	3/12/2013	9.48	55
	5/20/2013	6.82	23
	9/23/2013	4.89	6
	12/10/2013	8.65	44
	2/6/2014	12.24	65
	6/26/2014	7.12	25
	9/30/2014	6.01	15
	11/19/2014	8.83	46
	3/23/2015	8.4	41
	4/22/2015	8.36	40
	9/30/2015	5.05	8
	11/19/2015	7.37	28
	3/15/2016	7.97	36
	6/29/2016	2.77	2

8/9/2016	4.31	4
12/7/2016	8.44	42
3/2/2017	3.9	3
7/5/2017	5.36	9
8/16/2017	5.04	7
10/25/2017	9.93	59
3/28/2018	9.47	54
6/29/2018	5.55	11
8/2/2018	5.64	12
12/10/2018	10.98	63
4/15/2019	8.27	39
6/12/2019	6.77	21
8/27/2019	8.75	45
10/29/2019	9.88	58
3/30/2020	8.91	48
6/16/2020	7.01	24
9/21/2020	7.69	32
12/17/2020	9.94	60
3/18/2021	9.62	56

The Wilcoxon Statistic is 520

The Expected value is 528

The Standard Deviation is 76.2102

The Z Score is -0.111534

The Standard Deviation adjusted for ties is 76.2102

The Z Score adjusted for ties is -0.111534

-0.111534 < 2.326 indicating no statistical significance at 1% level

-0.111534 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 36

Non detect rank is 18.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 5	3/13/2013	0.26	58
	5/20/2013	ND<0	18.5
	9/23/2013	ND<0	18.5
	12/10/2013	0.1	37
	2/6/2014	0.17	51
	6/26/2014	ND<0	18.5
	9/30/2014	ND<0	18.5
	11/19/2014	0.11	38
	3/23/2015	0.12	42
	4/22/2015	0.14	49
	9/30/2015	ND<0	18.5
	11/19/2015	0.168	50
	3/15/2016	ND<0	18.5
	6/29/2016	ND<0	18.5
	8/9/2016	ND<0	18.5
	12/7/2016	ND<0	18.5
	3/2/2017	0.118	41
	7/5/2017	ND<0	18.5
	8/16/2017	ND<0	18.5
	10/25/2017	ND<0	18.5
	3/28/2018	0.127	44
	6/29/2018	ND<0	18.5
	8/2/2018	ND<0	18.5
	12/10/2018	ND<0	18.5
	4/15/2019	0.128	46
	6/12/2019	ND<0	18.5
	8/27/2019	ND<0	18.5
	10/29/2019	ND<0	18.5
	3/30/2020	0.13	48
	6/16/2020	ND<0	18.5
	9/21/2020	ND<0	18.5
	12/17/2020	0.122	43
	3/18/2021	0.127	45
HB 3	3/12/2013	0.19	53
	5/20/2013	0.17	52
	9/23/2013	ND<0	18.5
	12/10/2013	ND<0	18.5
	2/6/2014	0.48	66
	6/26/2014	ND<0	18.5
	9/30/2014	ND<0	18.5
	11/19/2014	0.11	39
	3/23/2015	0.26	59
	4/22/2015	0.2	55
	9/30/2015	ND<0	18.5
	11/19/2015	0.377	65
	3/15/2016	0.295	60
	6/29/2016	ND<0	18.5
	8/9/2016	ND<0	18.5
	12/7/2016	0.111	40
	3/2/2017	0.334	61

7/5/2017	ND<0	18.5
8/16/2017	ND<0	18.5
10/25/2017	ND<0	18.5
3/28/2018	0.359	62
6/29/2018	ND<0	18.5
8/2/2018	ND<0	18.5
12/10/2018	0.363	63
4/15/2019	0.233	56
6/12/2019	0.129	47
8/27/2019	ND<0	18.5
10/29/2019	ND<0	18.5
3/30/2020	0.234	57
6/16/2020	ND<0	18.5
9/21/2020	ND<0	18.5
12/17/2020	0.195	54
3/18/2021	0.369	64

The Wilcoxon Statistic is 688

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 1.8339

The Standard Deviation adjusted for ties is 71.3727

The Z Score adjusted for ties is 2.00357

1.8339 < 2.326 indicating no statistical significance at 1% level

2.00357 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 53

Non detect rank is 27

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 5	3/13/2013	ND<0	27
	5/20/2013	ND<0	27
	9/23/2013	0.027	54
	12/10/2013	0.088	64
	2/6/2014	0.038	57
	6/26/2014	ND<0	27
	9/30/2014	ND<0	27
	11/19/2014	0.051	60
	3/23/2015	ND<0	27
	4/22/2015	ND<0	27
	9/30/2015	ND<0	27
	11/19/2015	0.042	58
	3/15/2016	ND<0	27
	6/29/2016	0.074	61
	8/9/2016	ND<0	27
	12/7/2016	ND<0	27
	3/2/2017	ND<0	27
	7/5/2017	ND<0	27
	8/16/2017	ND<0	27
	10/25/2017	ND<0	27
	3/28/2018	ND<0	27
	6/29/2018	ND<0	27
	8/2/2018	ND<0	27
	12/10/2018	ND<0	27
	4/15/2019	ND<0	27
	6/12/2019	ND<0	27
	8/27/2019	ND<0	27
	10/29/2019	ND<0	27
	3/30/2020	ND<0	27
	6/16/2020	ND<0	27
	9/21/2020	ND<0	27
	12/17/2020	ND<0	27
	3/18/2021	ND<0	27
HB 3	3/12/2013	0.081	62
	5/20/2013	ND<0	27
	9/23/2013	0.037	56
	12/10/2013	0.14	66
	2/6/2014	0.03	55
	6/26/2014	ND<0	27
	9/30/2014	ND<0	27
	11/19/2014	0.098	65
	3/23/2015	ND<0	27
	4/22/2015	ND<0	27
	9/30/2015	ND<0	27
	11/19/2015	0.045	59
	3/15/2016	0.087	63
	6/29/2016	ND<0	27
	8/9/2016	ND<0	27
	12/7/2016	ND<0	27
	3/2/2017	ND<0	27

7/5/2017	ND<0	27
8/16/2017	ND<0	27
10/25/2017	ND<0	27
3/28/2018	ND<0	27
6/29/2018	ND<0	27
8/2/2018	ND<0	27
12/10/2018	ND<0	27
4/15/2019	ND<0	27
6/12/2019	ND<0	27
8/27/2019	ND<0	27
10/29/2019	ND<0	27
3/30/2020	ND<0	27
6/16/2020	ND<0	27
9/21/2020	ND<0	27
12/17/2020	ND<0	27
3/18/2021	ND<0	27

The Wilcoxon Statistic is 567

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 0.282138

The Standard Deviation adjusted for ties is 54.1484

The Z Score adjusted for ties is 0.406291

0.282138 < 2.326 indicating no statistical significance at 1% level

0.406291 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 27

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 5	3/13/2013	8.33	64
	5/20/2013	8.28	62
	9/23/2013	7.67	20
	12/10/2013	7.97	44
	2/6/2014	7.14	2
	6/26/2014	7.9	39
	9/30/2014	8.28	63
	11/19/2014	8.15	55
	3/23/2015	8.14	54
	4/22/2015	7.81	30
	9/30/2015	8.03	50
	11/19/2015	7.63	17
	3/15/2016	8.8	66
	6/29/2016	8.02	46
	8/9/2016	8.25	61
	12/7/2016	7.73	24
	3/2/2017	7.81	31
	7/5/2017	7.32	7
	8/16/2017	7.89	37
	10/25/2017	7.36	10
	3/28/2018	8.18	56
	6/29/2018	7.76	27
	8/2/2018	7.59	15
	12/10/2018	7.87	36
	4/15/2019	7.69	22
	6/12/2019	8.02	47
	8/27/2019	7.15	3
	10/29/2019	7.85	34
	3/30/2020	7.65	18
	6/16/2020	7.69	23
	9/21/2020	7.65	19
	12/17/2020	7.62	16
	3/18/2021	7.15	4
HB 3	3/12/2013	7.54	13
	5/20/2013	8.21	58
	9/23/2013	8.02	48
	12/10/2013	7.9	40
	2/6/2014	7.22	5
	6/26/2014	8.2	57
	9/30/2014	8.05	51
	11/19/2014	7.85	35
	3/23/2015	8.21	59
	4/22/2015	7.91	41
	9/30/2015	7.89	38
	11/19/2015	7.83	33
	3/15/2016	8.52	65
	6/29/2016	8.02	49
	8/9/2016	7.91	42
	12/7/2016	7.93	43
	3/2/2017	7.75	26

7/5/2017	7.29	6
8/16/2017	7.35	9
10/25/2017	6.64	1
3/28/2018	7.99	45
6/29/2018	7.67	21
8/2/2018	7.4	11
12/10/2018	7.55	14
4/15/2019	7.73	25
6/12/2019	8.13	53
8/27/2019	8.21	60
10/29/2019	7.82	32
3/30/2020	7.79	28
6/16/2020	7.33	8
9/21/2020	7.8	29
12/17/2020	8.07	52
3/18/2021	7.47	12

The Wilcoxon Statistic is 548

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 0.0384734

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is 0.0384734

0.0384734 < 2.326 indicating no statistical significance at 1% level

0.0384734 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 27

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 5	3/13/2013	10.2	11
	5/20/2013	22.6	36
	9/23/2013	27.1	53
	12/10/2013	9.1	6
	2/6/2014	7.2	2
	9/30/2014	25.22	42
	11/19/2014	9.4	8
	3/23/2015	15.9	17
	4/22/2015	21.7	34
	9/30/2015	26.3	47
	11/19/2015	16.6	19
	3/15/2016	19.4	32
	6/29/2016	30.37	63
	8/9/2016	30.2	62
	12/7/2016	11.96	12
	3/2/2017	14.26	15
	7/5/2017	26.9	50
	8/16/2017	28	58
	10/25/2017	18.7	28
	3/28/2018	18.5	25
	6/29/2018	27.5	56
	8/2/2018	25.7	43
	12/10/2018	7.3	3
	4/15/2019	19.3	31
	6/12/2019	27.2	54
	8/27/2019	28.7	59
	10/29/2019	17.8	23
	3/30/2020	19.1	29
	6/16/2020	27.2	55
	9/21/2020	23.2	37
	12/17/2020	9.7	9
	3/18/2021	16.9	20
HB 3	3/12/2013	13.9	14
	5/20/2013	27.8	57
	9/23/2013	25.7	44
	12/10/2013	10.1	10
	2/6/2014	5.9	1
	9/30/2014	24.78	40
	11/19/2014	8.8	5
	3/23/2015	24.2	39
	4/22/2015	21.9	35
	9/30/2015	25.7	45
	11/19/2015	17.4	21
	3/15/2016	19.1	30
	6/29/2016	30.61	64
	8/9/2016	30.19	61
	12/7/2016	12.81	13
	3/2/2017	14.33	16
	7/5/2017	27	51
	8/16/2017	27	52

10/25/2017	18.5	26
3/28/2018	17.6	22
6/29/2018	26	46
8/2/2018	25.1	41
12/10/2018	7.9	4
4/15/2019	19.6	33
6/12/2019	26.6	49
8/27/2019	29.1	60
10/29/2019	18.3	24
3/30/2020	18.5	27
6/16/2020	26.3	48
9/21/2020	23.5	38
12/17/2020	9.1	7
3/18/2021	16	18

The Wilcoxon Statistic is 513

The Expected value is 512

The Standard Deviation is 74.4759

The Z Score is 0.00671358

The Standard Deviation adjusted for ties is 74.4759

The Z Score adjusted for ties is 0.00671358

0.00671358 < 2.326 indicating no statistical significance at 1% level

0.00671358 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 10

Non detect rank is 5.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 5	3/13/2013	0.34	18
	5/20/2013	0.62	52
	9/23/2013	0.45	33
	12/10/2013	0.47	37
	2/6/2014	0.37	22
	6/26/2014	0.34	19
	9/30/2014	ND<0	5.5
	11/19/2014	0.43	30
	3/23/2015	0.34	20
	4/22/2015	0.65	55
	9/30/2015	0.557	46
	11/19/2015	ND<0	5.5
	3/15/2016	0.435	31
	6/29/2016	0.49	40
	8/9/2016	0.412	27
	12/7/2016	0.337	17
	3/2/2017	0.491	41
	7/5/2017	0.73	59
	8/16/2017	0.404	25
	10/25/2017	0.347	21
	3/28/2018	ND<0	5.5
	6/29/2018	0.689	57
	8/2/2018	0.332	16
	12/10/2018	0.523	45
	4/15/2019	0.411	26
	6/12/2019	ND<0	5.5
	8/27/2019	0.506	42
	10/29/2019	0.477	38
	3/30/2020	0.32	14
	6/16/2020	0.561	47
	9/21/2020	ND<0	5.5
	12/17/2020	0.422	28
	3/18/2021	0.6	49
HB 3	3/12/2013	0.83	63
	5/20/2013	0.6	50
	9/23/2013	0.6	51
	12/10/2013	0.62	53
	2/6/2014	0.37	23
	6/26/2014	0.37	24
	9/30/2014	0.48	39
	11/19/2014	0.44	32
	3/23/2015	0.46	35
	4/22/2015	0.66	56
	9/30/2015	0.91	64
	11/19/2015	ND<0	5.5
	3/15/2016	ND<0	5.5
	6/29/2016	0.51	43
	8/9/2016	0.703	58
	12/7/2016	0.73	60
	3/2/2017	0.969	66

7/5/2017	0.812	62
8/16/2017	0.763	61
10/25/2017	0.322	15
3/28/2018	ND<0	5.5
6/29/2018	0.464	36
8/2/2018	0.952	65
12/10/2018	0.426	29
4/15/2019	ND<0	5.5
6/12/2019	ND<0	5.5
8/27/2019	0.634	54
10/29/2019	0.517	44
3/30/2020	0.452	34
6/16/2020	0.299	13
9/21/2020	0.279	12
12/17/2020	0.588	48
3/18/2021	0.252	11

The Wilcoxon Statistic is 667.5

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 1.571

The Standard Deviation adjusted for ties is 77.8416

The Z Score adjusted for ties is 1.57371

1.571 < 2.326 indicating no statistical significance at 1% level

1.57371 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 52

Non detect rank is 26.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 5	3/13/2013	ND<0	26.5
	5/20/2013	ND<0	26.5
	9/23/2013	ND<0	26.5
	12/10/2013	0.1	53
	2/6/2014	ND<0	26.5
	6/26/2014	ND<0	26.5
	9/30/2014	ND<0	26.5
	11/19/2014	ND<0	26.5
	3/23/2015	ND<0	26.5
	4/22/2015	ND<0	26.5
	9/30/2015	0.115	55
	11/19/2015	ND<0	26.5
	3/15/2016	ND<0	26.5
	6/29/2016	ND<0	26.5
	8/9/2016	ND<0	26.5
	12/7/2016	ND<0	26.5
	3/2/2017	ND<0	26.5
	7/5/2017	ND<0	26.5
	8/16/2017	ND<0	26.5
	10/25/2017	ND<0	26.5
	3/28/2018	ND<0	26.5
	6/29/2018	ND<0	26.5
	8/2/2018	ND<0	26.5
	12/10/2018	0.19	65
	4/15/2019	1.2	66
	6/12/2019	ND<0	26.5
	8/27/2019	0.17	63
	10/29/2019	ND<0	26.5
	3/30/2020	ND<0	26.5
	6/16/2020	ND<0	26.5
	9/21/2020	ND<0	26.5
	12/17/2020	0.113	54
	3/18/2021	ND<0	26.5
HB 3	3/12/2013	ND<0	26.5
	5/20/2013	ND<0	26.5
	9/23/2013	ND<0	26.5
	12/10/2013	0.15	60
	2/6/2014	ND<0	26.5
	6/26/2014	ND<0	26.5
	9/30/2014	ND<0	26.5
	11/19/2014	0.12	57
	3/23/2015	ND<0	26.5
	4/22/2015	ND<0	26.5
	9/30/2015	ND<0	26.5
	11/19/2015	ND<0	26.5
	3/15/2016	ND<0	26.5
	6/29/2016	ND<0	26.5
	8/9/2016	ND<0	26.5
	12/7/2016	0.126	58
	3/2/2017	0.115	56

7/5/2017	ND<0	26.5
8/16/2017	ND<0	26.5
10/25/2017	ND<0	26.5
3/28/2018	ND<0	26.5
6/29/2018	ND<0	26.5
8/2/2018	ND<0	26.5
12/10/2018	0.141	59
4/15/2019	ND<0	26.5
6/12/2019	ND<0	26.5
8/27/2019	0.179	64
10/29/2019	0.166	61
3/30/2020	0.166	62
6/16/2020	ND<0	26.5
9/21/2020	ND<0	26.5
12/17/2020	ND<0	26.5
3/18/2021	ND<0	26.5

The Wilcoxon Statistic is 578.5

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 0.42962

The Standard Deviation adjusted for ties is 55.74

The Z Score adjusted for ties is 0.601004

0.42962 < 2.326 indicating no statistical significance at 1% level

0.601004 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 26.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 5	3/13/2013	9.6	11
	5/20/2013	9	8
	9/23/2013	8	6
	12/10/2013	18	32
	2/6/2014	17	27
	6/26/2014	12	14
	9/30/2014	18	33
	11/19/2014	26	51
	3/23/2015	15	25
	4/22/2015	13	18
	9/30/2015	17.3	30
	11/19/2015	42.8	62
	3/15/2016	13.2	21
	6/29/2016	15	26
	8/9/2016	11	13
	12/7/2016	6.8	2
	3/2/2017	13	19
	7/5/2017	22.7	47
	8/16/2017	9	9
	10/25/2017	14.6	23
	3/28/2018	6.06	1
	6/29/2018	19.6	37
	8/2/2018	26.4	52
	12/10/2018	22.3	46
	4/15/2019	29	55
	6/12/2019	9.33	10
	8/27/2019	10.9	12
	10/29/2019	21	44
	3/30/2020	12.1	16
	6/16/2020	7.4	4
	9/21/2020	7.9	5
	12/17/2020	19.8	38
	3/18/2021	30.6	58
HB 3	3/12/2013	49	63
	5/20/2013	17	28
	9/23/2013	19	35
	12/10/2013	20	39
	2/6/2014	13	20
	6/26/2014	12	15
	9/30/2014	30	56
	11/19/2014	51	64
	3/23/2015	35	59
	4/22/2015	22	45
	9/30/2015	23	48
	11/19/2015	30.2	57
	3/15/2016	23.8	50
	6/29/2016	20.9	43
	8/9/2016	14.3	22
	12/7/2016	17	29
	3/2/2017	57.1	66

7/5/2017	28.5	54
8/16/2017	12.7	17
10/25/2017	20.4	41
3/28/2018	20.2	40
6/29/2018	18.2	34
8/2/2018	35.3	60
12/10/2018	27.6	53
4/15/2019	35.5	61
6/12/2019	52.3	65
8/27/2019	7.3	3
10/29/2019	17.6	31
3/30/2020	19	36
6/16/2020	14.6	24
9/21/2020	8.3	7
12/17/2020	20.4	42
3/18/2021	23	49

The Wilcoxon Statistic is 795

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 3.20612

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is 3.20612

3.20612 > 2.326 indicating statistical significance at 1% level

3.20612 > 2.326 indicating statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 26.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 5	3/13/2013	11.6	12
	5/20/2013	14	21
	9/23/2013	11.5	11
	12/10/2013	57.9	63
	2/6/2014	45.9	59
	6/26/2014	17	29
	9/30/2014	22.5	38
	11/19/2014	42.9	58
	3/23/2015	24	41
	4/22/2015	25	43
	9/30/2015	18	31
	11/19/2015	90	66
	3/15/2016	23.7	40
	6/29/2016	21	34
	8/9/2016	11.8	14
	12/7/2016	10	8
	3/2/2017	12.3	17
	7/5/2017	15	25
	8/16/2017	8	5
	10/25/2017	9.2	7
	3/28/2018	6.1	4
	6/29/2018	16.3	27
	8/2/2018	18.4	32
	12/10/2018	37.7	57
	4/15/2019	29.7	52
	6/12/2019	6	3
	8/27/2019	75.2	64
	10/29/2019	29	50
	3/30/2020	14.5	22
	6/16/2020	16.4	28
	9/21/2020	10.8	9
	12/17/2020	28.7	48
	3/18/2021	3.4	2
HB 3	3/12/2013	33.3	56
	5/20/2013	14.5	23
	9/23/2013	21.3	35
	12/10/2013	48.4	60
	2/6/2014	32	54
	6/26/2014	12	15
	9/30/2014	29.5	51
	11/19/2014	56.1	62
	3/23/2015	27	45
	4/22/2015	25	44
	9/30/2015	22	36
	11/19/2015	32	55
	3/15/2016	28.8	49
	6/29/2016	17.3	30
	8/9/2016	11.3	10
	12/7/2016	16	26
	3/2/2017	50	61

7/5/2017	23.1	39
8/16/2017	13.7	20
10/25/2017	11.7	13
3/28/2018	13.2	19
6/29/2018	14.6	24
8/2/2018	28.3	47
12/10/2018	24.8	42
4/15/2019	22.4	37
6/12/2019	12.4	18
8/27/2019	78.1	65
10/29/2019	28.2	46
3/30/2020	8.88	6
6/16/2020	20.4	33
9/21/2020	12.1	16
12/17/2020	31.16	53
3/18/2021	1.8	1

The Wilcoxon Statistic is 630

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 1.09008

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is 1.09008

1.09008 < 2.326 indicating no statistical significance at 1% level

1.09008 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Comparison of HB3 and GD7

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 7	3/12/2013	11.63	63
	5/8/2013	7.46	30
	9/23/2013	6.31	18
	12/10/2013	9.68	52
	2/6/2014	13.32	66
	6/26/2014	7.04	27
	9/30/2014	6.32	19
	11/19/2014	10.1	57
	3/23/2015	8.87	45
	4/22/2015	6.4	20
	9/30/2015	5.18	10
	11/19/2015	8.23	35
	3/15/2016	8.51	41
	6/29/2016	2.22	1
	8/9/2016	4.08	4
	12/7/2016	10.14	58
	3/2/2017	4.57	6
	6/29/2017	6.59	21
	8/16/2017	5.66	16
	10/25/2017	6.93	25
	3/28/2018	9.33	47
	6/29/2018	5.56	14
	8/2/2018	5.51	12
	12/10/2018	11.05	62
	4/15/2019	7.85	32
	6/12/2019	6.68	22
	8/27/2019	9.35	48
	10/29/2019	8.14	34
	3/30/2020	10.38	60
	6/16/2020	8.25	36
	9/21/2020	12.45	65
	12/17/2020	10.21	59
	3/18/2021	9.75	53
HB 3	3/12/2013	9.48	50
	5/20/2013	6.82	24
	9/23/2013	4.89	7
	12/10/2013	8.65	42
	2/6/2014	12.24	64
	6/26/2014	7.12	28
	9/30/2014	6.01	17
	11/19/2014	8.83	44
	3/23/2015	8.4	39
	4/22/2015	8.36	38
	9/30/2015	5.05	9
	11/19/2015	7.37	29
	3/15/2016	7.97	33

6/29/2016	2.77	2
8/9/2016	4.31	5
12/7/2016	8.44	40
3/2/2017	3.9	3
7/5/2017	5.36	11
8/16/2017	5.04	8
10/25/2017	9.93	55
3/28/2018	9.47	49
6/29/2018	5.55	13
8/2/2018	5.64	15
12/10/2018	10.98	61
4/15/2019	8.27	37
6/12/2019	6.77	23
8/27/2019	8.75	43
10/29/2019	9.88	54
3/30/2020	8.91	46
6/16/2020	7.01	26
9/21/2020	7.69	31
12/17/2020	9.94	56
3/18/2021	9.62	51

The Wilcoxon Statistic is 492

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -0.679697

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is -0.679697

-0.679697 < 2.326 indicating no statistical significance at 1% level

-0.679697 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 33

Non detect rank is 17

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 7	3/12/2013	0.39	64
	5/8/2013	0.24	46
	9/23/2013	ND<0	17
	12/10/2013	0.34	54
	2/6/2014	0.52	66
	6/26/2014	ND<0	17
	9/30/2014	ND<0	17
	11/19/2014	0.14	38
	3/23/2015	0.27	50
	4/22/2015	0.24	47
	9/30/2015	ND<0	17
	11/19/2015	0.344	55
	3/15/2016	0.261	49
	6/29/2016	ND<0	17
	8/9/2016	ND<0	17
	12/7/2016	ND<0	17
	3/2/2017	0.357	57
	6/29/2017	ND<0	17
	8/16/2017	ND<0	17
	10/25/2017	ND<0	17
	3/28/2018	0.35	56
	6/29/2018	ND<0	17
	8/2/2018	ND<0	17
	12/10/2018	0.378	63
	4/15/2019	0.23	43
	6/12/2019	0.132	37
	8/27/2019	ND<0	17
	10/29/2019	ND<0	17
	3/30/2020	ND<0	17
	6/16/2020	ND<0	17
	9/21/2020	ND<0	17
	12/17/2020	0.373	61
	3/18/2021	0.312	52
HB 3	3/12/2013	0.19	40
	5/20/2013	0.17	39
	9/23/2013	ND<0	17
	12/10/2013	ND<0	17
	2/6/2014	0.48	65
	6/26/2014	ND<0	17
	9/30/2014	ND<0	17
	11/19/2014	0.11	34
	3/23/2015	0.26	48
	4/22/2015	0.2	42
	9/30/2015	ND<0	17
	11/19/2015	0.377	62
	3/15/2016	0.295	51
	6/29/2016	ND<0	17
	8/9/2016	ND<0	17
	12/7/2016	0.111	35
	3/2/2017	0.334	53

7/5/2017	ND<0	17
8/16/2017	ND<0	17
10/25/2017	ND<0	17
3/28/2018	0.359	58
6/29/2018	ND<0	17
8/2/2018	ND<0	17
12/10/2018	0.363	59
4/15/2019	0.233	44
6/12/2019	0.129	36
8/27/2019	ND<0	17
10/29/2019	ND<0	17
3/30/2020	0.234	45
6/16/2020	ND<0	17
9/21/2020	ND<0	17
12/17/2020	0.195	41
3/18/2021	0.369	60

The Wilcoxon Statistic is 523

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -0.282138

The Standard Deviation adjusted for ties is 72.9434

The Z Score adjusted for ties is -0.301604

-0.282138 < 2.326 indicating no statistical significance at 1% level

-0.301604 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 51

Non detect rank is 26

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 7	3/12/2013	0.037	56
	5/8/2013	0.063	61
	9/23/2013	0.026	52
	12/10/2013	0.084	63
	2/6/2014	0.034	55
	6/26/2014	ND<0	26
	9/30/2014	ND<0	26
	11/19/2014	ND<0	26
	3/23/2015	ND<0	26
	4/22/2015	ND<0	26
	9/30/2015	ND<0	26
	11/19/2015	0.051	60
	3/15/2016	ND<0	26
	6/29/2016	0.048	59
	8/9/2016	ND<0	26
	12/7/2016	ND<0	26
	3/2/2017	ND<0	26
	6/29/2017	ND<0	26
	8/16/2017	ND<0	26
	10/25/2017	ND<0	26
	3/28/2018	ND<0	26
	6/29/2018	ND<0	26
	8/2/2018	0.027	53
	12/10/2018	ND<0	26
	4/15/2019	ND<0	26
	6/12/2019	ND<0	26
	8/27/2019	ND<0	26
	10/29/2019	ND<0	26
	3/30/2020	ND<0	26
	6/16/2020	ND<0	26
	9/21/2020	ND<0	26
	12/17/2020	ND<0	26
	3/18/2021	ND<0	26
HB 3	3/12/2013	0.081	62
	5/20/2013	ND<0	26
	9/23/2013	0.037	57
	12/10/2013	0.14	66
	2/6/2014	0.03	54
	6/26/2014	ND<0	26
	9/30/2014	ND<0	26
	11/19/2014	0.098	65
	3/23/2015	ND<0	26
	4/22/2015	ND<0	26
	9/30/2015	ND<0	26
	11/19/2015	0.045	58
	3/15/2016	0.087	64
	6/29/2016	ND<0	26
	8/9/2016	ND<0	26
	12/7/2016	ND<0	26
	3/2/2017	ND<0	26

7/5/2017	ND<0	26
8/16/2017	ND<0	26
10/25/2017	ND<0	26
3/28/2018	ND<0	26
6/29/2018	ND<0	26
8/2/2018	ND<0	26
12/10/2018	ND<0	26
4/15/2019	ND<0	26
6/12/2019	ND<0	26
8/27/2019	ND<0	26
10/29/2019	ND<0	26
3/30/2020	ND<0	26
6/16/2020	ND<0	26
9/21/2020	ND<0	26
12/17/2020	ND<0	26
3/18/2021	ND<0	26

The Wilcoxon Statistic is 541

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -0.0512979

The Standard Deviation adjusted for ties is 57.2298

The Z Score adjusted for ties is -0.0698937

-0.0512979 < 2.326 indicating no statistical significance at 1% level

-0.0698937 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 26

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 7	3/12/2013	7.98	46
	5/8/2013	7.72	19
	9/23/2013	7.05	2
	12/10/2013	8.02	49
	2/6/2014	7.27	6
	6/26/2014	8.45	63
	9/30/2014	7.87	36
	11/19/2014	8.53	66
	3/23/2015	8.28	62
	4/22/2015	7.99	47
	9/30/2015	7.89	38
	11/19/2015	7.78	26
	3/15/2016	8.46	64
	6/29/2016	7.9	40
	8/9/2016	7.97	45
	12/7/2016	7.88	37
	3/2/2017	7.8	29
	6/29/2017	8.18	57
	8/16/2017	7.84	34
	10/25/2017	7.73	20
	3/28/2018	8.16	56
	6/29/2018	7.79	27
	8/2/2018	7.62	17
	12/10/2018	7.06	3
	4/15/2019	7.83	32
	6/12/2019	7.24	5
	8/27/2019	7.35	9
	10/29/2019	7.77	24
	3/30/2020	7.77	25
	6/16/2020	8.12	54
	9/21/2020	7.42	13
	12/17/2020	7.75	22
	3/18/2021	7.37	11
HB 3	3/12/2013	7.54	15
	5/20/2013	8.21	59
	9/23/2013	8.02	50
	12/10/2013	7.9	41
	2/6/2014	7.22	4
	6/26/2014	8.2	58
	9/30/2014	8.05	52
	11/19/2014	7.85	35
	3/23/2015	8.21	60
	4/22/2015	7.91	42
	9/30/2015	7.89	39
	11/19/2015	7.83	33
	3/15/2016	8.52	65
	6/29/2016	8.02	51
	8/9/2016	7.91	43
	12/7/2016	7.93	44
	3/2/2017	7.75	23

7/5/2017	7.29	7
8/16/2017	7.35	10
10/25/2017	6.64	1
3/28/2018	7.99	48
6/29/2018	7.67	18
8/2/2018	7.4	12
12/10/2018	7.55	16
4/15/2019	7.73	21
6/12/2019	8.13	55
8/27/2019	8.21	61
10/29/2019	7.82	31
3/30/2020	7.79	28
6/16/2020	7.33	8
9/21/2020	7.8	30
12/17/2020	8.07	53
3/18/2021	7.47	14

The Wilcoxon Statistic is 566

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 0.269314

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is 0.269314

0.269314 < 2.326 indicating no statistical significance at 1% level

0.269314 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 26

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 7	3/12/2013	15.27	17
	5/8/2013	18.4	27
	9/23/2013	26.5	49
	12/10/2013	7.5	3
	2/6/2014	4.4	1
	9/30/2014	24.39	40
	11/19/2014	9.6	9
	3/23/2015	15.4	18
	4/22/2015	20.2	34
	9/30/2015	24.9	42
	11/19/2015	15.6	20
	3/15/2016	17.8	25
	6/29/2016	30.32	63
	8/9/2016	29.31	61
	12/7/2016	12.39	11
	3/2/2017	13.35	13
	6/29/2017	26.4	48
	8/16/2017	29	58
	10/25/2017	19.8	33
	3/28/2018	14.9	16
	6/29/2018	27.5	56
	8/2/2018	27	51
	12/10/2018	8	5
	4/15/2019	19.2	31
	6/12/2019	27.2	54
	8/27/2019	29.1	59
	10/29/2019	17.2	22
	3/30/2020	21.1	35
	6/16/2020	27.3	55
	9/21/2020	23.7	38
	12/17/2020	9.3	8
	3/18/2021	15.4	19
HB 3	3/12/2013	13.9	14
	5/20/2013	27.8	57
	9/23/2013	25.7	44
	12/10/2013	10.1	10
	2/6/2014	5.9	2
	9/30/2014	24.78	41
	11/19/2014	8.8	6
	3/23/2015	24.2	39
	4/22/2015	21.9	36
	9/30/2015	25.7	45
	11/19/2015	17.4	23
	3/15/2016	19.1	30
	6/29/2016	30.61	64
	8/9/2016	30.19	62
	12/7/2016	12.81	12
	3/2/2017	14.33	15
	7/5/2017	27	52
	8/16/2017	27	53

10/25/2017	18.5	28
3/28/2018	17.6	24
6/29/2018	26	46
8/2/2018	25.1	43
12/10/2018	7.9	4
4/15/2019	19.6	32
6/12/2019	26.6	50
8/27/2019	29.1	60
10/29/2019	18.3	26
3/30/2020	18.5	29
6/16/2020	26.3	47
9/21/2020	23.5	37
12/17/2020	9.1	7
3/18/2021	16	21

The Wilcoxon Statistic is 531

The Expected value is 512

The Standard Deviation is 74.4759

The Z Score is 0.248402

The Standard Deviation adjusted for ties is 74.4759

The Z Score adjusted for ties is 0.248402

0.248402 < 2.326 indicating no statistical significance at 1% level

0.248402 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 12

Non detect rank is 6.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 7	3/12/2013	0.31	16
	5/8/2013	ND<0	6.5
	9/23/2013	0.54	48
	12/10/2013	0.32	17
	2/6/2014	0.61	54
	6/26/2014	0.52	47
	9/30/2014	0.41	29
	11/19/2014	0.46	37
	3/23/2015	0.35	21
	4/22/2015	0.47	40
	9/30/2015	0.59	50
	11/19/2015	ND<0	6.5
	3/15/2016	0.397	28
	6/29/2016	0.49	43
	8/9/2016	0.471	41
	12/7/2016	0.355	22
	3/2/2017	0.514	45
	6/29/2017	0.44	33
	8/16/2017	0.358	23
	10/25/2017	0.416	31
	3/28/2018	ND<0	6.5
	6/29/2018	0.625	56
	8/2/2018	0.45	35
	12/10/2018	0.39	27
	4/15/2019	ND<0	6.5
	6/12/2019	ND<0	6.5
	8/27/2019	0.604	53
	10/29/2019	0.414	30
	3/30/2020	0.343	20
	6/16/2020	0.322	18
	9/21/2020	ND<0	6.5
	12/17/2020	ND<0	6.5
	3/18/2021	0.387	26
HB 3	3/12/2013	0.83	63
	5/20/2013	0.6	51
	9/23/2013	0.6	52
	12/10/2013	0.62	55
	2/6/2014	0.37	24
	6/26/2014	0.37	25
	9/30/2014	0.48	42
	11/19/2014	0.44	34
	3/23/2015	0.46	38
	4/22/2015	0.66	58
	9/30/2015	0.91	64
	11/19/2015	ND<0	6.5
	3/15/2016	ND<0	6.5
	6/29/2016	0.51	44
	8/9/2016	0.703	59
	12/7/2016	0.73	60
	3/2/2017	0.969	66

7/5/2017	0.812	62
8/16/2017	0.763	61
10/25/2017	0.322	19
3/28/2018	ND<0	6.5
6/29/2018	0.464	39
8/2/2018	0.952	65
12/10/2018	0.426	32
4/15/2019	ND<0	6.5
6/12/2019	ND<0	6.5
8/27/2019	0.634	57
10/29/2019	0.517	46
3/30/2020	0.452	36
6/16/2020	0.299	15
9/21/2020	0.279	14
12/17/2020	0.588	49
3/18/2021	0.252	13

The Wilcoxon Statistic is 714.5

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 2.17375

The Standard Deviation adjusted for ties is 77.7428

The Z Score adjusted for ties is 2.18026

2.17375 < 2.326 indicating no statistical significance at 1% level

2.18026 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 54

Non detect rank is 27.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 7	3/12/2013	ND<0	27.5
	5/8/2013	ND<0	27.5
	9/23/2013	ND<0	27.5
	12/10/2013	0.11	55
	2/6/2014	ND<0	27.5
	6/26/2014	ND<0	27.5
	9/30/2014	ND<0	27.5
	11/19/2014	0.13	59
	3/23/2015	ND<0	27.5
	4/22/2015	ND<0	27.5
	9/30/2015	ND<0	27.5
	11/19/2015	ND<0	27.5
	3/15/2016	ND<0	27.5
	6/29/2016	ND<0	27.5
	8/9/2016	ND<0	27.5
	12/7/2016	ND<0	27.5
	3/2/2017	ND<0	27.5
	6/29/2017	ND<0	27.5
	8/16/2017	ND<0	27.5
	10/25/2017	ND<0	27.5
	3/28/2018	ND<0	27.5
	6/29/2018	ND<0	27.5
	8/2/2018	ND<0	27.5
	12/10/2018	0.149	61
	4/15/2019	ND<0	27.5
	6/12/2019	ND<0	27.5
	8/27/2019	0.156	63
	10/29/2019	ND<0	27.5
	3/30/2020	ND<0	27.5
	6/16/2020	ND<0	27.5
	9/21/2020	ND<0	27.5
	12/17/2020	ND<0	27.5
	3/18/2021	ND<0	27.5
HB 3	3/12/2013	ND<0	27.5
	5/20/2013	ND<0	27.5
	9/23/2013	ND<0	27.5
	12/10/2013	0.15	62
	2/6/2014	ND<0	27.5
	6/26/2014	ND<0	27.5
	9/30/2014	ND<0	27.5
	11/19/2014	0.12	57
	3/23/2015	ND<0	27.5
	4/22/2015	ND<0	27.5
	9/30/2015	ND<0	27.5
	11/19/2015	ND<0	27.5
	3/15/2016	ND<0	27.5
	6/29/2016	ND<0	27.5
	8/9/2016	ND<0	27.5
	12/7/2016	0.126	58
	3/2/2017	0.115	56

7/5/2017	ND<0	27.5
8/16/2017	ND<0	27.5
10/25/2017	ND<0	27.5
3/28/2018	ND<0	27.5
6/29/2018	ND<0	27.5
8/2/2018	ND<0	27.5
12/10/2018	0.141	60
4/15/2019	ND<0	27.5
6/12/2019	ND<0	27.5
8/27/2019	0.179	66
10/29/2019	0.166	64
3/30/2020	0.166	65
6/16/2020	ND<0	27.5
9/21/2020	ND<0	27.5
12/17/2020	ND<0	27.5
3/18/2021	ND<0	27.5

The Wilcoxon Statistic is 614.5

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 0.8913

The Standard Deviation adjusted for ties is 52.4445

The Z Score adjusted for ties is 1.32521

0.8913 < 2.326 indicating no statistical significance at 1% level

1.32521 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 27.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 7	3/12/2013	8.8	9
	5/8/2013	20	40
	9/23/2013	9.6	13
	12/10/2013	40	61
	2/6/2014	13	20
	6/26/2014	8.7	8
	9/30/2014	13	21
	11/19/2014	15	29
	3/23/2015	10	15
	4/22/2015	24	51
	9/30/2015	9.1	10
	11/19/2015	34.3	57
	3/15/2016	13.9	24
	6/29/2016	8.6	7
	8/9/2016	5.73	1
	12/7/2016	7.75	4
	3/2/2017	14.4	26
	6/29/2017	13.4	23
	8/16/2017	15.3	30
	10/25/2017	18.4	37
	3/28/2018	9.19	11
	6/29/2018	14.6	27
	8/2/2018	32.1	56
	12/10/2018	48.7	62
	4/15/2019	12	16
	6/12/2019	9.29	12
	8/27/2019	6.3	2
	10/29/2019	17	31
	3/30/2020	12.8	19
	6/16/2020	8.29	5
	9/21/2020	9.6	14
	12/17/2020	18.2	35
	3/18/2021	23	47
HB 3	3/12/2013	49	63
	5/20/2013	17	32
	9/23/2013	19	38
	12/10/2013	20	41
	2/6/2014	13	22
	6/26/2014	12	17
	9/30/2014	30	54
	11/19/2014	51	64
	3/23/2015	35	58
	4/22/2015	22	46
	9/30/2015	23	48
	11/19/2015	30.2	55
	3/15/2016	23.8	50
	6/29/2016	20.9	45
	8/9/2016	14.3	25
	12/7/2016	17	33
	3/2/2017	57.1	66

7/5/2017	28.5	53
8/16/2017	12.7	18
10/25/2017	20.4	43
3/28/2018	20.2	42
6/29/2018	18.2	36
8/2/2018	35.3	59
12/10/2018	27.6	52
4/15/2019	35.5	60
6/12/2019	52.3	65
8/27/2019	7.3	3
10/29/2019	17.6	34
3/30/2020	19	39
6/16/2020	14.6	28
9/21/2020	8.3	6
12/17/2020	20.4	44
3/18/2021	23	49

The Wilcoxon Statistic is 827

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 3.6165

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is 3.6165

3.6165 > 2.326 indicating statistical significance at 1% level

3.6165 > 2.326 indicating statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 27.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
GD 7	3/12/2013	9.7	14
	5/8/2013	26.1	46
	9/23/2013	10.9	18
	12/10/2013	41.9	60
	2/6/2014	28	48
	6/26/2014	6.2	3
	9/30/2014	11.9	21
	11/19/2014	19.6	38
	3/23/2015	13	25
	4/22/2015	28	49
	9/30/2015	8.3	8
	11/19/2015	45	61
	3/15/2016	17.2	34
	6/29/2016	10.7	16
	8/9/2016	6.54	4
	12/7/2016	9.5	13
	3/2/2017	10.82	17
	6/29/2017	9.4	12
	8/16/2017	8.5	9
	10/25/2017	9.9	15
	3/28/2018	7.6	6
	6/29/2018	14.2	29
	8/2/2018	18.5	37
	12/10/2018	40.8	59
	4/15/2019	30.1	54
	6/12/2019	7.4	5
	8/27/2019	45.3	62
	10/29/2019	17.6	36
	3/30/2020	7.8	7
	6/16/2020	9.1	11
	9/21/2020	13.6	27
	12/17/2020	14.4	30
	3/18/2021	1.2	1
HB 3	3/12/2013	33.3	58
	5/20/2013	14.5	31
	9/23/2013	21.3	40
	12/10/2013	48.4	63
	2/6/2014	32	56
	6/26/2014	12	22
	9/30/2014	29.5	53
	11/19/2014	56.1	65
	3/23/2015	27	47
	4/22/2015	25	45
	9/30/2015	22	41
	11/19/2015	32	57
	3/15/2016	28.8	52
	6/29/2016	17.3	35
	8/9/2016	11.3	19
	12/7/2016	16	33
	3/2/2017	50	64

7/5/2017	23.1	43
8/16/2017	13.7	28
10/25/2017	11.7	20
3/28/2018	13.2	26
6/29/2018	14.6	32
8/2/2018	28.3	51
12/10/2018	24.8	44
4/15/2019	22.4	42
6/12/2019	12.4	24
8/27/2019	78.1	66
10/29/2019	28.2	50
3/30/2020	8.88	10
6/16/2020	20.4	39
9/21/2020	12.1	23
12/17/2020	31.16	55
3/18/2021	1.8	2

The Wilcoxon Statistic is 775

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 2.94963

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is 2.94963

2.94963 > 2.326 indicating statistical significance at 1% level

2.94963 > 2.326 indicating statistical significance at 1% level when adjusted for ties

Comparison of HB3 and RC14

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
RC 14	3/12/2013	7.53	33
	5/8/2013	1.78	1
	9/23/2013	6.68	24
	12/10/2013	9.5	53
	2/6/2014	10.94	64
	6/26/2014	6.3	21
	9/19/2014	10.1	61
	9/30/2014	6.2	20
	3/23/2015	7.8	37
	4/22/2015	7.25	29
	9/30/2015	5.63	15
	11/19/2015	6.07	19
	3/15/2016	7.73	36
	6/29/2016	2.17	2
	8/9/2016	2.35	3
	12/7/2016	6.47	22
	3/2/2017	3.55	5
	7/5/2017	6.56	23
	8/16/2017	5.54	12
	10/25/2017	7.26	30
	3/28/2018	9	50
	6/29/2018	5.89	17
	8/2/2018	5.56	14
	12/10/2018	10.63	63
	4/15/2019	7.67	34
	6/12/2019	7.39	32
	8/27/2019	8.78	46
	10/29/2019	9.83	56
	3/30/2020	10.01	60
	6/16/2020	8.01	39
	9/21/2020	9.65	55
	12/17/2020	10.4	62
	3/18/2021	8.88	48
HB 3	3/12/2013	9.48	52
	5/20/2013	6.82	26
	9/23/2013	4.89	8
	12/10/2013	8.65	44
	2/6/2014	12.24	66
	6/26/2014	7.12	28
	9/30/2014	6.01	18
	11/19/2014	8.83	47
	3/23/2015	8.4	42
	4/22/2015	8.36	41
	9/30/2015	5.05	10
	11/19/2015	7.37	31
	3/15/2016	7.97	38

6/29/2016	2.77	4
8/9/2016	4.31	7
12/7/2016	8.44	43
3/2/2017	3.9	6
7/5/2017	5.36	11
8/16/2017	5.04	9
10/25/2017	9.93	58
3/28/2018	9.47	51
6/29/2018	5.55	13
8/2/2018	5.64	16
12/10/2018	10.98	65
4/15/2019	8.27	40
6/12/2019	6.77	25
8/27/2019	8.75	45
10/29/2019	9.88	57
3/30/2020	8.91	49
6/16/2020	7.01	27
9/21/2020	7.69	35
12/17/2020	9.94	59
3/18/2021	9.62	54

The Wilcoxon Statistic is 564

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 0.243665

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is 0.243665

0.243665 < 2.326 indicating no statistical significance at 1% level

0.243665 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 34

Non detect rank is 17.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
RC 14	3/12/2013	ND<0	17.5
	5/8/2013	0.14	43
	9/23/2013	ND<0	17.5
	12/10/2013	ND<0	17.5
	2/6/2014	0.16	46
	6/26/2014	ND<0	17.5
	9/19/2014	ND<0	17.5
	9/30/2014	ND<0	17.5
	3/23/2015	0.26	56
	4/22/2015	0.2	50
	9/30/2015	ND<0	17.5
	11/19/2015	0.137	42
	3/15/2016	0.106	35
	6/29/2016	ND<0	17.5
	8/9/2016	ND<0	17.5
	12/7/2016	ND<0	17.5
	3/2/2017	0.12	39
	7/5/2017	0.279	59
	8/16/2017	0.21	52
	10/25/2017	0.24	55
	3/28/2018	0.148	45
	6/29/2018	ND<0	17.5
	8/2/2018	ND<0	17.5
	12/10/2018	ND<0	17.5
	4/15/2019	0.108	36
	6/12/2019	0.12	40
	8/27/2019	ND<0	17.5
	10/29/2019	ND<0	17.5
	3/30/2020	ND<0	17.5
	6/16/2020	0.141	44
	9/21/2020	ND<0	17.5
	12/17/2020	0.261	58
	3/18/2021	ND<0	17.5
HB 3	3/12/2013	0.19	48
	5/20/2013	0.17	47
	9/23/2013	ND<0	17.5
	12/10/2013	ND<0	17.5
	2/6/2014	0.48	66
	6/26/2014	ND<0	17.5
	9/30/2014	ND<0	17.5
	11/19/2014	0.11	37
	3/23/2015	0.26	57
	4/22/2015	0.2	51
	9/30/2015	ND<0	17.5
	11/19/2015	0.377	65
	3/15/2016	0.295	60
	6/29/2016	ND<0	17.5
	8/9/2016	ND<0	17.5
	12/7/2016	0.111	38
	3/2/2017	0.334	61

7/5/2017	ND<0	17.5
8/16/2017	ND<0	17.5
10/25/2017	ND<0	17.5
3/28/2018	0.359	62
6/29/2018	ND<0	17.5
8/2/2018	ND<0	17.5
12/10/2018	0.363	63
4/15/2019	0.233	53
6/12/2019	0.129	41
8/27/2019	ND<0	17.5
10/29/2019	ND<0	17.5
3/30/2020	0.234	54
6/16/2020	ND<0	17.5
9/21/2020	ND<0	17.5
12/17/2020	0.195	49
3/18/2021	0.369	64

The Wilcoxon Statistic is 635

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 1.1542

The Standard Deviation adjusted for ties is 72.4537

The Z Score adjusted for ties is 1.24217

1.1542 < 2.326 indicating no statistical significance at 1% level

1.24217 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 48

Non detect rank is 24.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
RC 14	3/12/2013	0.088	62
	5/8/2013	ND<0	24.5
	9/23/2013	ND<0	24.5
	12/10/2013	0.1	65
	2/6/2014	0.036	50
	6/26/2014	ND<0	24.5
	9/19/2014	0.085	60
	9/30/2014	ND<0	24.5
	3/23/2015	0.07	58
	4/22/2015	ND<0	24.5
	9/30/2015	ND<0	24.5
	11/19/2015	ND<0	24.5
	3/15/2016	ND<0	24.5
	6/29/2016	0.037	51
	8/9/2016	ND<0	24.5
	12/7/2016	ND<0	24.5
	3/2/2017	ND<0	24.5
	7/5/2017	0.041	54
	8/16/2017	0.042	55
	10/25/2017	0.088	63
	3/28/2018	ND<0	24.5
	6/29/2018	ND<0	24.5
	8/2/2018	0.055	57
	12/10/2018	0.038	53
	4/15/2019	ND<0	24.5
	6/12/2019	ND<0	24.5
	8/27/2019	ND<0	24.5
	10/29/2019	ND<0	24.5
	3/30/2020	ND<0	24.5
	6/16/2020	ND<0	24.5
	9/21/2020	ND<0	24.5
	12/17/2020	ND<0	24.5
	3/18/2021	ND<0	24.5
HB 3	3/12/2013	0.081	59
	5/20/2013	ND<0	24.5
	9/23/2013	0.037	52
	12/10/2013	0.14	66
	2/6/2014	0.03	49
	6/26/2014	ND<0	24.5
	9/30/2014	ND<0	24.5
	11/19/2014	0.098	64
	3/23/2015	ND<0	24.5
	4/22/2015	ND<0	24.5
	9/30/2015	ND<0	24.5
	11/19/2015	0.045	56
	3/15/2016	0.087	61
	6/29/2016	ND<0	24.5
	8/9/2016	ND<0	24.5
	12/7/2016	ND<0	24.5
	3/2/2017	ND<0	24.5

7/5/2017	ND<0	24.5
8/16/2017	ND<0	24.5
10/25/2017	ND<0	24.5
3/28/2018	ND<0	24.5
6/29/2018	ND<0	24.5
8/2/2018	ND<0	24.5
12/10/2018	ND<0	24.5
4/15/2019	ND<0	24.5
6/12/2019	ND<0	24.5
8/27/2019	ND<0	24.5
10/29/2019	ND<0	24.5
3/30/2020	ND<0	24.5
6/16/2020	ND<0	24.5
9/21/2020	ND<0	24.5
12/17/2020	ND<0	24.5
3/18/2021	ND<0	24.5

The Wilcoxon Statistic is 483

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -0.795117

The Standard Deviation adjusted for ties is 61.1704

The Z Score adjusted for ties is -1.01356

-0.795117 < 2.326 indicating no statistical significance at 1% level

-1.01356 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 24.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
RC 14	3/12/2013	8.23	62
	5/8/2013	6.72	2
	9/23/2013	7.86	38
	12/10/2013	8.45	65
	2/6/2014	7.15	6
	6/26/2014	8.21	58
	9/19/2014	8.2	56
	9/30/2014	7.2	7
	3/23/2015	8.03	48
	4/22/2015	7.77	32
	9/30/2015	8.28	63
	11/19/2015	7.32	12
	3/15/2016	8.13	54
	6/29/2016	7.58	23
	8/9/2016	7.05	4
	12/7/2016	7.21	8
	3/2/2017	7.32	13
	7/5/2017	7.55	21
	8/16/2017	7.72	28
	10/25/2017	7.64	24
	3/28/2018	8.03	49
	6/29/2018	7.64	25
	8/2/2018	7.3	11
	12/10/2018	7.13	5
	4/15/2019	7.68	27
	6/12/2019	8.03	50
	8/27/2019	8.36	64
	10/29/2019	7.9	40
	3/30/2020	8.1	53
	6/16/2020	6.79	3
	9/21/2020	7.49	19
	12/17/2020	7.72	29
	3/18/2021	7.43	17
HB 3	3/12/2013	7.54	20
	5/20/2013	8.21	59
	9/23/2013	8.02	46
	12/10/2013	7.9	41
	2/6/2014	7.22	9
	6/26/2014	8.2	57
	9/30/2014	8.05	51
	11/19/2014	7.85	37
	3/23/2015	8.21	60
	4/22/2015	7.91	42
	9/30/2015	7.89	39
	11/19/2015	7.83	36
	3/15/2016	8.52	66
	6/29/2016	8.02	47
	8/9/2016	7.91	43
	12/7/2016	7.93	44
	3/2/2017	7.75	31

7/5/2017	7.29	10
8/16/2017	7.35	15
10/25/2017	6.64	1
3/28/2018	7.99	45
6/29/2018	7.67	26
8/2/2018	7.4	16
12/10/2018	7.55	22
4/15/2019	7.73	30
6/12/2019	8.13	55
8/27/2019	8.21	61
10/29/2019	7.82	35
3/30/2020	7.79	33
6/16/2020	7.33	14
9/21/2020	7.8	34
12/17/2020	8.07	52
3/18/2021	7.47	18

The Wilcoxon Statistic is 634

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 1.14138

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is 1.14138

1.14138 < 2.326 indicating no statistical significance at 1% level

1.14138 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 24.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
RC 14	3/12/2013	10.3	11
	5/8/2013	21.4	34
	9/23/2013	24.7	43
	12/10/2013	8.2	6
	2/6/2014	4.9	1
	9/19/2014	7.5	4
	9/30/2014	23.5	38
	3/23/2015	18.2	25
	4/22/2015	18.1	24
	9/30/2015	24.4	42
	11/19/2015	17.71	23
	3/15/2016	18.5	28
	6/29/2016	28.53	60
	8/9/2016	28.53	61
	12/7/2016	11.62	12
	3/2/2017	12.69	13
	7/5/2017	25.7	47
	8/16/2017	26.7	53
	10/25/2017	17.1	19
	3/28/2018	18.3	26
	6/29/2018	27.1	57
	8/2/2018	23.7	40
	12/10/2018	7.3	3
	4/15/2019	19.5	32
	6/12/2019	25.3	46
	8/27/2019	28.4	59
	10/29/2019	17.7	22
	3/30/2020	21.9	35
	6/16/2020	26.9	54
	9/21/2020	21.9	36
	12/17/2020	9.3	9
	3/18/2021	15.6	17
HB 3	3/12/2013	13.9	15
	5/20/2013	27.8	58
	9/23/2013	25.7	48
	12/10/2013	10.1	10
	2/6/2014	5.9	2
	9/30/2014	24.78	44
	11/19/2014	8.8	7
	3/23/2015	24.2	41
	4/22/2015	21.9	37
	9/30/2015	25.7	49
	11/19/2015	17.4	20
	3/15/2016	19.1	31
	6/29/2016	30.61	64
	8/9/2016	30.19	63
	12/7/2016	12.81	14
	3/2/2017	14.33	16
	7/5/2017	27	55
	8/16/2017	27	56

10/25/2017	18.5	29
3/28/2018	17.6	21
6/29/2018	26	50
8/2/2018	25.1	45
12/10/2018	7.9	5
4/15/2019	19.6	33
6/12/2019	26.6	52
8/27/2019	29.1	62
10/29/2019	18.3	27
3/30/2020	18.5	30
6/16/2020	26.3	51
9/21/2020	23.5	39
12/17/2020	9.1	8
3/18/2021	16	18

The Wilcoxon Statistic is 572

The Expected value is 512

The Standard Deviation is 74.4759

The Z Score is 0.798916

The Standard Deviation adjusted for ties is 74.4759

The Z Score adjusted for ties is 0.798916

0.798916 < 2.326 indicating no statistical significance at 1% level

0.798916 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 6

Non detect rank is 3.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
RC 14	3/12/2013	0.61	46
	5/8/2013	0.63	48
	9/23/2013	0.58	41
	12/10/2013	0.69	52
	2/6/2014	0.7	53
	6/26/2014	0.39	17
	9/19/2014	0.52	38
	9/30/2014	0.4	19
	3/23/2015	1.1	65
	4/22/2015	0.4	20
	9/30/2015	0.454	28
	11/19/2015	0.633	49
	3/15/2016	0.434	24
	6/29/2016	0.46	29
	8/9/2016	0.547	39
	12/7/2016	0.252	8
	3/2/2017	0.608	45
	7/5/2017	0.357	14
	8/16/2017	0.4	21
	10/25/2017	0.465	32
	3/28/2018	ND<0	3.5
	6/29/2018	0.722	55
	8/2/2018	0.848	61
	12/10/2018	1.4	66
	4/15/2019	0.403	22
	6/12/2019	0.25	7
	8/27/2019	0.391	18
	10/29/2019	0.478	33
	3/30/2020	0.451	26
	6/16/2020	0.56	40
	9/21/2020	0.307	12
	12/17/2020	0.497	35
	3/18/2021	0.779	58
HB 3	3/12/2013	0.83	60
	5/20/2013	0.6	43
	9/23/2013	0.6	44
	12/10/2013	0.62	47
	2/6/2014	0.37	15
	6/26/2014	0.37	16
	9/30/2014	0.48	34
	11/19/2014	0.44	25
	3/23/2015	0.46	30
	4/22/2015	0.66	51
	9/30/2015	0.91	62
	11/19/2015	ND<0	3.5
	3/15/2016	ND<0	3.5
	6/29/2016	0.51	36
	8/9/2016	0.703	54
	12/7/2016	0.73	56
	3/2/2017	0.969	64

7/5/2017	0.812	59
8/16/2017	0.763	57
10/25/2017	0.322	13
3/28/2018	ND<0	3.5
6/29/2018	0.464	31
8/2/2018	0.952	63
12/10/2018	0.426	23
4/15/2019	ND<0	3.5
6/12/2019	ND<0	3.5
8/27/2019	0.634	50
10/29/2019	0.517	37
3/30/2020	0.452	27
6/16/2020	0.299	11
9/21/2020	0.279	10
12/17/2020	0.588	42
3/18/2021	0.252	9

The Wilcoxon Statistic is 525.5

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -0.250077

The Standard Deviation adjusted for ties is 77.9475

The Z Score adjusted for ties is -0.250168

-0.250077 < 2.326 indicating no statistical significance at 1% level

-0.250168 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 49

Non detect rank is 25

Wilcoxon Ranks

Location	Date	Conc.	Rank
RC 14	3/12/2013	ND<0	25
	5/8/2013	ND<0	25
	9/23/2013	ND<0	25
	12/10/2013	0.11	50
	2/6/2014	0.11	51
	6/26/2014	ND<0	25
	9/19/2014	0.13	55
	9/30/2014	ND<0	25
	3/23/2015	ND<0	25
	4/22/2015	ND<0	25
	9/30/2015	ND<0	25
	11/19/2015	0.135	56
	3/15/2016	0.304	66
	6/29/2016	ND<0	25
	8/9/2016	ND<0	25
	12/7/2016	ND<0	25
	3/2/2017	ND<0	25
	7/5/2017	ND<0	25
	8/16/2017	ND<0	25
	10/25/2017	0.149	59
	3/28/2018	ND<0	25
	6/29/2018	ND<0	25
	8/2/2018	ND<0	25
	12/10/2018	0.169	63
	4/15/2019	ND<0	25
	6/12/2019	ND<0	25
	8/27/2019	0.141	57
	10/29/2019	ND<0	25
	3/30/2020	ND<0	25
	6/16/2020	ND<0	25
	9/21/2020	0.202	65
	12/17/2020	ND<0	25
	3/18/2021	ND<0	25
HB 3	3/12/2013	ND<0	25
	5/20/2013	ND<0	25
	9/23/2013	ND<0	25
	12/10/2013	0.15	60
	2/6/2014	ND<0	25
	6/26/2014	ND<0	25
	9/30/2014	ND<0	25
	11/19/2014	0.12	53
	3/23/2015	ND<0	25
	4/22/2015	ND<0	25
	9/30/2015	ND<0	25
	11/19/2015	ND<0	25
	3/15/2016	ND<0	25
	6/29/2016	ND<0	25
	8/9/2016	ND<0	25
	12/7/2016	0.126	54
	3/2/2017	0.115	52

7/5/2017	ND<0	25
8/16/2017	ND<0	25
10/25/2017	ND<0	25
3/28/2018	ND<0	25
6/29/2018	ND<0	25
8/2/2018	ND<0	25
12/10/2018	0.141	58
4/15/2019	ND<0	25
6/12/2019	ND<0	25
8/27/2019	0.179	64
10/29/2019	0.166	61
3/30/2020	0.166	62
6/16/2020	ND<0	25
9/21/2020	ND<0	25
12/17/2020	ND<0	25
3/18/2021	ND<0	25

The Wilcoxon Statistic is 528

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -0.218016

The Standard Deviation adjusted for ties is 59.9379

The Z Score adjusted for ties is -0.283627

-0.218016 < 2.326 indicating no statistical significance at 1% level

-0.283627 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 25

Wilcoxon Ranks

Location	Date	Conc.	Rank
RC 14	3/12/2013	21	43
	5/8/2013	16	26
	9/23/2013	13	17
	12/10/2013	16	27
	2/6/2014	18	34
	6/26/2014	5.9	1
	9/19/2014	28	50
	9/30/2014	12	11
	3/23/2015	34	54
	4/22/2015	15	24
	9/30/2015	12.6	15
	11/19/2015	36	59
	3/15/2016	69.6	66
	6/29/2016	17.5	32
	8/9/2016	8.48	5
	12/7/2016	8.6	6
	3/2/2017	14.6	22
	7/5/2017	35	55
	8/16/2017	12.4	14
	10/25/2017	27.2	48
	3/28/2018	10.9	9
	6/29/2018	13.8	19
	8/2/2018	17.3	31
	12/10/2018	16.9	28
	4/15/2019	36	60
	6/12/2019	12.3	13
	8/27/2019	8.8	7
	10/29/2019	10.6	8
	3/30/2020	15.7	25
	6/16/2020	11.4	10
	9/21/2020	8.2	3
	12/17/2020	14.4	21
	3/18/2021	51.6	63
HB 3	3/12/2013	49	61
	5/20/2013	17	29
	9/23/2013	19	36
	12/10/2013	20	38
	2/6/2014	13	18
	6/26/2014	12	12
	9/30/2014	30	52
	11/19/2014	51	62
	3/23/2015	35	56
	4/22/2015	22	44
	9/30/2015	23	45
	11/19/2015	30.2	53
	3/15/2016	23.8	47
	6/29/2016	20.9	42
	8/9/2016	14.3	20
	12/7/2016	17	30
	3/2/2017	57.1	65

7/5/2017	28.5	51
8/16/2017	12.7	16
10/25/2017	20.4	40
3/28/2018	20.2	39
6/29/2018	18.2	35
8/2/2018	35.3	57
12/10/2018	27.6	49
4/15/2019	35.5	58
6/12/2019	52.3	64
8/27/2019	7.3	2
10/29/2019	17.6	33
3/30/2020	19	37
6/16/2020	14.6	23
9/21/2020	8.3	4
12/17/2020	20.4	41
3/18/2021	23	46

The Wilcoxon Statistic is 744

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 2.55207

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is 2.55207

2.55207 > 2.326 indicating statistical significance at 1% level

2.55207 > 2.326 indicating statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 25

Wilcoxon Ranks

Location	Date	Conc.	Rank
RC 14	3/12/2013	28.3	44
	5/8/2013	29.5	47
	9/23/2013	18.4	31
	12/10/2013	40	55
	2/6/2014	66.6	61
	6/26/2014	6.2	2
	9/19/2014	50.3	59
	9/30/2014	12.4	15
	3/23/2015	70	62
	4/22/2015	30	49
	9/30/2015	17	25
	11/19/2015	95	66
	3/15/2016	85	65
	6/29/2016	17.2	26
	8/9/2016	10.38	8
	12/7/2016	7.9	3
	3/2/2017	18	30
	7/5/2017	17.7	29
	8/16/2017	9.8	5
	10/25/2017	18.7	32
	3/28/2018	9.9	6
	6/29/2018	12.9	17
	8/2/2018	21.7	35
	12/10/2018	35.1	54
	4/15/2019	45.8	56
	6/12/2019	11	9
	8/27/2019	76.4	63
	10/29/2019	17.4	28
	3/30/2020	12.9	18
	6/16/2020	11.5	11
	9/21/2020	13.7	20
	12/17/2020	25.8	41
	3/18/2021	10.1	7
HB 3	3/12/2013	33.3	53
	5/20/2013	14.5	22
	9/23/2013	21.3	34
	12/10/2013	48.4	57
	2/6/2014	32	51
	6/26/2014	12	13
	9/30/2014	29.5	48
	11/19/2014	56.1	60
	3/23/2015	27	42
	4/22/2015	25	40
	9/30/2015	22	36
	11/19/2015	32	52
	3/15/2016	28.8	46
	6/29/2016	17.3	27
	8/9/2016	11.3	10
	12/7/2016	16	24
	3/2/2017	50	58

7/5/2017	23.1	38
8/16/2017	13.7	21
10/25/2017	11.7	12
3/28/2018	13.2	19
6/29/2018	14.6	23
8/2/2018	28.3	45
12/10/2018	24.8	39
4/15/2019	22.4	37
6/12/2019	12.4	16
8/27/2019	78.1	64
10/29/2019	28.2	43
3/30/2020	8.88	4
6/16/2020	20.4	33
9/21/2020	12.1	14
12/17/2020	31.16	50
3/18/2021	1.8	1

The Wilcoxon Statistic is 571

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 0.333436

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is 0.333436

0.333436 < 2.326 indicating no statistical significance at 1% level

0.333436 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Comparison of HB3 and SME3

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 3	3/13/2013	7.44	31
	5/20/2013	6.09	20
	9/23/2013	5.32	11
	12/10/2013	8.85	49
	2/6/2014	10.62	60
	6/26/2014	7.03	28
	9/30/2014	5.98	18
	11/19/2014	10.4	59
	3/23/2015	7.72	36
	4/22/2015	6.7	23
	9/30/2015	6.19	21
	11/19/2015	7.44	32
	3/15/2016	7.51	33
	6/29/2016	2.56	1
	8/9/2016	3.43	3
	12/7/2016	10.91	62
	3/2/2017	4.6	6
	7/5/2017	5.88	17
	8/16/2017	5	8
	10/25/2017	8.23	39
	3/28/2018	9.44	52
	6/29/2018	5.39	13
	8/2/2018	5.66	16
	12/10/2018	10.68	61
	4/15/2019	7.65	34
	6/12/2019	6.87	26
	8/27/2019	8.41	43
	10/29/2019	8.44	44
	3/30/2020	8.91	50
	6/16/2020	7.95	37
	9/21/2020	6.5	22
HB 3	3/12/2013	9.48	54
	5/20/2013	6.82	25
	9/23/2013	4.89	7
	12/10/2013	8.65	46
	2/6/2014	12.24	64
	6/26/2014	7.12	29
	9/30/2014	6.01	19
	11/19/2014	8.83	48
	3/23/2015	8.4	42
	4/22/2015	8.36	41
	9/30/2015	5.05	10
	11/19/2015	7.37	30
	3/15/2016	7.97	38
	6/29/2016	2.77	2
	8/9/2016	4.31	5

12/7/2016	8.44	45
3/2/2017	3.9	4
7/5/2017	5.36	12
8/16/2017	5.04	9
10/25/2017	9.93	57
3/28/2018	9.47	53
6/29/2018	5.55	14
8/2/2018	5.64	15
12/10/2018	10.98	63
4/15/2019	8.27	40
6/12/2019	6.77	24
8/27/2019	8.75	47
10/29/2019	9.88	56
3/30/2020	8.91	51
6/16/2020	7.01	27
9/21/2020	7.69	35
12/17/2020	9.94	58
3/18/2021	9.62	55

The Wilcoxon Statistic is 564

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is 0.698553

The Standard Deviation adjusted for ties is 74.4396

The Z Score adjusted for ties is 0.698553

0.698553 < 2.326 indicating no statistical significance at 1% level

0.698553 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 34

Non detect rank is 17.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 3	3/13/2013	0.2	45
	5/20/2013	0.17	41
	9/23/2013	ND<0	17.5
	12/10/2013	ND<0	17.5
	2/6/2014	0.25	53
	6/26/2014	ND<0	17.5
	9/30/2014	ND<0	17.5
	11/19/2014	0.12	37
	3/23/2015	0.24	52
	4/22/2015	0.15	40
	9/30/2015	0.125	38
	11/19/2015	0.253	54
	3/15/2016	0.295	57
	6/29/2016	ND<0	17.5
	8/9/2016	ND<0	17.5
	12/7/2016	ND<0	17.5
	3/2/2017	0.272	56
	7/5/2017	ND<0	17.5
	8/16/2017	ND<0	17.5
	10/25/2017	ND<0	17.5
	3/28/2018	0.22	47
	6/29/2018	ND<0	17.5
	8/2/2018	ND<0	17.5
	12/10/2018	ND<0	17.5
	4/15/2019	0.234	49
	6/12/2019	ND<0	17.5
	8/27/2019	ND<0	17.5
	10/29/2019	ND<0	17.5
	3/30/2020	0.239	51
	6/16/2020	ND<0	17.5
	9/21/2020	ND<0	17.5
HB 3	3/12/2013	0.19	43
	5/20/2013	0.17	42
	9/23/2013	ND<0	17.5
	12/10/2013	ND<0	17.5
	2/6/2014	0.48	64
	6/26/2014	ND<0	17.5
	9/30/2014	ND<0	17.5
	11/19/2014	0.11	35
	3/23/2015	0.26	55
	4/22/2015	0.2	46
	9/30/2015	ND<0	17.5
	11/19/2015	0.377	63
	3/15/2016	0.295	58
	6/29/2016	ND<0	17.5
	8/9/2016	ND<0	17.5
	12/7/2016	0.111	36
	3/2/2017	0.334	59
	7/5/2017	ND<0	17.5
	8/16/2017	ND<0	17.5

10/25/2017	ND<0	17.5
3/28/2018	0.359	60
6/29/2018	ND<0	17.5
8/2/2018	ND<0	17.5
12/10/2018	0.363	61
4/15/2019	0.233	48
6/12/2019	0.129	39
8/27/2019	ND<0	17.5
10/29/2019	ND<0	17.5
3/30/2020	0.234	50
6/16/2020	ND<0	17.5
9/21/2020	ND<0	17.5
12/17/2020	0.195	44
3/18/2021	0.369	62

The Wilcoxon Statistic is 584

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is 0.967227

The Standard Deviation adjusted for ties is 68.6364

The Z Score adjusted for ties is 1.04901

0.967227 < 2.326 indicating no statistical significance at 1% level

1.04901 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 45

Non detect rank is 23

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 3	3/13/2013	0.038	53
	5/20/2013	0.028	47
	9/23/2013	0.029	48
	12/10/2013	0.086	61
	2/6/2014	ND<0	23
	6/26/2014	0.047	56
	9/30/2014	ND<0	23
	11/19/2014	0.035	51
	3/23/2015	0.026	46
	4/22/2015	ND<0	23
	9/30/2015	ND<0	23
	11/19/2015	0.032	50
	3/15/2016	ND<0	23
	6/29/2016	0.062	58
	8/9/2016	ND<0	23
	12/7/2016	ND<0	23
	3/2/2017	ND<0	23
	7/5/2017	0.039	54
	8/16/2017	0.07	59
	10/25/2017	0.053	57
	3/28/2018	ND<0	23
	6/29/2018	ND<0	23
	8/2/2018	ND<0	23
	12/10/2018	ND<0	23
	4/15/2019	ND<0	23
	6/12/2019	ND<0	23
	8/27/2019	ND<0	23
	10/29/2019	ND<0	23
	3/30/2020	ND<0	23
	6/16/2020	ND<0	23
	9/21/2020	ND<0	23
HB 3	3/12/2013	0.081	60
	5/20/2013	ND<0	23
	9/23/2013	0.037	52
	12/10/2013	0.14	64
	2/6/2014	0.03	49
	6/26/2014	ND<0	23
	9/30/2014	ND<0	23
	11/19/2014	0.098	63
	3/23/2015	ND<0	23
	4/22/2015	ND<0	23
	9/30/2015	ND<0	23
	11/19/2015	0.045	55
	3/15/2016	0.087	62
	6/29/2016	ND<0	23
	8/9/2016	ND<0	23
	12/7/2016	ND<0	23
	3/2/2017	ND<0	23
	7/5/2017	ND<0	23
	8/16/2017	ND<0	23

10/25/2017	ND<0	23
3/28/2018	ND<0	23
6/29/2018	ND<0	23
8/2/2018	ND<0	23
12/10/2018	ND<0	23
4/15/2019	ND<0	23
6/12/2019	ND<0	23
8/27/2019	ND<0	23
10/29/2019	ND<0	23
3/30/2020	ND<0	23
6/16/2020	ND<0	23
9/21/2020	ND<0	23
12/17/2020	ND<0	23
3/18/2021	ND<0	23

The Wilcoxon Statistic is 442

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is -0.94036

The Standard Deviation adjusted for ties is 60.1291

The Z Score adjusted for ties is -1.16416

-0.94036 < 2.326 indicating no statistical significance at 1% level

-1.16416 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 23

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 3	3/13/2013	7.84	33
	5/20/2013	8.11	54
	12/10/2013	7.69	22
	2/6/2014	7.09	2
	6/26/2014	8.04	49
	9/30/2014	8.08	53
	11/19/2014	8.3	61
	3/23/2015	8.13	55
	4/22/2015	7.76	25
	9/30/2015	7.96	44
	11/19/2015	7.56	18
	3/15/2016	8.35	62
	6/29/2016	7.8	29
	8/9/2016	7.52	13
	12/7/2016	7.9	37
	3/2/2017	7.95	43
	7/5/2017	7.54	15
	8/16/2017	7.86	35
	10/25/2017	7.42	9
	3/28/2018	7.98	45
	6/29/2018	7.53	14
	8/2/2018	7.59	19
	12/10/2018	7.21	3
	4/15/2019	7.78	27
	6/12/2019	7.48	11
	8/27/2019	7.91	39
	10/29/2019	7.77	26
	3/30/2020	7.51	12
	6/16/2020	8.06	51
	9/21/2020	7.67	20
HB 3	3/12/2013	7.54	16
	5/20/2013	8.21	58
	9/23/2013	8.02	47
	12/10/2013	7.9	38
	2/6/2014	7.22	4
	6/26/2014	8.2	57
	9/30/2014	8.05	50
	11/19/2014	7.85	34
	3/23/2015	8.21	59
	4/22/2015	7.91	40
	9/30/2015	7.89	36
	11/19/2015	7.83	32
	3/15/2016	8.52	63
	6/29/2016	8.02	48
	8/9/2016	7.91	41
	12/7/2016	7.93	42
	3/2/2017	7.75	24
	7/5/2017	7.29	5
	8/16/2017	7.35	7
	10/25/2017	6.64	1

3/28/2018	7.99	46
6/29/2018	7.67	21
8/2/2018	7.4	8
12/10/2018	7.55	17
4/15/2019	7.73	23
6/12/2019	8.13	56
8/27/2019	8.21	60
10/29/2019	7.82	31
3/30/2020	7.79	28
6/16/2020	7.33	6
9/21/2020	7.8	30
12/17/2020	8.07	52
3/18/2021	7.47	10

The Wilcoxon Statistic is 529

The Expected value is 495

The Standard Deviation is 72.6636

The Z Score is 0.461029

The Standard Deviation adjusted for ties is 72.6636

The Z Score adjusted for ties is 0.461029

0.461029 < 2.326 indicating no statistical significance at 1% level

0.461029 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 23

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 3	3/13/2013	11.3	10
	5/20/2013	23.6	36
	9/23/2013	26.5	47
	12/10/2013	9.6	8
	2/6/2014	6.3	2
	9/30/2014	25.33	40
	11/19/2014	9.3	7
	3/23/2015	21.2	31
	4/22/2015	21.8	32
	9/30/2015	25.6	41
	11/19/2015	15.8	16
	3/15/2016	19.2	27
	6/29/2016	30.16	60
	8/9/2016	29.53	59
	12/7/2016	11.85	11
	3/2/2017	13.64	13
	7/5/2017	27.3	54
	8/16/2017	28.1	56
	10/25/2017	19.4	28
	3/28/2018	17.4	19
	6/29/2018	26.9	49
	8/2/2018	26.4	46
	12/10/2018	7	3
	4/15/2019	19.7	30
	6/12/2019	27.1	52
	8/27/2019	29.2	58
	10/29/2019	17.2	18
	3/30/2020	18.8	25
	6/16/2020	27.1	53
	9/21/2020	23	34
HB 3	3/12/2013	13.9	14
	5/20/2013	27.8	55
	9/23/2013	25.7	42
	12/10/2013	10.1	9
	2/6/2014	5.9	1
	9/30/2014	24.78	38
	11/19/2014	8.8	5
	3/23/2015	24.2	37
	4/22/2015	21.9	33
	9/30/2015	25.7	43
	11/19/2015	17.4	20
	3/15/2016	19.1	26
	6/29/2016	30.61	62
	8/9/2016	30.19	61
	12/7/2016	12.81	12
	3/2/2017	14.33	15
	7/5/2017	27	50
	8/16/2017	27	51
	10/25/2017	18.5	23
	3/28/2018	17.6	21

6/29/2018	26	44
8/2/2018	25.1	39
12/10/2018	7.9	4
4/15/2019	19.6	29
6/12/2019	26.6	48
8/27/2019	29.1	57
10/29/2019	18.3	22
3/30/2020	18.5	24
6/16/2020	26.3	45
9/21/2020	23.5	35
12/17/2020	9.1	6
3/18/2021	16	17

The Wilcoxon Statistic is 460

The Expected value is 480

The Standard Deviation is 70.993

The Z Score is -0.288761

The Standard Deviation adjusted for ties is 70.993

The Z Score adjusted for ties is -0.288761

-0.288761 < 2.326 indicating no statistical significance at 1% level

-0.288761 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 10

Non detect rank is 5.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 3	3/13/2013	0.69	50
	5/20/2013	0.69	51
	9/23/2013	0.53	36
	12/10/2013	0.62	42
	2/6/2014	0.69	52
	6/26/2014	0.53	37
	9/30/2014	0.66	47
	11/19/2014	ND<0	5.5
	3/23/2015	0.46	29
	4/22/2015	0.45	27
	9/30/2015	0.42	22
	11/19/2015	ND<0	5.5
	3/15/2016	ND<0	5.5
	6/29/2016	0.37	16
	8/9/2016	0.564	38
	12/7/2016	1.78	64
	3/2/2017	0.733	55
	7/5/2017	0.628	44
	8/16/2017	0.446	26
	10/25/2017	0.376	19
	3/28/2018	ND<0	5.5
	6/29/2018	0.8	57
	8/2/2018	0.981	63
	12/10/2018	0.433	24
	4/15/2019	0.271	12
	6/12/2019	ND<0	5.5
	8/27/2019	0.389	20
	10/29/2019	0.39	21
	3/30/2020	0.657	46
	6/16/2020	0.466	32
	9/21/2020	0.66	48
HB 3	3/12/2013	0.83	59
	5/20/2013	0.6	40
	9/23/2013	0.6	41
	12/10/2013	0.62	43
	2/6/2014	0.37	17
	6/26/2014	0.37	18
	9/30/2014	0.48	33
	11/19/2014	0.44	25
	3/23/2015	0.46	30
	4/22/2015	0.66	49
	9/30/2015	0.91	60
	11/19/2015	ND<0	5.5
	3/15/2016	ND<0	5.5
	6/29/2016	0.51	34
	8/9/2016	0.703	53
	12/7/2016	0.73	54
	3/2/2017	0.969	62
	7/5/2017	0.812	58
	8/16/2017	0.763	56

10/25/2017	0.322	15
3/28/2018	ND<0	5.5
6/29/2018	0.464	31
8/2/2018	0.952	61
12/10/2018	0.426	23
4/15/2019	ND<0	5.5
6/12/2019	ND<0	5.5
8/27/2019	0.634	45
10/29/2019	0.517	35
3/30/2020	0.452	28
6/16/2020	0.299	14
9/21/2020	0.279	13
12/17/2020	0.588	39
3/18/2021	0.252	11

The Wilcoxon Statistic is 513.5

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is 0.0201506

The Standard Deviation adjusted for ties is 74.2988

The Z Score adjusted for ties is 0.0201887

0.0201506 < 2.326 indicating no statistical significance at 1% level

0.0201887 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 48

Non detect rank is 24.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 3	3/13/2013	ND<0	24.5
	5/20/2013	ND<0	24.5
	9/23/2013	ND<0	24.5
	12/10/2013	ND<0	24.5
	2/6/2014	ND<0	24.5
	6/26/2014	ND<0	24.5
	9/30/2014	ND<0	24.5
	11/19/2014	ND<0	24.5
	3/23/2015	ND<0	24.5
	4/22/2015	ND<0	24.5
	9/30/2015	0.129	56
	11/19/2015	ND<0	24.5
	3/15/2016	ND<0	24.5
	6/29/2016	ND<0	24.5
	8/9/2016	ND<0	24.5
	12/7/2016	0.147	58
	3/2/2017	ND<0	24.5
	7/5/2017	ND<0	24.5
	8/16/2017	ND<0	24.5
	10/25/2017	0.106	50
	3/28/2018	ND<0	24.5
	6/29/2018	ND<0	24.5
	8/2/2018	0.108	51
	12/10/2018	0.127	55
	4/15/2019	0.285	64
	6/12/2019	ND<0	24.5
	8/27/2019	0.149	59
	10/29/2019	ND<0	24.5
	3/30/2020	ND<0	24.5
	6/16/2020	0.102	49
	9/21/2020	ND<0	24.5
HB 3	3/12/2013	ND<0	24.5
	5/20/2013	ND<0	24.5
	9/23/2013	ND<0	24.5
	12/10/2013	0.15	60
	2/6/2014	ND<0	24.5
	6/26/2014	ND<0	24.5
	9/30/2014	ND<0	24.5
	11/19/2014	0.12	53
	3/23/2015	ND<0	24.5
	4/22/2015	ND<0	24.5
	9/30/2015	ND<0	24.5
	11/19/2015	ND<0	24.5
	3/15/2016	ND<0	24.5
	6/29/2016	ND<0	24.5
	8/9/2016	ND<0	24.5
	12/7/2016	0.126	54
	3/2/2017	0.115	52
	7/5/2017	ND<0	24.5
	8/16/2017	ND<0	24.5

10/25/2017	ND<0	24.5
3/28/2018	ND<0	24.5
6/29/2018	ND<0	24.5
8/2/2018	ND<0	24.5
12/10/2018	0.141	57
4/15/2019	ND<0	24.5
6/12/2019	ND<0	24.5
8/27/2019	0.179	63
10/29/2019	0.166	61
3/30/2020	0.166	62
6/16/2020	ND<0	24.5
9/21/2020	ND<0	24.5
12/17/2020	ND<0	24.5
3/18/2021	ND<0	24.5

The Wilcoxon Statistic is 513.5

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is 0.0201506

The Standard Deviation adjusted for ties is 56.6037

The Z Score adjusted for ties is 0.0265

0.0201506 < 2.326 indicating no statistical significance at 1% level

0.0265 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 24.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 3	3/13/2013	15	17
	5/20/2013	19	30
	9/23/2013	13	12
	12/10/2013	20	34
	2/6/2014	33	51
	6/26/2014	30	48
	9/30/2014	18	26
	11/19/2014	19	31
	3/23/2015	16	20
	4/22/2015	14	14
	9/30/2015	24.4	44
	11/19/2015	37.8	55
	3/15/2016	78.8	62
	6/29/2016	15.3	18
	8/9/2016	10.8	8
	12/7/2016	9.38	4
	3/2/2017	17	22
	7/5/2017	16.3	21
	8/16/2017	18.5	29
	10/25/2017	49.7	57
	3/28/2018	11.2	9
	6/29/2018	115	63
	8/2/2018	56	60
	12/10/2018	27.1	45
	4/15/2019	371	64
	6/12/2019	10.7	6
	8/27/2019	7	1
	10/29/2019	15.4	19
	3/30/2020	18.2	27
	6/16/2020	10.1	5
	9/21/2020	10.7	7
HB 3	3/12/2013	49	56
	5/20/2013	17	23
	9/23/2013	19	32
	12/10/2013	20	35
	2/6/2014	13	13
	6/26/2014	12	10
	9/30/2014	30	49
	11/19/2014	51	58
	3/23/2015	35	52
	4/22/2015	22	40
	9/30/2015	23	41
	11/19/2015	30.2	50
	3/15/2016	23.8	43
	6/29/2016	20.9	39
	8/9/2016	14.3	15
	12/7/2016	17	24
	3/2/2017	57.1	61
	7/5/2017	28.5	47
	8/16/2017	12.7	11

10/25/2017	20.4	37
3/28/2018	20.2	36
6/29/2018	18.2	28
8/2/2018	35.3	53
12/10/2018	27.6	46
4/15/2019	35.5	54
6/12/2019	52.3	59
8/27/2019	7.3	2
10/29/2019	17.6	25
3/30/2020	19	33
6/16/2020	14.6	16
9/21/2020	8.3	3
12/17/2020	20.4	38
3/18/2021	23	42

The Wilcoxon Statistic is 610

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is 1.3165

The Standard Deviation adjusted for ties is 74.4396

The Z Score adjusted for ties is 1.3165

1.3165 < 2.326 indicating no statistical significance at 1% level

1.3165 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: HB 3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 24.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 3	3/13/2013	17.1	27
	5/20/2013	18.5	32
	9/23/2013	15.3	22
	12/10/2013	48.3	54
	2/6/2014	82.7	63
	6/26/2014	50	56
	9/30/2014	17.3	28
	11/19/2014	22.4	36
	3/23/2015	25	41
	4/22/2015	12	10
	9/30/2015	18	31
	11/19/2015	65	60
	3/15/2016	68.4	61
	6/29/2016	17.7	30
	8/9/2016	14.8	21
	12/7/2016	8.5	3
	3/2/2017	14.6	19
	7/5/2017	12.5	14
	8/16/2017	11.5	8
	10/25/2017	15.3	23
	3/28/2018	8.9	5
	6/29/2018	15.8	25
	8/2/2018	30	48
	12/10/2018	33.1	52
	4/15/2019	552.6	64
	6/12/2019	7.8	2
	8/27/2019	55.3	58
	10/29/2019	22.4	37
	3/30/2020	14.4	17
	6/16/2020	9.2	6
	9/21/2020	15.3	24
HB 3	3/12/2013	33.3	53
	5/20/2013	14.5	18
	9/23/2013	21.3	34
	12/10/2013	48.4	55
	2/6/2014	32	50
	6/26/2014	12	11
	9/30/2014	29.5	47
	11/19/2014	56.1	59
	3/23/2015	27	43
	4/22/2015	25	42
	9/30/2015	22	35
	11/19/2015	32	51
	3/15/2016	28.8	46
	6/29/2016	17.3	29
	8/9/2016	11.3	7
	12/7/2016	16	26
	3/2/2017	50	57
	7/5/2017	23.1	39
	8/16/2017	13.7	16

10/25/2017	11.7	9
3/28/2018	13.2	15
6/29/2018	14.6	20
8/2/2018	28.3	45
12/10/2018	24.8	40
4/15/2019	22.4	38
6/12/2019	12.4	13
8/27/2019	78.1	62
10/29/2019	28.2	44
3/30/2020	8.88	4
6/16/2020	20.4	33
9/21/2020	12.1	12
12/17/2020	31.16	49
3/18/2021	1.8	1

The Wilcoxon Statistic is 542

The Expected value is 511.5

The Standard Deviation is 74.4396

The Z Score is 0.403011

The Standard Deviation adjusted for ties is 74.4396

The Z Score adjusted for ties is 0.403011

0.403011 < 2.326 indicating no statistical significance at 1% level

0.403011 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Comparison of RC 2 and SME 1

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: DO

Location: RC 2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 0

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	8.26	34
	5/8/2013	8.96	43
	9/23/2013	7.87	31
	12/10/2013	9.15	46
	2/6/2014	11.34	59
	6/26/2014	7.05	21
	9/30/2014	7.46	28
	11/19/2014	10.86	57
	3/23/2015	8.52	38
	4/22/2015	7.97	33
	9/30/2015	7.03	19
	11/19/2015	7.04	20
	3/15/2016	7.21	25
	6/29/2016	3.29	3
	8/9/2016	4.98	8
	12/7/2016	10.2	54
	3/2/2017	4.31	5
	6/29/2017	9.21	48
	8/16/2017	6.58	16
	10/25/2017	8.32	35
	3/28/2018	9.18	47
	6/29/2018	6.37	14
	8/2/2018	5.82	12
	12/10/2018	11.48	62
	4/15/2019	7.89	32
	6/12/2019	8.73	42
	8/27/2019	8.51	37
	10/29/2019	9.21	49
	3/30/2020	8.61	39
	6/16/2020	10.36	55
	9/21/2020	6.92	18
	12/17/2020	10.68	56
	3/18/2021	9.54	52
RC 2	3/12/2013	9.83	53
	5/8/2013	3.06	2
	9/23/2013	3	1
	12/10/2013	11.71	63
	2/6/2014	17.28	65
	6/26/2014	6.81	17
	9/30/2014	5.55	10
	11/19/2014	7.14	24
	3/23/2015	9.07	44
	4/22/2015	11.42	61
	9/30/2015	9.28	50
	11/19/2015	21.94	66
	3/15/2016	16.67	64
	6/29/2016	4.31	6

8/9/2016	5.05	9
12/7/2016	7.47	29
3/2/2017	7.74	30
6/21/2017	5.61	11
8/17/2017	4.94	7
10/26/2017	7.05	22
3/27/2018	8.43	36
6/26/2018	6.19	13
8/1/2018	7.1	23
12/11/2018	11.41	60
4/17/2019	8.67	40
6/11/2019	3.78	4
8/28/2019	7.3	27
10/28/2019	9.42	51
3/31/2020	9.1	45
6/10/2020	6.37	15
9/21/2020	7.24	26
12/17/2020	11.23	58
3/18/2021	8.68	41

The Wilcoxon Statistic is 512

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -0.423207

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is -0.423207

-0.423207 < 2.326 indicating no statistical significance at 1% level

-0.423207 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Nitrate-nitrite

Location: RC 2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 23

Non detect rank is 12

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	0.54	60
	5/8/2013	0.15	32
	9/23/2013	ND<0	12
	12/10/2013	0.55	61
	2/6/2014	0.55	62
	6/26/2014	ND<0	12
	9/30/2014	ND<0	12
	11/19/2014	0.74	66
	3/23/2015	0.51	59
	4/22/2015	0.4	54
	9/30/2015	ND<0	12
	11/19/2015	0.401	55
	3/15/2016	0.454	57
	6/29/2016	ND<0	12
	8/9/2016	ND<0	12
	12/7/2016	0.413	56
	3/2/2017	0.671	65
	6/29/2017	ND<0	12
	8/16/2017	ND<0	12
	10/25/2017	0.368	52
	3/28/2018	0.633	64
	6/29/2018	0.312	50
	8/2/2018	0.296	49
	12/10/2018	0.259	44
	4/15/2019	0.39	53
	6/12/2019	ND<0	12
	8/27/2019	ND<0	12
	10/29/2019	0.129	27
	3/30/2020	0.462	58
	6/16/2020	ND<0	12
	9/21/2020	ND<0	12
	12/17/2020	0.577	63
	3/18/2021	0.263	47
RC 2	3/12/2013	0.12	26
	5/8/2013	0.19	39
	9/23/2013	ND<0	12
	12/10/2013	0.11	25
	2/6/2014	0.26	45
	6/26/2014	0.15	33
	9/30/2014	ND<0	12
	11/19/2014	0.17	37
	3/23/2015	0.15	34
	4/22/2015	0.26	46
	9/30/2015	ND<0	12
	11/19/2015	0.271	48
	3/15/2016	0.181	38
	6/29/2016	ND<0	12
	8/9/2016	0.14	29
	12/7/2016	0.2	41
	3/2/2017	0.166	36

6/21/2017	ND<0	12
8/17/2017	ND<0	12
10/26/2017	ND<0	12
3/27/2018	0.146	31
6/26/2018	0.101	24
8/1/2018	ND<0	12
12/11/2018	0.316	51
4/17/2019	0.165	35
6/11/2019	ND<0	12
8/28/2019	ND<0	12
10/28/2019	0.132	28
3/31/2020	0.19	40
6/10/2020	0.21	42
9/21/2020	ND<0	12
12/17/2020	0.218	43
3/18/2021	0.145	30

The Wilcoxon Statistic is 372

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -2.21863

The Standard Deviation adjusted for ties is 76.3109

The Z Score adjusted for ties is -2.26704

-2.21863 < 2.326 indicating no statistical significance at 1% level

-2.26704 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Ortho-phosphate

Location: RC 2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 36

Non detect rank is 18.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	0.11	57
	5/8/2013	0.063	48
	9/23/2013	0.053	46
	12/10/2013	0.21	65
	2/6/2014	0.11	58
	6/26/2014	ND<0	18.5
	9/30/2014	0.044	41
	11/19/2014	0.27	66
	3/23/2015	0.073	51
	4/22/2015	0.039	40
	9/30/2015	0.052	45
	11/19/2015	0.084	53
	3/15/2016	0.047	43
	6/29/2016	0.18	63
	8/9/2016	0.089	55
	12/7/2016	0.209	64
	3/2/2017	0.127	61
	6/29/2017	0.028	37
	8/16/2017	ND<0	18.5
	10/25/2017	0.121	59
	3/28/2018	0.106	56
	6/29/2018	0.121	60
	8/2/2018	0.145	62
	12/10/2018	ND<0	18.5
	4/15/2019	0.063	49
	6/12/2019	ND<0	18.5
	8/27/2019	ND<0	18.5
	10/29/2019	0.049	44
	3/30/2020	ND<0	18.5
	6/16/2020	0.031	39
	9/21/2020	ND<0	18.5
	12/17/2020	0.072	50
	3/18/2021	ND<0	18.5
RC 2	3/12/2013	0.088	54
	5/8/2013	ND<0	18.5
	9/23/2013	ND<0	18.5
	12/10/2013	0.062	47
	2/6/2014	ND<0	18.5
	6/26/2014	ND<0	18.5
	9/30/2014	ND<0	18.5
	11/19/2014	ND<0	18.5
	3/23/2015	0.044	42
	4/22/2015	ND<0	18.5
	9/30/2015	ND<0	18.5
	11/19/2015	ND<0	18.5
	3/15/2016	ND<0	18.5
	6/29/2016	0.077	52
	8/9/2016	ND<0	18.5
	12/7/2016	ND<0	18.5
	3/2/2017	ND<0	18.5

6/21/2017	ND<0	18.5
8/17/2017	ND<0	18.5
10/26/2017	ND<0	18.5
3/27/2018	ND<0	18.5
6/26/2018	ND<0	18.5
8/1/2018	ND<0	18.5
12/11/2018	ND<0	18.5
4/17/2019	ND<0	18.5
6/11/2019	ND<0	18.5
8/28/2019	ND<0	18.5
10/28/2019	ND<0	18.5
3/31/2020	0.029	38
6/10/2020	ND<0	18.5
9/21/2020	ND<0	18.5
12/17/2020	ND<0	18.5
3/18/2021	ND<0	18.5

The Wilcoxon Statistic is 190

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -4.55269

The Standard Deviation adjusted for ties is 71.3727

The Z Score adjusted for ties is -4.97389

-4.55269 < 2.326 indicating no statistical significance at 1% level

-4.97389 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: pH

Location: RC 2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 18.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	8.19	53
	5/8/2013	7.64	23
	9/23/2013	8.26	56
	12/10/2013	8.05	48
	2/6/2014	7.22	9
	6/26/2014	8.49	61
	9/30/2014	8.25	55
	11/19/2014	8.31	58
	3/23/2015	8.26	57
	4/22/2015	7.14	8
	9/30/2015	8.34	59
	11/19/2015	7.92	42
	3/15/2016	8.44	60
	6/29/2016	8.8	64
	8/9/2016	8.55	62
	12/7/2016	7.96	45
	3/2/2017	7.75	29
	6/29/2017	9.11	65
	8/16/2017	8.12	51
	10/25/2017	8.02	47
	3/28/2018	8.1	50
	6/29/2018	7.84	32
	8/2/2018	7.48	18
	12/10/2018	7.45	16
	4/15/2019	7.89	35
	6/12/2019	7.34	12
	8/27/2019	7.45	17
	10/29/2019	7.95	44
	3/30/2020	7.35	13
	6/16/2020	8.58	63
	9/21/2020	7.71	26
	12/17/2020	7.66	25
	3/18/2021	7.24	10
RC 2	3/12/2013	7.73	28
	5/8/2013	6.16	5
	9/23/2013	6.24	6
	12/10/2013	6.07	4
	2/6/2014	3.89	1
	6/26/2014	7.9	36
	9/30/2014	7.27	11
	11/19/2014	5.65	2
	3/23/2015	8.23	54
	4/22/2015	7.64	24
	9/30/2015	5.93	3
	11/19/2015	7.36	14
	3/15/2016	7.62	22
	6/29/2016	7.78	31
	8/9/2016	8.12	52
	12/7/2016	7.86	33
	3/2/2017	7.71	27

6/21/2017	7.91	39
8/17/2017	8.08	49
10/26/2017	7.57	21
3/27/2018	7.91	40
6/26/2018	7.94	43
8/1/2018	7.4	15
12/11/2018	7.54	19
4/17/2019	7.77	30
6/11/2019	6.83	7
8/2/2019	8.01	46
10/28/2019	7.55	20
3/31/2020	7.9	37
6/10/2020	7.87	34
12/17/2020	7.91	41
3/18/2021	7.9	38

The Wilcoxon Statistic is 304

The Expected value is 528

The Standard Deviation is 76.2102

The Z Score is -2.9458

The Standard Deviation adjusted for ties is 76.2102

The Z Score adjusted for ties is -2.9458

-2.9458 < 2.326 indicating no statistical significance at 1% level

-2.9458 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Temperature

Location: RC 2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 0

Non detect rank is 18.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	13.1	17
	5/8/2013	16	26
	9/23/2013	27.7	58
	12/10/2013	7.6	5
	2/6/2014	5.9	3
	9/30/2014	24.67	48
	11/19/2014	7.8	7
	3/23/2015	17.3	30
	4/22/2015	18.5	36
	9/30/2015	26.4	53
	11/19/2015	15.9	25
	3/15/2016	18.3	34
	6/29/2016	30.67	65
	8/9/2016	28.87	63
	12/7/2016	11.98	13
	3/2/2017	12.34	15
	6/29/2017	25.8	51
	8/16/2017	29.7	64
	10/25/2017	17.3	31
	3/28/2018	17.6	32
	6/29/2018	26.2	52
	8/2/2018	23.9	47
	12/10/2018	8	8
	4/15/2019	19.7	39
	6/12/2019	27.2	57
	8/27/2019	28.8	62
	10/29/2019	17.6	33
	3/30/2020	19.3	38
	6/16/2020	27	56
	9/21/2020	22.2	40
	12/17/2020	9.2	11
	3/18/2021	15.7	23
RC 2	3/12/2013	10.53	12
	5/8/2013	16.36	28
	9/23/2013	23.61	45
	12/10/2013	8.38	9
	2/6/2014	5.62	1
	6/26/2014	24.81	49
	9/30/2014	22.25	41
	11/19/2014	5.72	2
	3/23/2015	16	27
	4/22/2015	18.4	35
	9/30/2015	23.33	44
	11/19/2015	15.29	22
	3/15/2016	14.61	19
	6/29/2016	28.3	61
	8/9/2016	26.5	54
	12/7/2016	12	14
	3/2/2017	13.1	18
	6/21/2017	23.7	46

8/17/2017	27.9	59
10/26/2017	15.2	21
3/27/2018	12.4	16
6/26/2018	26.5	55
8/1/2018	22.4	42
12/11/2018	7.7	6
4/17/2019	18.9	37
6/11/2019	22.96	43
8/28/2019	28	60
10/28/2019	14.9	20
3/31/2020	15.7	24
6/10/2020	25.6	50
9/21/2020	7.03	4
12/17/2020	8.9	10
3/18/2021	16.7	29

The Wilcoxon Statistic is 442

The Expected value is 528

The Standard Deviation is 76.2102

The Z Score is -1.13502

The Standard Deviation adjusted for ties is 76.2102

The Z Score adjusted for ties is -1.13502

-1.13502 < 2.326 indicating no statistical significance at 1% level

-1.13502 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: TKN

Location: RC 2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 12

Non detect rank is 6.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	0.34	21
	5/8/2013	0.42	30
	9/23/2013	0.8	63
	12/10/2013	0.47	38
	2/6/2014	0.5	42
	6/26/2014	0.31	18
	9/30/2014	0.61	55
	11/19/2014	0.55	51
	3/23/2015	ND<0	6.5
	4/22/2015	0.38	27
	9/30/2015	0.807	65
	11/19/2015	ND<0	6.5
	3/15/2016	ND<0	6.5
	6/29/2016	0.62	57
	8/9/2016	0.547	50
	12/7/2016	0.378	26
	3/2/2017	0.345	22
	6/29/2017	0.53	47
	8/16/2017	0.52	45
	10/25/2017	0.288	15
	3/28/2018	ND<0	6.5
	6/29/2018	0.67	58
	8/2/2018	0.495	41
	12/10/2018	0.336	20
	4/15/2019	0.36	25
	6/12/2019	ND<0	6.5
	8/27/2019	0.356	24
	10/29/2019	0.272	13
	3/30/2020	ND<0	6.5
	6/16/2020	0.485	40
	9/21/2020	ND<0	6.5
	12/17/2020	0.3	17
	3/18/2021	0.58	54
RC 2	3/12/2013	0.75	61
	5/8/2013	0.55	52
	9/23/2013	0.43	31
	12/10/2013	0.54	49
	2/6/2014	0.43	32
	6/26/2014	0.44	35
	9/30/2014	0.4	29
	11/19/2014	0.43	33
	3/23/2015	0.81	66
	4/22/2015	ND<0	6.5
	9/30/2015	ND<0	6.5
	11/19/2015	0.753	62
	3/15/2016	0.432	34
	6/29/2016	0.35	23
	8/9/2016	0.454	37
	12/7/2016	0.532	48
	3/2/2017	0.445	36

6/21/2017	0.505	43
8/17/2017	0.724	59
10/26/2017	0.274	14
3/27/2018	ND<0	6.5
6/26/2018	0.802	64
8/1/2018	0.506	44
12/11/2018	0.479	39
4/17/2019	0.288	16
6/11/2019	0.52	46
8/28/2019	0.748	60
10/28/2019	ND<0	6.5
3/31/2020	0.574	53
6/10/2020	0.33	19
9/21/2020	ND<0	6.5
12/17/2020	0.396	28
3/18/2021	0.611	56

The Wilcoxon Statistic is 640.5

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is 1.22474

The Standard Deviation adjusted for ties is 77.7428

The Z Score adjusted for ties is 1.22841

1.22474 < 2.326 indicating no statistical significance at 1% level

1.22841 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Phosphorus

Location: RC 2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 42

Non detect rank is 21.5

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	0.11	44
	5/8/2013	ND<0	21.5
	9/23/2013	ND<0	21.5
	12/10/2013	0.26	64
	2/6/2014	0.13	50
	6/26/2014	ND<0	21.5
	9/30/2014	0.11	45
	11/19/2014	0.29	66
	3/23/2015	0.1	43
	4/22/2015	ND<0	21.5
	9/30/2015	0.135	55
	11/19/2015	0.134	53
	3/15/2016	ND<0	21.5
	6/29/2016	0.245	63
	8/9/2016	0.154	58
	12/7/2016	0.271	65
	3/2/2017	0.208	61
	6/29/2017	ND<0	21.5
	8/16/2017	0.111	46
	10/25/2017	0.151	57
	3/28/2018	ND<0	21.5
	6/29/2018	0.241	62
	8/2/2018	0.136	56
	12/10/2018	ND<0	21.5
	4/15/2019	ND<0	21.5
	6/12/2019	ND<0	21.5
	8/27/2019	0.161	59
	10/29/2019	0.134	54
	3/30/2020	ND<0	21.5
	6/16/2020	0.129	49
	9/21/2020	ND<0	21.5
	12/17/2020	ND<0	21.5
	3/18/2021	0.112	47
RC 2	3/12/2013	ND<0	21.5
	5/8/2013	ND<0	21.5
	9/23/2013	ND<0	21.5
	12/10/2013	ND<0	21.5
	2/6/2014	ND<0	21.5
	6/26/2014	ND<0	21.5
	9/30/2014	ND<0	21.5
	11/19/2014	ND<0	21.5
	3/23/2015	ND<0	21.5
	4/22/2015	ND<0	21.5
	9/30/2015	ND<0	21.5
	11/19/2015	0.133	51
	3/15/2016	ND<0	21.5
	6/29/2016	ND<0	21.5
	8/9/2016	ND<0	21.5
	12/7/2016	ND<0	21.5
	3/2/2017	ND<0	21.5

6/21/2017	ND<0	21.5
8/17/2017	0.133	52
10/26/2017	ND<0	21.5
3/27/2018	ND<0	21.5
6/26/2018	ND<0	21.5
8/1/2018	ND<0	21.5
12/11/2018	ND<0	21.5
4/17/2019	ND<0	21.5
6/11/2019	ND<0	21.5
8/28/2019	ND<0	21.5
10/28/2019	0.2	60
3/31/2020	0.118	48
6/10/2020	ND<0	21.5
9/21/2020	ND<0	21.5
12/17/2020	ND<0	21.5
3/18/2021	ND<0	21.5

The Wilcoxon Statistic is 273.5

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -3.48184

The Standard Deviation adjusted for ties is 67.1855

The Z Score adjusted for ties is -4.04105

-3.48184 < 2.326 indicating no statistical significance at 1% level

-4.04105 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Total Suspended Solids

Location: RC 2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 1

Non detect rank is 1

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	16	42
	5/8/2013	14	35
	9/23/2013	15	39
	12/10/2013	21	54
	2/6/2014	23	55
	6/26/2014	13	32
	9/30/2014	34	61
	11/19/2014	19	50
	3/23/2015	14	36
	4/22/2015	18	47
	9/30/2015	15.3	41
	11/19/2015	23.2	56
	3/15/2016	17.7	45
	6/29/2016	20.3	52
	8/9/2016	12.6	30
	12/7/2016	17.7	46
	3/2/2017	15	40
	6/29/2017	18.3	49
	8/16/2017	12.7	31
	10/25/2017	16.9	43
	3/28/2018	19.8	51
	6/29/2018	23.3	57
	8/2/2018	29.5	59
	12/10/2018	31	60
	4/15/2019	35	62
	6/12/2019	9.67	18
	8/27/2019	7.1	13
	10/29/2019	11	23
	3/30/2020	13.3	34
	6/16/2020	11.4	25
	9/21/2020	9	16
	12/17/2020	20.9	53
	3/18/2021	90.4	66
RC 2	3/12/2013	14	37
	5/8/2013	12	27
	9/23/2013	6.3	12
	12/10/2013	10	20
	2/6/2014	9.6	17
	6/26/2014	7.2	14
	9/30/2014	2.5	2
	11/19/2014	11	24
	3/23/2015	18	48
	4/22/2015	4.8	6
	9/30/2015	4.6	5
	11/19/2015	14.4	38
	3/15/2016	6	11
	6/29/2016	10.9	22
	8/9/2016	9.9	19
	12/7/2016	11.9	26
	3/2/2017	8	15

6/21/2017	12.3	28
8/17/2017	72.2	63
10/26/2017	17.5	44
3/27/2018	12.5	29
6/26/2018	13	33
8/1/2018	84.4	64
12/11/2018	3.1	3
4/17/2019	ND<0	1
6/11/2019	5.2	8
8/28/2019	4.8	7
10/28/2019	3.4	4
3/31/2020	90	65
6/10/2020	10.8	21
9/21/2020	5.2	9
12/17/2020	5.4	10
3/18/2021	26.8	58

The Wilcoxon Statistic is 229

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -4.05253

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is -4.05253

-4.05253 < 2.326 indicating no statistical significance at 1% level

-4.05253 < 2.326 indicating no statistical significance at 1% level when adjusted for ties

Wilcoxon Non-Parametric Analysis (Inter-Well)

Parameter: Turbidity

Location: RC 2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total non-detects is 1

Non detect rank is 1

Wilcoxon Ranks

Location	Date	Conc.	Rank
SME 1	3/12/2013	13.1	12
	5/8/2013	24	42
	9/23/2013	14.2	19
	12/10/2013	46.3	59
	2/6/2014	61	62
	6/26/2014	14	15
	9/30/2014	27.6	47
	11/19/2014	40.1	56
	3/23/2015	21	39
	4/22/2015	29	50
	9/30/2015	15	25
	11/19/2015	50	60
	3/15/2016	26.2	45
	6/29/2016	21.2	40
	8/9/2016	15.3	26
	12/7/2016	31	53
	3/2/2017	14	16
	6/29/2017	19.2	35
	8/16/2017	10.6	6
	10/25/2017	5.4	3
	3/28/2018	19.3	36
	6/29/2018	20.7	38
	8/2/2018	28.5	49
	12/10/2018	32	54
	4/15/2019	42.2	57
	6/12/2019	12.2	11
	8/27/2019	135.2	66
	10/29/2019	14.5	23
	3/30/2020	13.3	13
	6/16/2020	11.6	9
	9/21/2020	13.8	14
	12/17/2020	23.19	41
	3/18/2021	14.1	17
RC 2	3/12/2013	29.1	51
	5/8/2013	18.9	34
	9/23/2013	11.4	7
	12/10/2013	33.6	55
	2/6/2014	30.4	52
	6/26/2014	17.6	29
	9/30/2014	3.37	2
	11/19/2014	27.4	46
	3/23/2015	45	58
	4/22/2015	14.1	18
	9/30/2015	7.08	5
	11/19/2015	114	65
	3/15/2016	14.5	24
	6/29/2016	12.1	10
	8/9/2016	24.5	43
	12/7/2016	17.2	28
	3/2/2017	25.3	44

6/21/2017	14.2	20
8/17/2017	18.2	31
10/26/2017	18.1	30
3/27/2018	18.2	32
6/26/2018	18.8	33
8/1/2018	56.8	61
12/11/2018	16	27
4/17/2019	7	4
6/11/2019	14.3	21
8/28/2019	14.4	22
10/28/2019	11.4	8
3/31/2020	84.5	64
6/10/2020	20.5	37
9/21/2020	ND<0.7	1
12/17/2020	28.1	48
3/18/2021	67.5	63

The Wilcoxon Statistic is 512

The Expected value is 544.5

The Standard Deviation is 77.976

The Z Score is -0.423207

The Standard Deviation adjusted for ties is 77.976

The Z Score adjusted for ties is -0.423207

-0.423207 < 2.326 indicating no statistical significance at 1 % level

-0.423207 < 2.326 indicating no statistical significance at 1 % level when adjusted for ties

Appendix C – Monitoring Reports



Monitoring Report Second Quarter 2020
Gadsden Alabama Urbanized Area
Phase II Small MS4
NPDES General Permit ALR040000
Gadsden, Etowah County, Alabama
S&ME Project No. 4482-19-065



PREPARED FOR:
Gadsden-Etowah MS4 Steering Committee

PREPARED BY:
S&ME, Inc.
360D Quality Circle NW, Ste 450
Huntsville, AL 35806

December 2, 2020



Table of Contents

1.0	Introduction	1
1.1	NPDES Permit.....	1
1.2	Water Quality Concerns	2
1.3	Monitoring Program	2
2.0	Rainfall Data	2
3.0	Monitoring Event	3
3.1	Monitoring Locations.....	3
3.2	Sampling Procedures	4
3.3	Field Documentation.....	4
3.4	Quality Assurance / Quality Control	5
3.4.1	<i>Sample Containers and Preservation</i>	<i>5</i>
3.4.2	<i>Quality Assurance</i>	<i>6</i>
3.4.3	<i>Sample Shipment.....</i>	<i>6</i>
4.0	Analytical Results	6
5.0	Recordkeeping.....	6
6.0	Certification of the Monitoring Report	7
7.0	Acknowledgement.....	8

List of Tables

Table 1-1 Responsible Official and Authorization Dates	1
Table 1-2: Permit Numbers for MS4 Entities.....	2
Table 2-1 Quarterly Rainfall Data	3
Table 3-1 Monitoring Point Coordinates	3
Table 3-2 Sample Containers and Preservation	5
Table 5-0 Storm Water Steering Committee	7



Appendices

Appendix I

Figure 1 – Gadsden, Alabama Urbanized Area

Figure 2 – MS4 Monitoring Locations Map

Appendix II

Table B.1 – Field Observations

Table B.2 – Analytical Data

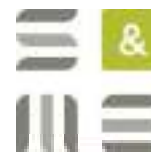
Tables B.3 to B.21 – Historical Analytical Data

Appendix III

Laboratory Report No. L1227977, dated June 23, 2020

Laboratory Report No. L1229923, dated June 26, 2020

Laboratory Report No. L123088, dated June 28, 2020



1.0 Introduction

S&ME, Inc. has prepared this Monitoring Report for the Gadsden, Alabama Urbanized Area Phase II small MS4 in accordance with S&ME Proposal No. 44-1900353, dated September 11, 2019. Authorization date and responsible official for each entity are provided in Table 1.1.

Table 1-1 Responsible Official and Authorization Dates

Name	Entity	Date
Wally Burns, Mayor	City of Southside	May 26, 2020
Tim Graves, County Engineer	Etowah County	April 6, 2020
Sherman Guyton, Mayor	City of Gadsden	October 3, 2019
Larry Means, Mayor	City of Attalla	October 11, 2019
Scott Reeves, Mayor	City of Hokes Bluff	September 20, 2019
Charles Gilchrist, Mayor	City of Glencoe	October 7, 2019
Terry John Calhoun, Mayor	City of Rainbow City	April 20, 2020

1.1 NPDES Permit

The Storm Water Phase II Final Rule issued by the United States Environmental Protection Agency (USEPA) in 1999 requires nationwide coverage of all operators of small MS4s located within the boundaries of an “urbanized area” as defined by the latest decennial Census. Based on the results of the 2010 census, the Bureau of the Census designated The City of Gadsden, Rainbow City, City of Southside, City of Glencoe, City of Hokes Bluff, City of Attalla, and portions of unincorporated Etowah County as the *Gadsden, Alabama Urbanized Area*. A map outlining the approximate boundary of the *Gadsden, Alabama Urbanized Area* is included as **Figure 1** in **Appendix I**. The regulated small municipal separate storm sewer system (MS4) for the urbanized area is collectively referred to as the Gadsden-Etowah MS4.

In 2016, the Alabama Department of Environmental Management (ADEM) issued National Pollutant Discharge Elimination System (NPDES) General Permit ALR040000 for discharges from regulated small municipal separate storm sewer systems to the Gadsden-Etowah MS4 with an effective date of October 1, 2016. Permit numbers for each entity are provided in Table 1.2.

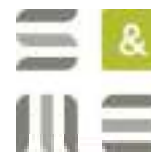


Table 1-2: Permit Numbers for MS4 Entities

Entity	ADEM Permit Number
City of Attalla	ALR0400052
City of Gadsden	ALR0400053
City of Glencoe	ALR0400054
City of Hokes Bluff	ALR0400055
City of Rainbow City	ALR0400056
City of Southside	ALR0400057
Etowah County	ALR0400009

1.2 Water Quality Concerns

Section 303(d) of the Clean Water Act (CWA), as amended by the Water Quality Act of 1987, and EPA's Water Quality Planning and Management Regulations (40CFR130) require states to identify waterbodies not in compliance with the water quality standards applicable to their designated use classifications. Section 303(d) then requires that total maximum daily loads (TMDLs) be determined for all pollutants causing violation of applicable water quality standards in each identified segment.

Neely Henry Lake is the primary receiving water for the Gadsden-Etowah MS4. In 1996, the ADEM identified five of the six reservoirs on the Coosa River within the State of Alabama's borders as being impaired, including Neely Henry Lake. In 2008 the EPA approved TMDLs for Neely Henry Lake related to Nutrients (Total Phosphorous), pH, and Dissolved Oxygen. The Gadsden-Etowah MS4 is required to achieve a 30% reduction in Total Phosphorus loading.

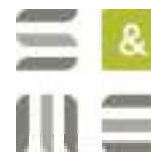
1.3 Monitoring Program

Part III.B of the NPDES General Permit requires that the Permittee develop and implement a Storm Water Management Program Plan (SWMP). Part IV.D of the NPDES General Permit requires that the SWMP include monitoring provisions to document that the waste load allocations prescribed in the TMDL are being achieved.

Section 2 of the SWMP, dated January 1, 2017, provides the specific details of the monitoring program. The intent of the monitoring program is to document that discharges from the MS4 meet the permit requirements. Where deviations are documented and/or expected, the collected monitoring data will be used to determine the extent and cause of the pollutant of concern.

2.0 Rainfall Data

The Gadsden-Etowah MS4 is required to achieve a 30% reduction in Total Phosphorus discharge loading. The largest loading of phosphorous to the Coosa River from the Gadsden-Etowah MS4 is expected to occur during runoff events; therefore, the SWMP requires that monitoring be conducted within 72 hours of a qualifying rain event of 0.75 inch.



A rain event was not observed at the weather stations located in the vicinity of the urbanized area; however, we performed sampling activities for dry weather conditions. The locations of the weather stations are identified on **Figure 2** in **Appendix I**.

Table 2-1 Quarterly Rainfall Data

GAUGE NAME	LOCATION	LAT.	LONG.	PRECIP 6/9/20	PRECIP 6/15/20
MD5866*	Rainbow City, AL	33.922°	-86.099°	NA	NA
KGAD	Gadsden Municipal Airport	33.973°	-86.088°	0.03 in.	0.00 in.
KALHOKES2	Hokes Bluff Hokes Bluff, AL	33.993°	-85.806°	0.59 in.	0.00 in.
KALGADSD3	Noccalula Falls Gadsden, AL	34.056°	-85.994°	0.31 in.	0.00 in.

*data was not available at this weather station

3.0 Monitoring Event

On June 10, 2020, S&ME personnel mobilized to conduct storm water monitoring at the land access monitoring points for the second quarter of 2020. On June 11, 2020, S&ME personnel mobilized to conduct storm water monitoring at the boat access monitoring points for the second quarter of 2020. However, the boat malfunctioned, and sampling was not completed. On June 16, 2020, S&ME personnel mobilized to conduct storm water monitoring at the boat access monitoring points for the second quarter of 2020.

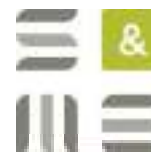
Land access monitoring was successfully sampled on June 10, 2020; while boat access monitoring points were successfully sampled on June 16, 2020. Excluding sampling dates (after a rain event for the boat access monitoring points), the quarterly monitoring events were carried out in accordance with Section 2 of the Gadsden-Etowah MS4 Storm Water Management Program (SWMPP), dated January 1, 2017.

3.1 Monitoring Locations

The primary monitoring locations selected for determining compliance of the Gadsden-Etowah MS4 with the 2008 phosphorous TMDL are identified on **Figure 2** in **Appendix I**. Coordinates for each point are listed in Table 3-1.

Table 3-1 Monitoring Point Coordinates

OUTFALL ID	LATITUDE	LONGITUDE	ACCESS	WATERBODY EVALUATED
AT 5	34.006446°	-86.069061°	LAND	Big Wills Creek / Little Wills Creek
GD 8	33.999535°	-86.024463°	LAND	Black Creek



OUTFALL ID	LATITUDE	LONGITUDE	ACCESS	WATERBODY EVALUATED
RC 2	33.967683°	-86.039476°	LAND	Horton Creek
SS 13	33.891352°	-86.049229°	LAND	Neely Henry Lake
SS 14	33.885921°	-86.030683°	LAND	U.T. to Neely Henry Lake
GD 12	33.952567°	-86.003495°	LAND	U.T. to Neely Henry Lake
CO 14	33.940904°	-85.967704°	LAND	U.T. to Neely Henry Lake
SME 2	34.002461°	-86.001571°	LAND	U.T. to Coosa River
GD 6	34.015350°	-85.995617°	LAND	Town Creek
CO 15	33.972280°	-85.965354°	LAND	U.T. to Neely Henry Lake
RC 14	33.905786°	-86.111656°	BOAT	Rook Creek / Dry Creek
SS 5	33.941329°	-86.021569°	BOAT	U.T. to Coosa River
SME 1	33.990184°	-86.004048°	BOAT	Big Wills Creek / Black Creek
GD 9	33.989718°	-85.998472°	BOAT	U.T. to Coosa River (East Gadsden)
GD 7	34.008361°	-85.999777°	BOAT	Storm sewer outfall to Coosa River
GD 5	34.014324°	-85.924013°	BOAT	Big Cove Creek / Little Cove Creek
GD 3	34.012380°	-85.953651°	BOAT	U.T. to Neely Henry Lake
SME 3	34.009698°	-85.956230°	BOAT	Coal Creek
HB 3	34.002129°	-85.882808°	BOAT	U.T. to Neely Henry Lake

3.2 Sampling Procedures

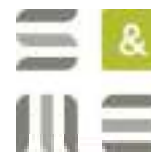
Samples collected on land were obtained using a stainless steel 1-quart bucket attached to a 30-foot telescoping fiberglass pole. S&ME personnel extended the pole to mid-channel at each location and collected a sample at mid-depth or two (2) feet below the water surface, whichever was shallower. The sample was then poured into a 6-quart stainless steel bucket. Four to five quarts were collected and mixed in the 6-quart bucket prior to analysis. The stainless steel buckets were decontaminated prior to use and between samples.

Samples collected from the boat were obtained using a horizontal Van Dorn sampler. S&ME personnel inserted the sampler into the water upstream of the boat, lowered it to a depth of five (5) feet below the water surface then triggered the seals. The collected sample was discharged from a valve in the sampler. Duplicate samples were obtained using the Van Dorn sampler to collect two 2-liter samples, then mixing them in a 6-quart stainless steel bucket. The Van Dorn sampler was decontaminated prior to use and in between samples.

3.3 Field Documentation

The following observations were documented in the field at each monitoring location:

- ◆ Monitoring point ID
- ◆ Date and time



- ◆ Person conducting the sampling
- ◆ Equipment used
- ◆ Depth of sample collection
- ◆ Weather conditions
- ◆ Waterbody conditions

The following parameters were measured in the field at the time of sample collection:

- ◆ Turbidity
- ◆ pH
- ◆ Dissolved Oxygen (DO)
- ◆ Temperature

Field parameters were measured using a combination of the following instruments:

- ◆ LaMotte 2020 Turbidimeter
- ◆ Hach 2100Q Turbidimeter
- ◆ YSI 556 Multi-Probe Meter
- ◆ YSI Pro DSS Multi-Probe Meter

The recorded field observations are included on **Table B.1** in **Appendix II**. The recorded field parameters are included on **Table B.2** in **Appendix II**.

3.4 Quality Assurance / Quality Control

The following handling procedures were employed in general accordance with EPA and ADEM guidance to safeguard the quality of the collected samples.

3.4.1 Sample Containers and Preservation

All samples were collected in new laboratory-provided containers containing analyte-appropriate preservatives as listed below:

Table 3-2 Sample Containers and Preservation

PARAMETER	CONTAINER	PRESERVATIVE	HOLD TIME
Total Suspended Solids (TSS)	HDPE - 1 L	NONE	7 days
Total Phosphorous	HDPE - 250 mL	H ₂ SO ₄	48 hours
Orthophosphate	HDPE - 250 mL	NONE	48 hours
Nitrate-Nitrite	HDPE - 250 mL	H ₂ SO ₄	28 days
Total Kjeldahl Nitrogen (TKN)	HDPE - 250 mL	H ₂ SO ₄	28 days



Prior to filling, sample containers were labeled with the following information in waterproof ink:

- ◆ Project number
- ◆ Sample location
- ◆ Collection date and time
- ◆ Preservative
- ◆ Analysis to be performed

3.4.2 Quality Assurance

Two duplicate samples were submitted to the laboratory. One duplicate sample of monitoring point AT 5 was collected by the land team during the sampling event and labeled as SME 4. One duplicate sample of monitoring point HB 3 was collected by the boat team during the sampling event and labeled as SME 5.

3.4.3 Sample Shipment

After filling, the sample containers were sealed and immediately placed on ice in a protective container for shipment to the analytical laboratory. A Chain of Custody form was completed and accompanied the samples from the field to the laboratory. A copy of the Chain of Custody is included in **Appendix III**.

4.0 Analytical Results

The laboratory analytical results for the June 10 and 16, 2020 quarterly monitoring event are included on **Table B.2** provided in **Appendix II**. The laboratory reports and Chain of Custody are included in **Appendix III**.

5.0 Recordkeeping

Each quarterly monitoring report will be incorporated into the Annual Update of the Storm Water Management Plan. Monitoring reports will be retained by each municipality for a minimum of 3 years.

The Storm Water Steering Committee is responsible for the coordination and implementation of the Storm Water Management Plan. Current membership of the Storm Water Steering Committee is as follows:

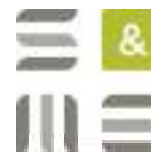


Table 5-0 Storm Water Steering Committee

ENTITY	CONTACT	PHONE NO.	EMAIL
City of Gadsden	Jeramy Ward	256-549-4527	jward@cityofgadsden.com
City of Gadsden	Heath Williamson	256-549-4520	hwilliamson@cityofgadsden.com
City of Attalla	Jason Nicholson	256-441-9200	jason.attalla@gmail.com
City of Rainbow City	Joel Jarmon	256-413-1240	jgarmon@rbc-alabama.com
City of Southside	Judd Rich	256-442-9775	juddrich@cityofsouthside.com
City of Glencoe	Todd Means	256-492-1424	toddmeans@cityofglencoe.net
City of Hokes Bluff	Lisa Johnson	256-492-2414	hbcity@cityofhokesbluff.net
Etowah County	Tim Graves	256-549-5358	tgraves@etowahcounty.org
Etowah County	Robert Nail	256-549-5358	rnail@etowahcounty.org

One copy of this Monitoring Report has been provided to each member of the Storm Water Steering Committee.

6.0 Certification of the Monitoring Report

I certify under penalty of law that this document and all attachments were prepared under my directions or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine or imprisonment for knowing violations.

Signature of Responsible Official

Date

Print Name and Title

MS4 Entity



7.0 Acknowledgement

S&ME, Inc. certifies that the information provided in this monitoring report reflects the conditions reported, encountered, and discovered at the time of report preparation. When performing this scope of services, S&ME, Inc., observed the degree of care and skill generally exercised by other consultants undertaking similar studies at the same time, under similar circumstances and conditions, and in the same geographic area.

S&ME sincerely appreciates the opportunity to provide watershed monitoring services for the Gadsden-Etowah MS4. Should questions remain or if additional information is required, please do not hesitate to contact the undersigned.

S&ME, Inc.

A handwritten signature in black ink that reads "Christa C. Lyons".

Christa C. Lyons
Project Manager

A handwritten signature in black ink that reads "Deborah J. Jones".

Deborah J. Jones, P.E.
Senior Engineer

Appendices

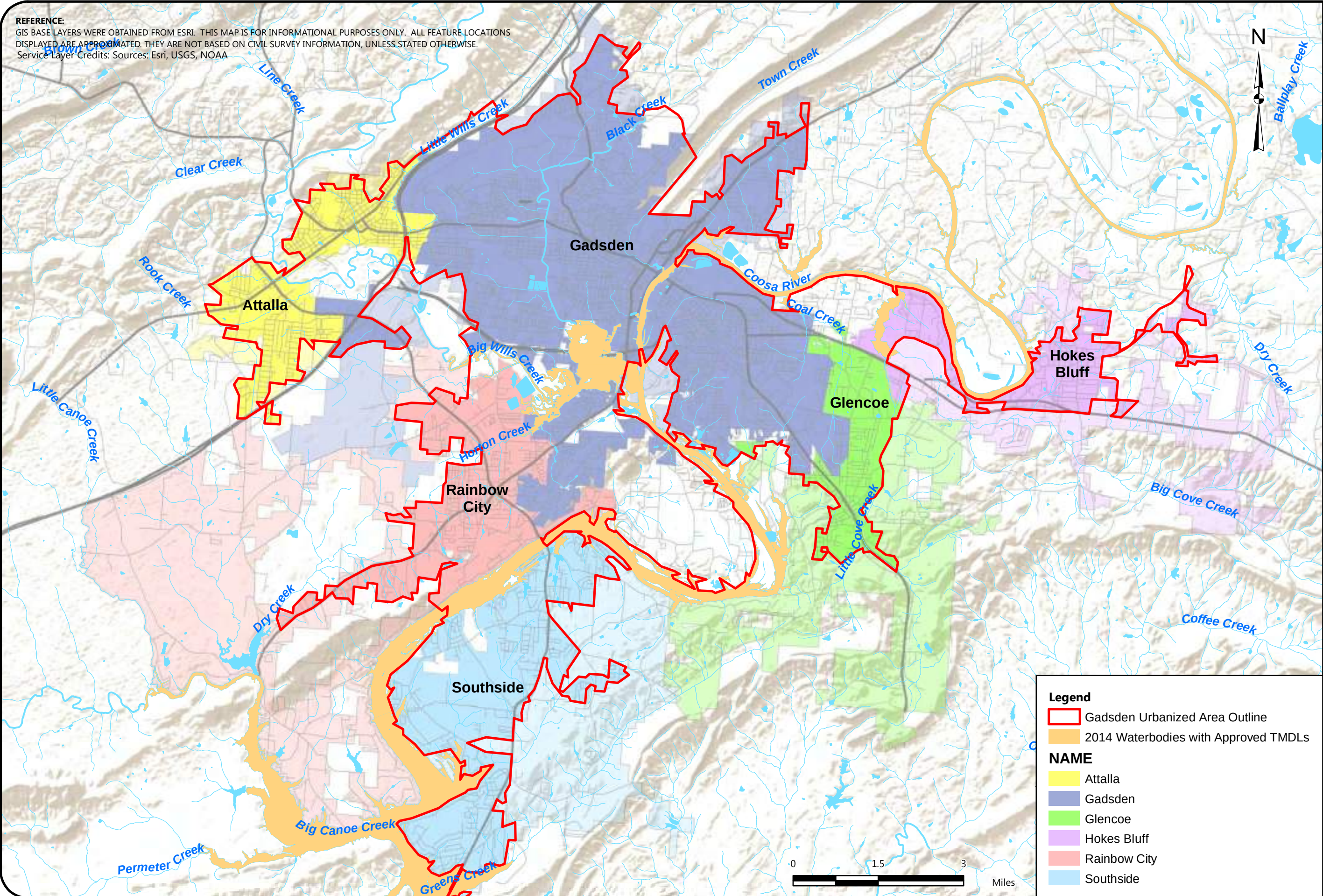
Appendix I

Figure 1 – Gadsden, Alabama Urbanized Area

Figure 2 – MS4 Monitoring Locations Map

Drawing Path: Q:\GIS Files\Gadsden MS4 Figures\Fig_1_TMDL and UA.mxd plotted by ekennedy 09-15-2017

REFERENCE:
GIS BASE LAYERS WERE OBTAINED FROM ESRI. THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS
DISPLAYED ARE APPROXIMATED. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.
Service Layer Credits: Sources: Esri, USGS, NOAA



Legend

- Gadsden Urbanized Area Outline
- 2014 Waterbodies with Approved TMDLs

NAME

- Attalla
- Gadsden
- Glencoe
- Hokes Bluff
- Rainbow City
- Southside

GADSDEN-ETOWAH MS4 BOUNDARIES

GADSDEN ALABAMA URBANIZED AREA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040009

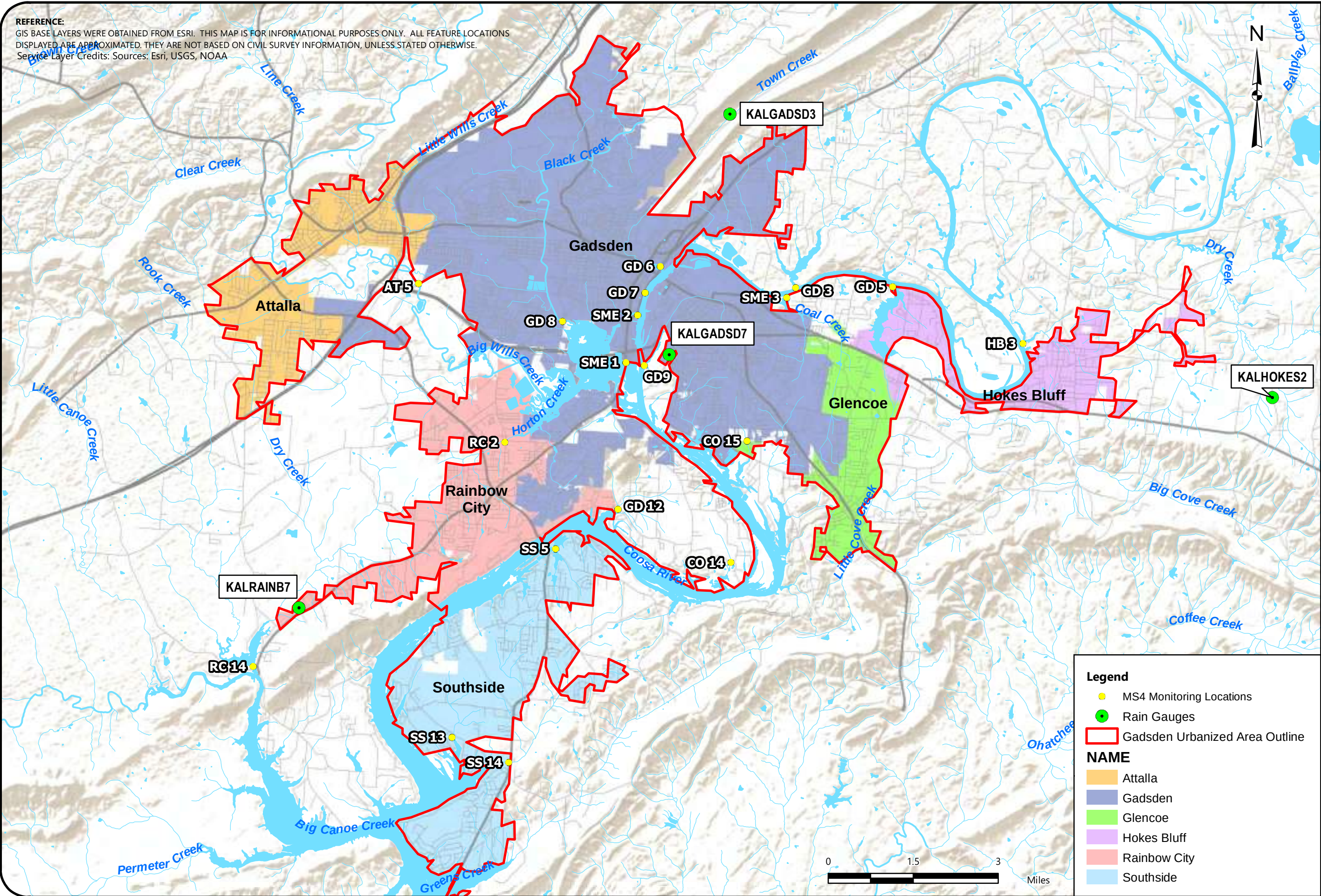
SCALE:
1:100,000

DATE:
09-15-17

PROJECT NUMBER
4482-16-056

FIGURE NO.

REFERENCE:
GIS BASE LAYERS WERE OBTAINED FROM ESRI. THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS
DISPLAYED ARE APPROXIMATED. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.
Service Layer Credits: Sources: Esri, USGS, NOAA



Legend

- MS4 Monitoring Locations
- Rain Gauges
- Gadsden Urbanized Area Outline

NAME

- Attalla
- Gadsden
- Glencoe
- Hokes Bluff
- Rainbow City
- Southside



MS4 MONITORING LOCATIONS

GADSDEN ALABAMA URBANIZED AREA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040009

SCALE:
1:100,000

DATE:
01-15-18

PROJECT NUMBER
4482-18-002

FIGURE NO.

Appendix II

Table B.1 – Field Observations

Table B.2 – Analytical Data

Tables B.3 to B.21 – Historical Analytical Data

TABLE B.1 - FIELD OBSERVATIONS**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	TIME	DEPTH (FT)	PERSONNEL	WEATHER CONDITIONS	WATERBODY CONDITIONS
AT 5	6/10/2020	1235	-3'	EJK/EAB	Partly Cloudy	Rough, fast
GD 8	6/10/2020	1222	-3'	EJK/EAB	Partly Cloudy	Rough, fast
RC 2	6/10/2020	1204	-3'	EJK/EAB	Sunny	Smooth, fast
SS 13	6/10/2020	1120	-3	EJK/EAB	Sunny	Slow, smooth
SS 14	6/10/2020	1133	-3'	EJK/EAB	Sunny	Slow, smooth
GD 12	6/10/2020	1100	-3'	EJK/EAB	Overcast	Rough, slow
CO 14	6/10/2020	1046	Flow	EJK/EAB	Partly Cloudy	Fast
SME 2	6/10/2020	1021	-3'	EJK/EAB	Partly Cloudy	Slow, rough
GD 6	6/10/2020	1015	-3'	EJK/EAB	Partly Cloudy	Rough, fast
CO 15	6/10/2020	945	-18"	EJK/EAB	Partly Cloudy	Smooth, slow
RC 14	6/16/2020	1240	-5'	GPW	Sunny	Smooth
SS 5	6/16/2020	1200	-5'	GPW	Sunny	Smooth
SME 1	6/16/2020	1130	-5'	GPW	Sunny	Smooth
GD 9	6/16/2020	1115	-5'	GPW	Sunny	Smooth
GD 7	6/16/2020	1100	-5'	GPW	Sunny	Smooth
GD 5	6/16/2020	1015	-5'	GPW	Sunny	Smooth
GD 3	6/16/2020	1025	-5'	GPW	Sunny	Smooth
SME 3	6/16/2020	1035	-5'	GPW	Sunny	Smooth
HB 3	6/16/2020	1000	-5'	GPW	Sunny	Smooth

TABLE B.2 - ANALYTICAL DATA
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
AT 5	6/10/2020	19.4	7.56	7.35	23.2	0.825	0.248	0.243	<0.250	22.8
GD 8	6/10/2020	10.8	7.97	7.13	24.9	0.211	<0.03	<0.100	<0.250	8.0
RC 2	6/10/2020	20.5	7.87	6.37	25.6	0.210	<0.03	<0.100	0.330	10.8
SS 13	6/10/2020	10.1	7.27	7.08	28.2	<0.100	<0.03	<0.100	0.492	21.2
SS 14	6/10/2020	17.0	7.32	7.20	29.1	0.246	0.078	0.128	0.897	40.4
GD 12	6/10/2020	12.3	6.46	6.44	25.8	<0.100	<0.03	<0.100	0.438	11.4
CO 14	6/10/2020	13.8	7.64	7.20	24.4	0.244	<0.03	<0.100	0.482	5.6
SME 2	6/10/2020	10.4	7.81	6.40	27.0	0.117	<0.03	<0.100	0.367	8.0
GD 6	6/10/2020	7.4	7.04	6.36	26.5	0.127	<0.03	<0.100	0.832	10.4
CO 15	6/10/2020	18.7	6.24	6.22	25.0	0.148	<0.03	<0.100	0.456	10.4
SME 4	6/10/2020	DUPLICATE OF AT5				0.840	0.306	0.212	0.266	20.2
RC 14	6/16/2020	11.5	6.79	8.01	26.9	0.141	<0.030	<0.10	0.560	11.4
SS 5	6/16/2020	10.5	8.41	7.99	27.9	<0.100	<0.030	<0.10	0.534	9.67
SME 1	6/16/2020	11.6	8.58	10.36	27.0	<0.100	0.031	0.129	0.485	11.4
GD 9	6/16/2020	11.4	8.15	7.94	27.1	<0.100	<0.030	<0.100	0.352	11.5
GD 7	6/16/2020	9.1	8.12	8.25	27.3	<0.100	<0.030	<0.100	0.322	8.29
GD 5	6/16/2020	16.4	7.69	7.75	27.2	<0.100	<0.030	<0.100	0.561	7.4
GD 3	6/16/2020	11.6	8.03	8.20	27.5	<0.100	<0.030	<0.100	0.363	9.47
SME 3	6/16/2020	9.2	8.06	7.95	27.1	<0.100	<0.030	0.102	0.466	10.1
HB 3	6/16/2020	20.4	7.33	7.01	26.3	<0.100	<0.030	<0.100	0.299	14.6
SME 5	6/16/2020	DUPLICATE OF SME 3				<0.100	<0.030	<0.100	0.382	12.3

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled (Dry)

Bold - maximum reading for constituent

NA - not available at this time

* - unknown reading due to equipment malfunction

TABLE B.3 - ANALYTICAL DATA - AT 5

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
AT 5	3/12/2013	15	7.80	11.04	12.55	0.61	0.150	0.14	0.37	20.0
AT 5	5/8/2013	25	5.08	2.59	14.69	0.31	0.099	0.11	0.56	19.0
AT 5	9/23/2013	21	5.96	3.95	22.88	1.30	0.400	0.35	0.37	22.0
AT 5	12/10/2013	68	5.32	11.43	8.21	0.79	0.290	0.34	0.97	64.0
AT 5	2/6/2014	40	4.06	15.29	7.28	0.80	0.130	0.13	0.35	32.0
AT 5	6/26/2014	70	7.85	7.61	23.89	0.77	0.340	0.28	0.38	19.0
AT 5	9/30/2014	15	5.78	6.63	21.03	0.94	0.490	0.54	<0.25	14.0
AT 5	11/19/2014	47	5.08	10.23	6.91	1.30	0.410	0.39	0.50	27.0
AT 5	3/23/2015	17	8.69	9.39	14.50	0.71	0.130	0.14	0.27	15.0
AT5	4/22/2015	53	6.93	11.13	18.40	0.69	0.110	0.13	<0.25	76.0
AT5	9/30/2015	15	6.37	9.45	21.63	1.82	0.664	0.86	<0.25	16.4
AT5	11/19/2015	934	7.38	19.33	14.98	0.67	0.261	0.31	1.47	74.6
AT 5	3/15/2016	30	7.93	20.43	16.86	0.58	0.068	<0.10	0.77	26.7
AT 5	6/29/2016	18	7.99	6.57	25.40	0.80	0.598	0.71	<0.25	14.5
AT 5	8/9/2016	17	7.89	6.47	25.80	0.98	0.482	0.50	0.27	18.3
AT5	12/7/2016	26.5	7.08	10.19	11.3	0.66	0.450	0.47	<0.25	16.9
AT5	3/2/2017	51	8.14	8.86	13.40	1.08	0.267	0.37	0.53	44.6
AT 5	6/21/2017	11.7	7.98	6.74	23.3	0.62	0.226	0.37	0.54	70.0
AT 5	8/17/2017	9.5	8.09	6.77	26.0	0.89	0.258	0.28	0.69	12.0
AT 5	10/26/2017	9.8	7.95	8.25	15.7	0.94	0.226	0.25	<0.25	9.4
AT 5	3/27/2018	14.5	7.79	9.03	12.9	0.849	0.162	0.148	<0.25	15.9
AT 5	6/26/2018	16.4	8.06	6.89	25.5	0.849	0.230	0.246	0.411	25.2
AT 5	8/1/2018	77.9	7.33	7.16	22.3	0.510	0.285	0.401	0.680	107.0
AT 5	12/11/2018	29.2	7.59	10.73	9.4	1.090	0.066	0.204	0.579	46.2
AT 5	4/17/2019	12.2	7.63	8.99	17.9	0.638	0.061	<0.10	<0.250	14.4
AT 5	6/11/2019	24.6	7.18	3.48	22.2	0.822	0.206	0.290	0.486	15.9
AT 5	8/28/2019	20.7	7.84	7.42	27.1	0.534	0.404	0.485	1.070	23.5
AT 5	10/28/2019	22.5	7.84	8.45	15.1	0.665	0.523	0.499	<0.250	17.0
AT 5	3/31/2020	23.1	8.09	9.07	16.6	0.657	0.0320	0.102	<0.250	27.1
AT 5	6/10/2020	19.4	7.56	7.35	23.2	0.825	0.248	0.243	<0.250	22.8

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.4 - ANALYTICAL DATA - GD 8

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 8	3/12/2013	7	7.65	11.73	9.85	0.13	<0.025	<0.10	0.25	4.5
GD 8	5/8/2013	19	6.71	1.72	14.47	0.11	<0.025	<0.10	0.38	19.0
GD 8	9/23/2013	18	6.22	3.98	22.74	<0.10	<0.025	<0.10	0.41	9.6
GD 8	12/10/2013	31	6.04	13.33	8.10	0.28	0.040	<0.10	0.35	32.0
GD 8	2/6/2014	16	3.87	16.32	6.48	0.25	<0.025	<0.10	0.13	13.0
GD 8	6/26/2014	31	8.19	6.64	26.15	0.25	<0.025	<0.10	0.48	7.3
GD 8	9/30/2014	12	7.32	5.06	23.19	0.14	<0.025	<0.10	0.42	6.0
GD 8	11/19/2014	25	5.16	9.01	5.87	0.23	<0.025	<0.01	0.32	13.0
GD 8	3/23/2015	11	8.67	9.76	14.8	0.22	<0.025	<0.10	<0.25	4.8
GD 8	4/22/2015	20	7.40	11.71	17.70	0.16	<0.025	<0.10	<0.25	15.0
GD 8	9/30/2015	9	7.79	9.48	24.33	0.18	<0.025	<0.10	0.48	6.8
GD 8	11/19/2015	212	6.94	23.30	15.13	0.23	<0.025	0.10	0.85	79.6
GD 8	3/15/2016	11	7.88	16.81	16.98	0.13	<0.025	<0.10	0.47	8.3
GD 8	6/29/2016	33	8.50	6.60	29.30	<0.10	<0.025	<0.10	0.45	39.8
GD 8	8/9/2016	13	8.90	5.87	28.90	0.22	<0.025	<0.10	0.67	6.3
GD 8	12/7/2016	10.1	7.75	8.84	12.1	0.31	<0.025	<0.10	0.41	7.0
GD 8	3/2/2017	20	8.14	9.76	12.20	0.28	<0.025	<0.10	0.34	3.6
GD 8	6/21/2017	7.9	8.73	6.50	25.0	<0.10	<0.025	<0.10	0.64	7.0
GD 8	8/17/2017	6.8	8.55	6.30	28.70	0.13	<0.025	<0.10	0.54	8.9
GD 8	10/26/2017	6.1	8.17	8.25	16.3	<0.10	<0.025	<0.10	0.35	4.0
GD 8	3/27/2018	8.9	8.09	9.52	12.1	0.215	<0.025	<0.10	<0.25	6.5
GD 8	6/26/2018	5.8	8.50	5.74	29.7	0.150	<0.025	<0.10	0.670	5.8
GD 8	8/1/2018	45.8	6.89	7.39	22.9	0.556	0.072	0.11	0.641	53.2
GD 8	12/11/2018	16.0	7.87	11.71	9.2	0.326	<0.025	<0.10	0.406	24.4
GD 8	4/17/2019	6.7	8.05	9.30	17.6	0.115	<0.025	<0.10	0.437	<5.00
GD 8	6/11/2019	9.4	7.19	2.94	25.8	0.181	<0.025	<0.10	0.948	4.1
GD 8	8/28/2019	14.2	8.26	6.07	30.2	0.212	<0.025	<0.10	0.992	11.8
GD 8	10/28/2019	29.6	7.83	8.22	16.2	0.435	<0.025	0.109	0.255	12.9
GD 8	3/31/2020	19.3	7.97	9.30	16.6	0.133	<0.025	0.132	0.348	18.0
GD 8	6/10/2020	10.8	7.97	7.13	24.9	0.211	<0.03	<0.100	<0.25	8.0

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.5 - ANALYTICAL DATA - RC 2

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 2	3/12/2013	29	7.73	9.83	10.53	0.12	0.088	<0.10	0.75	14.0
RC 2	5/8/2013	19	6.16	3.06	16.36	0.19	<0.025	<0.10	0.55	12.0
RC 2	9/23/2013	11	6.24	3.00	23.61	<0.10	<0.025	<0.10	0.43	6.3
RC 2	12/10/2013	34	6.07	11.71	8.38	0.11	0.062	<0.10	0.54	10.0
RC 2	2/6/2014	30	3.89	17.28	5.62	0.26	<0.025	<0.10	0.43	9.6
RC 2	6/26/2014	18	7.90	6.81	24.81	0.15	<0.025	<0.10	0.44	7.2
RC 2	9/30/2014	3	7.27	5.55	22.25	<0.10	<0.025	<0.10	0.40	2.5
RC 2	11/19/2014	27	5.65	7.14	5.72	0.17	<0.025	<0.10	0.43	11.0
RC 2	3/23/2015	45	8.23	9.07	16.00	0.15	0.044	<0.10	0.81	18.0
RC 2	4/22/2015	14	7.64	11.42	18.40	0.26	<0.025	<0.10	<0.25	4.8
RC 2	9/30/2015	7	5.93	9.28	23.33	<0.10	<0.025	<0.10	<0.25	4.6
RC 2	11/19/2015	114	7.36	21.94	15.29	0.27	<0.025	0.13	0.75	14.4
RC 2	3/15/2016	15	7.62	16.67	14.61	0.18	<0.025	<0.10	0.43	6.0
RC 2	6/29/2016	12	7.78	4.31	28.30	<0.10	0.077	<0.10	0.35	10.9
RC 2	8/9/2016	25	8.12	5.05	26.50	0.14	<0.025	<0.10	0.45	9.9
RC 2	12/7/2016	17.2	7.86	7.47	12.0	0.20	<0.025	<0.10	0.53	11.9
RC 2	3/2/2017	25	7.71	7.74	13.10	0.17	<0.025	<0.10	0.45	8.0
RC 2	6/21/2017	14.2	7.91	5.61	23.7	<0.10	<0.025	<0.10	0.51	12.3
RC 2	8/17/2017	18.2	8.08	4.94	27.90	<0.10	<0.025	0.13	0.72	72.2
RC 2	10/26/2017	18.1	7.57	7.05	15.2	<0.10	<0.025	<0.10	0.27	17.5
RC 2	3/27/2018	18.2	7.91	8.43	12.4	0.146	<0.025	<0.10	<0.25	12.5
RC 2	6/26/2018	18.8	7.94	6.19	26.5	0.101	<0.025	<0.10	0.802	13.0
RC 2	8/1/2018	56.8	7.40	7.10	22.4	<0.10	<0.025	<0.10	0.506	84.4
RC 2	12/11/2018	16.0	7.54	11.41	7.7	0.316	<0.025	<0.10	0.479	3.1
RC 2	4/17/2019	7.0	7.77	8.67	18.9	0.165	<0.025	<0.10	0.288	<5.00
RC 2	6/11/2019	14.3	6.83	3.78	23.0	<0.10	<0.025	<0.10	0.520	5.2
RC 2	8/28/2019	14.4	8.01	7.30	28.0	<0.10	<0.025	<0.10	0.748	4.8
RC 2	10/28/2019	11.4	7.55	9.42	14.9	0.132	<0.025	0.20	<0.250	3.4
RC 2	3/31/2020	84.5	7.90	9.10	15.7	0.190	0.0290	0.118	0.574	90.0
RC 2	6/10/2020	20.5	7.87	6.37	25.6	0.210	<0.03	<0.100	0.330	10.8

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.6 - ANALYTICAL DATA - SS 13**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 13	3/12/2013	8	7.04	9.85	11.45	0.34	0.032	<0.10	0.78	4.7
SS 13	5/8/2013	10	6.68	2.94	18.75	0.36	<0.050	<0.10	0.72	5.7
SS 13	9/23/2013	12	7.04	3.38	25.31	<0.10	0.028	<0.10	0.84	9.6
SS 13	12/10/2013	12	6.14	10.93	8.99	0.33	0.077	0.12	0.67	5.6
SS 13	2/6/2014	7	4.26	17.50	5.14	0.42	<0.025	<0.10	0.44	4.1
SS 13	6/26/2014	23	8.33	8.09	28.44	<0.10	<0.025	0.12	0.52	5.4
SS 13	9/30/2014	12	7.41	4.26	24.77	<0.10	<0.025	<0.10	0.44	12.0
SS 13	11/19/2014	13	6.31	6.08	6.44	0.22	0.044	<0.10	0.40	4.8
SS 13	3/23/2015	16	7.33	8.57	15.40	0.22	0.029	<0.10	0.71	7.6
SS 13	4/22/2015	15	6.60	8.93	20.80	0.32	<0.025	<0.10	0.67	10.0
SS 13	9/30/2015	9	7.33	11.54	25.95	<0.10	<0.025	<0.10	0.52	9.0
SS 13	11/19/2015	36	7.07	18.48	15.31	0.24	<0.025	0.18	0.97	4.8
SS 13	3/15/2016	9	6.61	12.42	17.37	0.32	<0.025	<0.10	<0.25	4.7
SS 13	6/29/2016	10	7.86	6.15	30.60	<0.10	<0.025	<0.10	0.53	9.8
SS 13	8/9/2016	20	7.77	5.92	29.10	<0.10	<0.025	<0.10	0.73	24.0
SS 13	12/7/2016	4.8	7.39	6.97	12.5	0.11	<0.025	<0.10	0.45	3.6
SS 13	3/2/2017	12	6.64	7.19	13.40	0.25	<0.025	<0.10	0.75	4.6
SS 13	6/21/2017	8.7	7.54	5.82	26.1	<0.10	<0.025	<0.10	0.82	12.8
SS 13	8/17/2017	9.3	7.93	6.54	30.90	<0.10	<0.025	<0.10	0.81	18.6
SS 13	10/26/2017	5.2	6.70	7.41	15.4	0.12	<0.025	<0.10	0.60	7.2
SS 13	3/27/2018	6.4	8.19	8.23	12.4	0.495	<0.025	<0.10	<0.25	16.2
SS 13	6/26/2018	6.8	7.36	5.67	29.5	<0.10	<0.025	0.140	0.998	10.2
SS 13	8/1/2018	24.2	6.75	6.86	21.9	0.226	0.206	0.308	1.180	20.2
SS 13	12/11/2018	8.2	7.37	10.79	7.4	0.451	<0.025	<0.10	0.655	8.6
SS 13	4/17/2019	6.4	7.42	9.23	19.1	<0.10	<0.025	<0.10	0.624	6.8
SS 13	6/11/2019	8.9	6.59	3.12	23.4	<0.10	<0.025	<0.10	0.929	<6.25
SS 13	8/28/2019	6.7	7.93	7.33	29.7	<0.10	<0.025	<0.10	1.170	24.4
SS 13	10/28/2019	12.3	6.25	3.61	16.0	0.211	0.031	<0.10	0.739	3.7
SS 13	3/31/2020	60.4	6.95	8.64	14.9	0.233	0.0580	0.147	0.928	92.0
SS 13	6/10/2020	10.1	7.27	7.08	28.2	<0.100	<0.03	<0.100	0.492	21.2

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.7 - ANALYTICAL DATA - SS 14**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 14	3/12/2013	10	7.40	11.23	10.93	0.40	0.087	0.11	0.77	4.7
SS 14	5/8/2013	10	6.47	2.75	16.42	0.45	0.041	<0.10	0.53	5.0
SS 14	9/23/2013	3	6.76	6.49	21.77	0.38	0.036	<0.10	0.45	<2.5
SS 14	12/10/2013	18	5.63	11.33	8.56	0.28	0.160	0.19	0.66	9.2
SS 14	2/6/2014	12	4.19	17.56	5.16	0.62	0.074	<0.10	0.50	14.0
SS 14	6/26/2014	8	8.18	7.58	24.14	0.67	0.080	0.16	0.89	<2.5
SS 14	9/30/2014	8	7.42	3.67	22.35	<0.10	0.031	<0.10	0.52	6.1
SS 14	11/19/2014	16	6.27	7.50	5.48	0.75	0.075	0.22	0.46	9.2
SS 14	3/23/2015	21	7.75	9.53	16.50	0.27	0.110	0.14	1.10	11.0
SS 14	4/22/2015	12	7.43	12.29	17.50	0.62	<0.025	<0.10	0.58	6.3
SS 14	9/30/2015	7	7.16	12.79	24.02	<0.10	0.088	0.18	0.51	6.6
SS 14	11/19/2015	27	6.49	20.71	15.16	0.44	0.131	0.18	1.00	23.3
SS 14	3/15/2016	11	7.18	12.11	16.01	0.50	0.056	<0.10	0.83	8.1
SS 14	6/29/2016	6	7.62	3.61	27.20	<0.10	0.103	0.16	0.65	6.0
SS 14	8/9/2016	22	7.71	5.99	26.90	0.16	0.062	0.12	0.87	12.7
SS 14	12/7/2016	7.6	7.27	7.72	11.9	0.89	0.078	0.15	0.71	<2.5
SS 14	3/2/2017	13	7.60	8.76	12.20	0.48	0.092	0.15	0.84	9.2
SS 14	6/21/2017	21.5	7.74	6.24	23.7	0.25	0.030	0.11	0.73	63.7
SS 14	8/17/2017	6.0	8.12	7.11	31.40	0.12	0.070	<0.10	0.83	24.8
SS 14	10/26/2017	4.3	7.39	7.66	13.9	0.70	0.054	<0.10	0.58	3.6
SS 14	3/27/2018	8.8	7.34	8.96	11.9	0.673	0.044	0.148	<0.25	8.2
SS 14	6/26/2018	7.7	8.47	10.65	29.3	0.206	0.044	0.148	1.01	18.7
SS 14	8/1/2018	42.9	6.35	7.04	22.5	0.109	0.233	0.276	0.89	60.0
SS 14	12/11/2018	8.4	6.95	11.53	7.4	0.812	0.057	0.117	0.635	4.3
SS 14	4/17/2019	6.6	7.60	8.28	22.1	0.598	0.042	<0.10	0.414	6.7
SS 14	6/11/2019	12.6	6.78	3.47	23.8	0.444	0.077	<0.10	0.928	5.9
SS 14	8/28/2019	8.1	7.96	8.18	27.9	<0.10	<0.025	0.174	1.050	8.5
SS 14	10/28/2019	10.9	6.97	7.83	15.1	0.458	0.048	0.167	0.381	2.7
SS 14	3/31/2020	62.4	6.67	9.31	15.2	0.190	0.235	0.348	0.934	145
SS 14	6/10/2020	17.0	7.32	7.20	29.1	0.246	0.078	0.128	0.897	40.4

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.8 - ANALYTICAL DATA - GD 12**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 12	3/12/2013	9	7.41	10.93	13.43	0.25	0.030	<0.10	0.54	3.9
GD 12	5/8/2013	15	6.73	2.35	16.53	0.21	0.030	<0.10	0.40	7.5
GD 12	9/23/2013	10	6.76	3.94	26.07	<0.10	0.026	<0.10	0.48	9.0
GD 12	12/10/2013	19	6.15	10.09	10.18	0.22	0.079	0.11	0.45	5.9
GD 12	2/6/2014	12	4.17	16.99	5.76	0.31	<0.025	<0.10	0.28	3.9
GD 12	6/26/2014	29	8.38	9.40	26.72	0.11	0.035	0.12	0.62	32.0
GD 12	9/30/2014	11	7.68	5.77	24.68	<0.10	<0.025	<0.10	0.39	11.0
GD 12	11/19/2014	15	6.95	5.93	5.85	0.28	<0.025	0.13	0.39	6.6
GD 12	3/23/2015	18	7.80	9.56	16.80	0.24	<0.025	<0.10	0.59	8.1
GD 12	4/22/2015	17	7.45	11.04	19.80	0.25	<0.025	<0.10	0.43	14.0
GD 12	9/30/2015	7	7.30	11.07	24.67	<0.10	<0.025	<0.10	0.70	8.5
GD 12	11/19/2015	23	7.07	19.14	14.68	0.28	0.100	0.15	0.77	12.0
GD 12	3/15/2016	10	7.43	13.14	16.05	0.25	0.032	<0.10	0.43	4.6
GD 12	6/29/2016	13	8.22	7.68	31.20	<0.10	0.036	<0.10	0.38	12.0
GD 12	8/9/2016	22	7.57	4.39	27.60	<0.10	<0.025	<0.10	0.63	13.3
GD 12	12/7/2016	10.3	7.18	6.65	11.4	0.14	<0.025	<0.10	0.60	4.0
GD 12	3/2/2017	15	7.79	10.12	11.70	0.22	<0.025	0.12	0.58	6.1
GD 12	6/21/2017	16.1	7.43	5.12	24.3	<0.10	<0.025	<0.10	0.77	16.8
GD 12	8/17/2017	6.3	8.13	5.80	29.90	<0.10	<0.025	<0.10	0.58	13.3
GD 12	10/26/2017	9.8	6.74	7.53	13.2	0.2	<0.025	<0.10	0.31	7.8
GD 12	3/27/2018	6.3	7.71	9.24	11.5	0.356	<0.025	<0.10	<0.25	4.2
GD 12	6/26/2018	9.9	7.44	4.35	26.1	0.102	<0.025	<0.10	0.528	13.2
GD 12	8/1/2018	42.3	7.05	7.33	22.7	0.108	0.159	0.286	1.23	43.8
GD 12	12/11/2018	9.5	6.68	11.46	7.8	0.313	<0.025	<0.10	0.574	4.3
GD 12	4/17/2019	9.1	7.45	9.20	17.5	0.257	<0.025	<0.10	0.272	4.0
GD 12	6/11/2019	19.0	7.20	3.25	22.0	0.223	0.066	0.121	0.820	8.2
GD 12	8/28/2019	11.0	7.83	7.61	28.2	<0.10	<0.025	0.103	0.764	9.4
GD 12	10/28/2019	18.9	5.34	6.65	14.7	0.197	0.044	<0.10	0.387	12.3
GD 12	3/31/2020	76.3	6.71	9.44	14.5	0.177	0.0650	0.167	1.00	143
GD 12	6/10/2020	12.3	6.46	6.44	25.8	<0.100	<0.03	<0.100	0.438	11.4

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.9 - ANALYTICAL DATA - CO 14

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 14	3/12/2013	8	6.88	9.65	12.92	0.32	<0.025	<0.10	0.42	3.5
CO 14	5/8/2013	13	6.61	3.02	16.37	0.34	<0.12	<0.10	0.74	6.7
CO 14	9/23/2013	15	6.70	3.78	22.58	<0.10	0.036	<0.10	0.30	9.6
CO 14	12/10/2013	14	5.82	11.15	9.37	0.11	0.027	<0.10	0.55	9.7
CO 14	2/6/2014	14	4.02	16.69	5.08	0.58	<0.025	<0.10	0.41	9.1
CO 14	6/26/2014	20	8.25	8.19	22.33	0.34	<0.025	<0.10	0.86	9.0
CO 14	9/30/2014	*	*	*	*	*	*	*	*	*
CO 14	11/19/2014	9.84	6.70	3.86	7.90	<0.10	<0.025	<0.10	0.26	2.8
CO 14	3/23/2015	19	6.85	8.78	17.20	0.25	<0.025	<0.10	0.67	10.0
CO 14	4/22/2015	14	6.23	11.19	18.00	0.49	<0.025	<0.10	0.60	8.6
CO 14	9/30/2015	*	*	*	*	*	*	*	*	*
CO 14	11/19/2015	24	6.64	16.06	15.25	<0.10	<0.025	<0.10	1.27	5.9
CO 14	3/15/2016	16	6.33	13.05	16.42	0.47	<0.025	<0.10	0.71	9.7
CO 14	6/29/2016	*	*	*	*	*	*	*	*	*
CO 14	8/9/2016	*	*	*	*	*	*	*	*	*
CO 14	12/7/2016	*	*	*	*	*	*	*	*	*
CO 14	3/2/2017	19	6.34	8.58	13.60	0.11	<0.025	<0.10	0.60	5.2
CO 14	6/21/2017	9.0	6.57	6.49	22.9	<0.10	<0.025	<0.10	0.76	19.0
CO 14	8/17/2017	13.8	7.83	6.22	28.0	<0.10	<0.025	<0.10	0.85	50.6
CO 14	10/26/2017	8.1	6.43	8.40	14.2	<0.10	<0.025	<0.10	0.44	4.7
CO 14	3/27/2018	8.2	7.63	9.45	11.4	0.601	<0.025	<0.10	<0.25	9.5
CO 14	6/26/2018	NS	NS	NS	NS	NS	NS	NS	NS	NS
CO 14	8/1/2018	40.2	6.99	7.42	22.1	<0.10	<0.025	<0.10	0.76	28.3
CO 14	12/11/2018	7.6	7.38	10.74	7.7	0.184	<0.025	<0.10	0.567	4.9
CO 14	4/17/2019	9.3	7.91	8.99	19.0	0.460	<0.025	<0.10	2.96	9.4
CO 14	6/11/2019	17.5	7.07	3.56	22.4	<0.10	<0.025	0.14	0.773	5.6
CO 14	8/28/2019	*	*	*	*	*	*	*	*	*
CO 14	10/28/2019	*	*	*	*	*	*	*	*	*
CO 14	3/31/2020	77.6	7.84	9.07	15.0	0.402	<0.025	<0.10	0.532	106
CO 14	6/10/2020	13.8	7.64	7.20	24.4	0.244	<0.03	<0.100	0.482	5.6

NTU - Nephelometric Turbidity Units

* - outfall was dry

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.10 - ANALYTICAL DATA - SME 2

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 2	3/12/2013	6	7.12	9.28	14.17	0.28	0.032	<0.10	0.47	8.1
SME 2	5/8/2013	26	7.67	6.46	21.40	0.24	0.042	<0.10	0.92	21.0
SME 2	9/23/2013	7	6.92	5.51	26.24	<0.10	0.039	<0.10	0.34	7.1
SME 2	12/10/2013	12	5.71	11.05	11.01	0.31	0.100	0.15	0.42	7.0
SME 2	2/6/2014	20	4.21	14.38	6.13	0.39	0.053	<0.10	0.59	14.0
SME 2	6/26/2014	15	8.16	7.22	26.98	0.11	<0.025	<0.10	0.38	8.7
SME 2	9/30/2014	6	7.97	5.33	26.53	<0.10	<0.025	<0.10	0.52	7.4
SME 2	11/19/2014	10	7.06	3.53	10.20	0.14	0.039	0.16	<0.25	6.8
SME 2	3/23/2015	11	7.96	9.34	17.60	0.24	<0.025	<0.10	0.45	10.0
SME 2	4/22/2015	9	7.93	11.46	24.50	0.13	<0.025	<0.10	0.48	9.1
SME 2	9/30/2015	7	7.62	12.67	25.91	0.10	<0.025	0.10	0.50	8.7
SME 2	11/19/2015	22	6.55	14.30	19.12	0.22	0.062	0.22	1.21	82.3
SME 2	3/15/2016	8	7.86	13.43	20.73	<0.10	<0.025	<0.10	0.49	6.3
SME 2	6/29/2016	8	8.23	7.24	30.40	0.19	<0.025	<0.10	0.29	8.0
SME 2	8/9/2016	10	8.01	6.58	30.60	<0.10	<0.025	<0.10	0.59	8.2
SME 2	12/7/2016	6.0	7.52	6.86	12.7	<0.10	<0.025	0.10	0.47	5.8
SME 2	3/2/2017	12	8.03	8.55	15.20	0.27	<0.025	<0.10	0.72	11.4
SME 2	6/21/2017	5.2	7.18	4.64	26.6	<0.10	<0.025	<0.10	0.89	11.4
SME 2	8/17/2017	6.5	7.76	6.43	30.6	<0.10	<0.025	<0.10	0.73	15.3
SME 2	10/26/2017	5.2	7.03	6.87	17.6	<0.10	<0.025	<0.10	0.38	8.5
SME 2	3/27/2018	11.1	7.44	8.64	12.9	0.161	<0.025	<0.10	<0.25	17.5
SME 2	6/26/2018	10.8	7.97	6.43	29.6	0.111	<0.025	<0.10	0.731	9.9
SME 2	8/1/2018	29.6	7.39	6.46	23.4	0.371	0.099	0.13	0.423	24.8
SME 2	12/11/2018	9.7	7.82	9.99	7.9	0.212	<0.025	0.166	0.368	5.1
SME 2	4/17/2019	5.0	7.82	7.80	20.5	0.105	<0.025	<0.10	0.783	6.0
SME 2	6/11/2019	12.3	6.68	3.43	24.4	<0.10	<0.025	<0.10	0.676	9.2
SME 2	8/28/2019	6.6	7.83	6.26	29.2	<0.10	<0.025	<0.10	0.452	5.9
SME 2	10/28/2019	24.9	7.64	7.42	16.8	<0.10	<0.025	0.107	0.341	18.2
SME 2	3/31/2020	9.5	7.02	7.31	18.2	<0.10	<0.025	<0.10	0.521	10.2
SME 2	6/10/2020	10.4	7.81	6.40	27.0	0.117	<0.03	<0.100	0.367	8.0

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.11 - ANALYTICAL DATA - GD 6**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 6	3/12/2013	10	8.03	9.65	11.90	0.21	0.036	<0.10	0.29	5.8
GD 6	5/8/2013	19	6.81	2.35	19.02	0.23	0.033	<0.10	0.40	8.3
GD 6	9/23/2013	6	7.28	5.17	26.93	<0.10	<0.025	<0.10	0.36	5.8
GD 6	12/10/2013	26	5.98	11.41	10.64	0.37	0.041	<0.10	0.17	8.6
GD 6	2/6/2014	16	4.34	15.80	6.85	0.26	0.057	<0.10	0.16	5.5
GD 6	6/26/2014	14	8.31	8.95	27.29	<0.10	<0.025	<0.10	0.42	7.0
GD 6	9/30/2014	7	8.35	6.53	26.78	<0.10	<0.025	<0.10	0.55	7.0
GD 6	11/19/2014	13	7.17	3.36	9.67	0.22	<0.025	0.28	0.38	9.8
GD 6	3/23/2015	17	7.95	8.95	18.40	0.22	<0.025	<0.10	0.26	8.2
GD 6	4/22/2015	15	7.59	10.82	19.80	0.22	<0.025	<0.10	0.28	8.0
GD 6	9/30/2015	14	8.19	12.31	25.47	<0.10	<0.025	0.10	0.97	12.4
GD 6	11/19/2015	43	6.97	15.87	17.75	0.47	0.037	0.13	0.77	16.0
GD 6	3/15/2016	16	7.68	11.58	19.98	0.12	0.043	<0.10	0.50	7.9
GD 6	6/29/2016	10	8.86	9.64	31.50	<0.10	<0.025	<0.10	0.40	11.2
GD 6	8/9/2016	10	8.26	6.98	30.70	<0.10	<0.025	<0.10	0.62	10.3
GD 6	12/7/2016	11.5	7.43	8.13	14.3	0.37	<0.025	<0.10	0.49	7.5
GD 6	3/2/2017	14	8.05	8.02	14.70	0.25	<0.025	<0.10	0.51	9.0
GD 6	6/21/2017	7.7	7.67	4.99	26.8	<0.10	<0.025	0.11	0.93	21.0
GD 6	8/17/2017	7.0	8.02	7.72	31.2	<0.10	<0.025	<0.10	0.68	13.2
GD 6	10/26/2017	8.3	6.25	7.84	15.8	0.13	<0.025	<0.10	0.39	12.0
GD 6	3/27/2018	10.1	7.97	9.00	12.1	0.233	<0.025	1.76	<0.25	10.9
GD 6	6/26/2018	8.0	8.02	6.78	29.6	0.108	<0.025	<0.10	0.782	9.6
GD 6	8/1/2018	25.4	7.66	7.52	22.7	0.335	0.090	0.1	0.636	21.9
GD 6	12/11/2018	13.8	7.97	10.92	8.2	0.397	<0.025	<0.10	0.362	5.8
GD 6	4/17/2019	9.0	7.10	8.00	20.5	0.198	<0.025	<0.10	0.624	9.6
GD 6	6/11/2019	17.9	7.07	3.68	23.8	<0.10	<0.025	<0.10	0.728	12.4
GD 6	8/28/2019	9.1	7.94	6.32	28.5	<0.10	<0.025	<0.10	0.607	6.5
GD 6	10/28/2019	18.4	7.48	6.63	16.4	0.198	<0.025	<0.10	0.467	9.9
GD 6	3/31/2020	16.0	6.06	8.86	16.1	0.212	<0.025	0.127	<0.250	8.40
GD 6	6/10/2020	7.4	7.04	6.36	26.5	0.127	<0.03	<0.100	0.832	10.40

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.12 - ANALYTICAL DATA - CO 15

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 15	3/12/2013	32	7.41	8.91	14.40	<0.10	0.097	<0.10	0.53	9.0
CO 15	5/8/2013	27	7.51	8.04	18.10	0.10	<0.12	<0.10	0.59	11.0
CO 15	9/23/2013	13	7.09	4.01	27.18	<0.10	0.027	<0.10	0.34	11.0
CO 15	12/10/2013	42	6.09	11.25	9.83	0.18	0.068	<0.10	0.56	13.0
CO 15	2/6/2014	32	4.22	16.10	6.28	0.21	<0.025	<0.10	0.46	12.0
CO 15	6/26/2014	105	8.16	7.00	25.55	<0.10	0.140	<0.10	0.59	46.0
CO 15	9/30/2014	8	7.88	6.67	23.28	<0.10	<0.025	<0.10	<0.25	8.6
CO 15	11/19/2014	44	7.38	3.68	9.43	0.20	0.030	<0.10	0.32	12.0
CO 15	3/23/2015	56	7.85	9.53	18.50	0.14	0.067	<0.10	0.61	19.0
CO 15	4/22/2015	26	7.62	10.14	21.90	0.14	<0.025	<0.10	0.40	11.0
CO 15	9/30/2015	15	7.68	12.73	22.88	<0.10	<0.025	<0.10	0.75	11.8
CO 15	11/19/2015	50	7.30	19.45	16.98	0.24	0.042	0.18	0.42	17.5
CO 15	3/15/2016	29	7.66	12.39	19.83	<0.10	<0.025	<0.10	0.78	12.4
CO 15	6/29/2016	*	*	*	*	*	*	*	*	*
CO 15	8/9/2016	38	8.03	6.78	29.60	<0.10	<0.025	<0.10	<0.25	22.0
CO 15	12/7/2016	13.6	7.50	9.78	12.1	<0.10	<0.025	<0.10	0.67	14.8
CO 15	3/2/2017	38.2	7.77	8.32	16.00	0.15	<0.025	<0.10	0.52	17.4
CO 15	6/21/2017	6.4	7.56	5.12	26.70	<0.10	<0.025	<0.10	0.97	18.3
CO 15	8/17/2017	21.7	8.29	6.47	30.10	<0.10	<0.025	<0.10	0.69	12.4
CO 15	10/26/2017	10.8	4.43	8.24	13.6	<0.10	<0.025	<0.10	0.39	6.4
CO 15	3/27/2018	14.5	7.87	9.33	12.1	<0.10	<0.025	<0.10	<0.25	8.0
CO 15	6/26/2018	13.8	7.87	7.33	26.5	<0.10	<0.025	0.270	0.573	12.4
CO 15	8/1/2018	58.8	7.25	7.12	23.0	<0.10	0.040	0.122	0.852	71.5
CO 15	12/11/2018	111.3	8.73	11.94	7.0	0.168	<0.025	0.107	1.160	10.1
CO 15	4/17/2019	17.0	7.80	9.17	19.1	0.144	<0.025	<0.10	0.574	11.5
CO 15	6/11/2019	21.9	6.56	3.10	22.8	<0.10	<0.025	<0.10	1.00	9.8
CO 15	8/28/2019	70.8	8.07	7.52	25.7	0.166	0.026	0.130	1.54	20.4
CO 15	10/28/2019	30.7	7.31	9.63	15.0	0.120	<0.025	<0.10	0.61	10.2
CO 15	3/31/2020	61.8	6.46	9.25	15.7	0.102	0.0320	0.158	0.625	72.4
CO 15	6/10/2020	18.7	6.24	6.22	25.0	0.148	<0.03	<0.100	0.456	10.4

NTU - Nephelometric Turbidity Units

* - outfall was dry

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.13 - ANALYTICAL DATA - RC 14

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 14	3/12/2013	28	8.23	7.53	10.30	<0.10	0.088	<0.10	0.61	21.0
RC 14	5/8/2013	30	6.72	1.78	21.40	0.14	<0.12	<0.10	0.63	16.0
RC 14	9/23/2013	18	7.86	6.68	24.70	<0.10	<0.025	<0.10	0.58	13.0
RC 14	12/10/2013	40	8.45	9.50	8.20	<0.10	0.100	0.11	0.69	16.0
RC 14	2/6/2014	67	7.15	10.94	4.90	0.16	0.036	0.11	0.70	18.0
RC 14	6/26/2014	6	8.21	6.30	*	<0.10	<0.025	<0.10	0.39	5.9
RC 14	9/30/2014	12	7.20	6.20	23.50	<0.10	<0.025	<0.10	0.40	12.0
RC 14	9/19/2014	50	8.20	10.10	7.50	<0.10	0.085	0.13	0.52	28.0
RC 14	3/23/2015	70	8.03	7.80	18.20	0.26	0.070	<0.10	1.10	34.0
RC 14	4/22/2015	30	7.77	7.25	18.10	0.20	<0.025	<0.10	0.40	15.0
RC 14	9/30/2015	17	8.28	5.63	24.40	<0.10	<0.025	<0.10	0.45	12.6
RC 14	11/19/2015	95	7.32	6.07	17.71	0.14	<0.025	0.14	0.63	36.0
RC 14	3/15/2016	85	8.13	7.73	18.50	0.11	<0.025	0.30	0.43	69.6
RC 14	6/29/2016	17	7.58	2.17	28.53	<0.10	0.037	<0.10	0.46	17.5
RC 14	8/9/2016	10	7.05	2.35	28.53	<0.10	<0.025	<0.10	0.55	8.5
RC 14	12/7/2016	7.9	7.21	6.47	11.62	<0.10	<0.025	<0.10	0.25	8.6
RC 14	3/2/2017	18.0	7.32	3.55	12.69	0.12	<0.025	<0.10	0.61	14.6
RC 14	7/5/2017	17.7	7.55	6.56	25.7	0.28	0.041	<0.10	0.36	35.0
RC 14	8/16/2017	9.8	7.72	5.54	26.70	0.21	0.042	<0.10	0.40	12.4
RC 14	10/25/2017	18.7	7.64	7.26	17.1	0.24	0.088	0.15	0.47	27.2
RC 14	3/28/2018	9.9	8.03	9.00	18.3	0.148	<0.025	<0.10	<0.25	10.9
RC 14	6/29/2018	12.9	7.64	5.89	27.1	<0.10	<0.025	<0.10	0.722	13.8
RC 14	8/2/2018	21.7	7.30	5.56	23.7	<0.10	0.055	<0.10	0.848	17.3
RC 14	12/10/2018	35.1	7.13	10.63	7.3	<0.10	0.038	0.169	1.400	16.9
RC 14	4/15/2019	45.8	7.68	7.67	19.5	0.108	<0.025	<0.10	0.403	36.0
RC 14	6/12/2019	11.0	8.03	7.39	25.3	0.120	<0.025	<0.10	0.250	12.3
RC 14	8/27/2019	76.4	8.36	8.78	28.4	<0.10	<0.025	0.141	0.391	8.8
RC 14	10/29/2019	17.4	7.90	9.83	17.7	<0.10	<0.025	<0.10	0.478	10.6
RC 14	3/30/2020	12.9	8.10	10.01	21.9	<0.10	<0.025	<0.10	0.451	15.7
RC 14	6/16/2020	11.5	6.79	8.01	26.9	0.141	<0.030	<0.10	0.560	11.4

NTU - Nephelometric Turbidity Units

* - unknown reading due to equipment malfunction

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.14 - ANALYTICAL DATA - SS 5

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 5	3/12/2013	6	8.38	9.87	10.80	0.30	0.031	<0.10	0.39	7.2
SS 5	5/8/2013	24	7.38	7.19	16.80	0.16	<0.12	<0.10	0.62	21.0
SS 5	9/23/2013	14	8.00	5.44	25.80	<0.10	0.029	<0.10	1.30	15.0
SS 5	12/10/2013	23	8.25	9.10	7.70	0.24	0.043	0.11	0.67	13.0
SS 5	2/6/2014	28	7.20	12.09	5.40	0.39	<0.025	<0.10	0.86	12.0
SS 5	6/26/2014	11	8.53	7.01	*	<0.10	<0.025	<0.10	0.40	11.0
SS 5	9/30/2014	11	7.64	6.82	24.44	<0.10	<0.025	<0.10	0.45	11.0
SS 5	11/19/2014	14	8.96	13.13	8.50	<0.10	<0.025	<0.10	0.35	9.6
SS 5	3/23/2015	18	8.50	8.99	17.70	0.26	<0.025	<0.10	0.46	11.0
SS 5	4/22/2015	19	7.76	6.71	20.20	0.15	<0.025	<0.10	0.47	13.0
SS 5	9/30/2015	11	8.26	6.61	25.30	<0.10	<0.025	<0.10	0.61	9.9
SS 5	11/19/2015	19	7.86	8.47	15.90	0.24	<0.025	<0.10	<0.25	11.0
SS 5	3/15/2016	20.0	8.37	8.47	17.20	0.26	<0.025	0.23	0.28	9.5
SS 5	6/29/2016	15	8.01	3.81	29.77	<0.10	0.066	<0.10	0.48	13.2
SS 5	8/9/2016	12	7.86	3.16	29.40	<0.10	<0.025	<0.10	0.46	12.6
SS 5	12/7/2016	6.6	7.94	6.70	12.30	<0.10	<0.025	0.12	0.42	8.0
SS 5	3/2/2017	14.0	7.78	3.92	12.77	0.33	<0.025	<0.10	0.77	16.0
SS 5	7/5/2017	8.4	7.77	7.19	28.90	<0.10	<0.025	<0.10	0.47	12.0
SS 5	8/16/2017	10.2	8.10	4.83	29.90	<0.10	<0.025	<0.10	0.49	15.1
SS 5	10/25/2017	7.5	8.24	8.36	19.2	<0.10	<0.025	<0.10	0.53	11.8
SS 5	3/28/2018	7.0	8.53	10.23	18.5	0.248	<0.025	<0.10	<0.25	8.33
SS 5	6/29/2018	10.4	7.93	5.50	27.5	<0.10	<0.025	<0.10	0.605	13.3
SS 5	8/2/2018	13.5	7.58	6.04	25.8	<0.10	<0.025	<0.10	0.554	12.8
SS 5	12/10/2018	21.9	7.01	11.15	7.3	0.146	<0.025	<0.10	0.522	16.7
SS 5	4/15/2019	15.5	7.35	7.77	19.4	0.168	<0.025	<0.10	0.374	11.7
SS 5	6/12/2019	10.0	8.44	8.78	26.6	<0.10	<0.025	<0.10	<0.250	11.0
SS 5	8/27/2019	24.5	8.66	9.02	28.9	<0.10	<0.025	0.17	0.508	7.1
SS 5	10/29/2019	18.7	8.20	9.33	18.1	0.105	<0.025	0.20	0.631	10.4
SS 5	3/30/2020	9.2	8.35	11.07	20.8	0.127	<0.025	<0.10	0.399	10.6
SS 5	6/16/2020	10.5	8.41	7.99	27.9	<0.100	<0.030	<0.10	0.534	9.7

NTU - Nephelometric Turbidity Units

* - unknown reading due to equipment malfunction

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.15 - ANALYTICAL DATA - SME 1**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 1	3/12/2013	13	8.19	8.26	13.10	0.54	0.110	0.11	0.34	16.0
SME 1	5/8/2013	24	7.64	8.96	16.00	0.15	0.063	<0.10	0.42	14.0
SME 1	9/23/2013	14	8.26	7.87	27.70	<0.10	0.053	<0.10	0.80	15.0
SME 1	12/10/2013	46	8.05	9.15	7.60	0.55	0.210	0.26	0.47	21.0
SME 1	2/6/2014	61	7.22	11.34	5.90	0.55	0.110	0.13	0.50	23.0
SME 1	6/26/2014	14	8.49	7.05	*	<0.10	<0.025	<0.10	0.31	13.0
SME 1	9/30/2014	28	8.25	7.46	24.67	<0.10	0.044	0.11	0.61	34.0
SME 1	11/19/2014	40	8.31	10.86	7.80	0.74	0.270	0.29	0.55	19.0
SME 1	3/23/2015	21	8.26	8.52	17.30	0.51	0.073	0.10	<0.25	14.0
SME 1	4/22/2015	29	7.14	7.97	18.50	0.40	0.039	<0.10	0.38	18.0
SME 1	9/30/2015	15	8.34	7.03	26.40	<0.10	0.052	0.14	0.81	15.3
SME 1	11/19/2015	50	7.92	7.04	15.90	0.40	0.084	0.13	<0.25	23.2
SME 1	3/15/2016	26	8.44	7.21	18.30	0.45	0.047	<0.10	<0.25	17.7
SME 1	6/29/2016	21	8.80	3.29	30.67	<0.10	0.180	0.25	0.62	20.3
SME 1	8/9/2016	15	8.55	4.98	28.87	<0.10	0.089	0.15	0.55	12.6
SME 1	12/7/2016	31	7.96	10.20	11.98	0.41	0.209	0.27	0.38	17.7
SME 1	3/2/2017	14	7.75	4.31	12.34	0.67	0.127	0.21	0.35	15.0
SME 1	6/29/2017	19.2	9.11	9.21	25.80	<0.10	0.028	<0.10	0.53	18.3
SME 1	8/16/2017	10.6	8.12	6.58	29.70	<0.10	<0.025	0.11	0.52	12.7
SME 1	10/25/2017	5.4	8.02	8.32	17.3	0.4	0.121	0.15	0.29	16.9
SME 1	3/28/2018	19.3	8.10	9.18	17.6	0.633	0.106	<0.10	<0.25	19.8
SME 1	6/29/2018	20.7	7.84	6.37	26.2	0.312	0.121	0.24	0.670	23.3
SME 1	8/2/2018	28.5	7.48	5.82	23.9	0.296	0.145	0.14	0.495	29.5
SME 1	12/10/2018	32.0	7.45	11.48	8.0	0.259	<0.025	<0.10	0.336	31.0
SME 1	4/15/2019	42.2	7.89	7.89	19.7	0.390	0.063	<0.10	0.360	35.0
SME 1	6/12/2019	12.2	7.34	8.73	27.2	<0.10	<0.025	<0.10	<0.250	9.7
SME 1	8/27/2019	135.2	7.45	8.51	28.8	<0.10	<0.025	0.161	0.356	7.1
SME 1	10/29/2019	14.5	7.95	9.21	17.6	0.129	0.049	0.134	0.272	11.0
SME 1	3/30/2020	13.3	7.35	8.61	19.3	0.462	<0.025	<0.10	<0.250	13.3
SME 1	6/16/2020	11.6	8.58	10.36	27.0	<0.100	0.031	0.129	0.485	11.4

NTU - Nephelometric Turbidity Units

* - unknown reading due to equipment malfunction

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.16 - ANALYTICAL DATA - GD 9
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 9	2/6/2014	34	7.20	11.27	5.50	0.40	0.063	0.12	0.60	14.0
GD 9	6/26/2014	45	8.22	6.08	*	<0.10	0.029	0.12	0.41	34.0
GD 9	9/30/2014	12	8.30	6.93	24.61	<0.10	<0.025	<0.10	0.30	15.0
GD 9	11/19/2014	23	8.13	9.38	9.30	0.16	0.082	0.25	0.74	15.0
GD 9	3/23/2015	25	8.16	7.58	15.80	0.15	<0.025	<0.10	0.64	18.0
GD 9	4/22/2015	18	7.58	5.58	20.70	0.15	<0.025	<0.10	0.65	14.0
GD 9	9/30/2015	10	7.93	5.37	25.70	<0.10	<0.025	<0.10	0.64	10.8
GD 9	11/19/2015	40	7.67	*	16.50	0.25	0.096	0.12	<0.25	16.7
GD 9	3/15/2016	15	8.49	7.66	17.30	0.33	0.044	<0.10	<0.25	12.1
GD 9	6/29/2016	44	8.20	1.76	29.77	<0.10	<0.025	<0.10	0.65	67.2
GD 9	8/9/2016	11	8.07	4.14	29.00	<0.10	<0.025	<0.10	0.47	9.4
GD 9	12/7/2016	26	7.99	8.01	11.99	<0.10	<0.025	0.13	0.38	38.3
GD 9	3/2/2017	10.7	7.70	4.26	13.60	0.27	<0.025	<0.10	0.67	11.2
GD 9	6/29/2017	15.8	8.37	5.85	26.4	<0.10	<0.025	<0.10	0.72	15.7
GD 9	8/16/2017	11.3	7.82	5.52	29.60	<0.10	<0.025	<0.10	0.38	18.2
GD 9	10/25/2017	18.9	7.50	6.68	18.9	<0.10	0.025	<0.10	0.38	29.7
GD 9	3/28/2018	10.2	8.21	9.75	15.8	0.230	<0.025	<0.10	<0.25	12.4
GD 9	6/29/2018	11.0	7.73	5.45	27.6	<0.10	<0.025	<0.10	0.507	13.9
GD 9	8/2/2018	13.0	7.55	5.17	26.0	0.110	0.067	<0.10	0.600	20.8
GD 9	12/10/2018	26.4	7.90	11.05	7.9	0.292	0.047	0.244	0.442	22.8
GD 9	4/15/2019	221.5	7.51	8.09	20.0	0.194	0.034	<0.10	<0.250	178
GD 9	6/12/2019	7.3	7.21	8.61	27.0	0.116	<0.025	<0.10	<0.250	29.0
GD 9	8/27/2019	76.5	7.81	8.22	28.8	<0.10	<0.025	0.146	0.385	9.3
GD 9	10/29/2019	22.3	7.35	8.91	17.9	<0.10	<0.025	<0.10	0.491	15.0
GD 9	3/30/2020	18.3	7.56	8.54	18.4	0.243	<0.025	0.121	<0.250	16.4
GD 9	6/16/2020	11.4	8.15	7.94	27.1	<0.100	<0.030	<0.100	0.352	11.5

NTU - Nephelometric Turbidity Units

* - unknown reading due to equipment malfunction

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.17 - ANALYTICAL DATA - GD 7**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 7	3/12/2013	10	7.98	11.63	15.27	0.39	0.037	<0.10	0.31	8.8
GD 7	5/8/2013	26	7.72	7.46	18.40	0.24	0.063	<0.10	<0.56	20.0
GD 7	9/23/2013	11	7.05	6.31	26.50	<0.10	0.026	<0.10	0.54	9.6
GD 7	12/10/2013	42	8.02	9.68	7.50	0.34	0.084	0.11	0.32	40.0
GD 7	2/6/2014	28	7.27	13.32	4.40	0.52	0.034	<0.10	0.61	13.0
GD 7	6/26/2014	6	8.45	7.04	*	<0.10	<0.025	<0.10	0.52	8.7
GD 7	9/30/2014	12	7.87	6.32	24.39	<0.10	<0.025	<0.10	0.41	13.0
GD 7	11/19/2014	20	8.53	10.10	9.60	0.14	<0.025	0.13	0.46	15.0
GD 7	3/23/2015	13	8.28	8.87	15.40	0.27	<0.025	<0.10	0.35	10.0
GD 7	4/22/2015	28	7.99	6.40	20.20	0.24	<0.025	<0.10	0.47	24.0
GD 7	9/30/2015	8	7.89	5.18	24.90	<0.10	<0.025	<0.10	0.59	9.1
GD 7	11/19/2015	45	7.78	8.23	15.60	0.34	0.051	<0.10	<0.25	34.3
GD 7	3/15/2016	17	8.46	8.51	17.80	0.26	<0.025	<0.10	0.40	13.9
GD 7	6/29/2016	11	7.90	2.22	30.32	<0.10	0.048	<0.10	0.49	8.6
GD 7	8/9/2016	7	7.97	4.08	29.31	<0.10	<0.025	<0.10	0.47	5.7
GD 7	12/7/2016	9.5	7.88	10.14	12.39	<0.10	<0.025	<0.10	0.36	7.8
GD 7	3/2/2017	11	7.80	4.57	13.35	0.36	<0.025	<0.10	0.51	14.4
GD 7	6/29/2017	9.4	8.18	6.59	26.4	<0.10	<0.025	<0.10	0.44	13.4
GD 7	8/16/2017	8.5	7.84	5.66	29.0	<0.10	<0.025	<0.10	0.36	15.3
GD 7	10/25/2017	9.9	7.73	6.93	19.8	<0.10	<0.025	<0.10	0.42	18.4
GD 7	3/28/2018	7.6	8.16	9.33	14.9	0.350	<0.025	<0.10	<0.25	9.19
GD 7	6/29/2018	14.2	7.79	5.56	27.5	<0.10	<0.025	<0.10	0.625	14.60
GD 7	8/2/2018	18.5	7.62	5.51	27.0	<0.10	0.027	<0.10	0.450	32.10
GD 7	12/10/2018	40.8	7.06	11.05	8.0	0.378	<0.025	0.149	0.390	48.7
GD 7	4/15/2019	30.1	7.83	7.85	19.2	0.230	<0.025	<0.10	<0.250	12.0
GD 7	6/12/2019	7.4	7.24	6.68	27.2	0.132	<0.025	<0.10	<0.250	9.3
GD 7	8/27/2019	45.3	7.35	9.35	29.1	<0.10	<0.025	0.156	0.604	6.3
GD 7	10/29/2019	17.6	7.77	8.14	17.2	<0.10	<0.025	<0.10	0.414	17.0
GD 7	3/30/2020	7.8	7.77	10.38	21.1	<0.10	<0.025	<0.10	0.343	12.8
GD 7	6/16/2020	9.1	8.12	8.25	27.3	<0.100	<0.030	<0.100	0.322	8.3

NTU - Nephelometric Turbidity Units

* - unknown reading due to equipment malfunction

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.18 - ANALYTICAL DATA - GD 5**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 5	3/13/2013	12	8.33	9.29	10.20	0.26	<0.025	<0.10	0.34	9.6
GD 5	5/20/2013	14	8.28	7.76	22.60	<0.10	<0.025	<0.10	0.62	9.0
GD 5	9/23/2013	12	7.67	6.78	27.10	<0.10	0.027	<0.10	0.45	8.0
GD 5	12/10/2013	58	7.97	9.10	9.10	0.10	0.088	0.10	0.47	18.0
GD 5	2/6/2014	46	7.14	9.88	7.20	0.17	0.038	<0.10	0.37	17.0
GD 5	6/26/2014	17	7.90	6.54	*	<0.10	<0.025	<0.10	0.34	12.0
GD 5	9/30/2014	23	8.28	7.53	25.22	<0.10	<0.025	<0.10	<0.25	18.0
GD 5	11/19/2014	43	8.15	9.30	9.40	0.11	0.051	<0.10	0.43	26.0
GD 5	3/23/2015	24	8.14	8.58	15.90	0.12	<0.025	<0.10	0.34	15.0
GD 5	4/22/2015	25	7.81	7.78	21.70	0.14	<0.025	<0.10	0.65	13.0
GD 5	9/30/2015	18	8.03	6.27	26.30	<0.10	<0.025	0.12	0.56	17.3
GD 5	11/19/2015	90	7.63	7.34	16.60	0.17	0.042	<0.10	<0.25	42.8
GD 5	3/15/2016	24	8.80	7.47	19.40	<0.10	<0.025	<0.10	0.44	13.2
GD 5	6/29/2016	21	8.02	2.27	30.37	<0.10	0.074	<0.10	0.49	15.0
GD 5	8/9/2016	12	8.25	5.55	30.20	<0.10	<0.025	<0.10	0.41	11.0
GD 5	12/7/2016	10	7.73	10.61	11.96	<0.10	<0.025	<0.10	0.34	6.8
GD 5	3/2/2017	12	7.81	4.49	14.26	0.12	<0.025	<0.10	0.49	13.0
GD 5	7/5/2017	15.0	7.32	5.83	26.9	<0.10	<0.025	<0.10	0.73	22.7
GD 5	8/16/2017	8.0	7.89	6.22	28.0	<0.10	<0.025	<0.10	0.40	9.0
GD 5	10/25/2017	9.2	7.36	7.35	18.7	<0.10	<0.025	<0.10	0.35	14.6
GD 5	3/28/2018	6.1	8.18	9.47	18.5	0.127	<0.025	<0.10	<0.25	6.06
GD 5	6/29/2018	16.3	7.76	5.66	27.5	<0.10	<0.025	<0.10	0.689	19.60
GD 5	8/2/2018	18.4	7.59	6.02	25.7	<0.10	<0.025	<0.10	0.332	26.40
GD 5	12/10/2018	37.7	7.87	11.30	7.3	<0.10	<0.025	0.190	0.523	22.3
GD 5	4/15/2019	29.7	7.69	8.02	19.3	0.128	<0.025	1.20	0.411	29.0
GD 5	6/12/2019	6.0	8.02	7.64	27.2	<0.10	<0.025	<0.10	<0.250	9.3
GD 5	8/27/2019	75.2	7.15	7.98	28.7	<0.10	<0.025	0.17	0.506	10.9
GD 5	10/29/2019	29.0	7.85	9.42	17.8	<0.10	<0.025	<0.10	0.477	21.0
GD 5	3/30/2020	14.5	7.65	8.86	19.1	0.130	<0.025	<0.10	0.320	12.1
GD 5	6/16/2020	16.4	7.69	7.75	27.2	<0.100	<0.030	<0.100	0.561	7.4

NTU - Nephelometric Turbidity Units

* - unknown reading due to equipment malfunction

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.19 - ANALYTICAL DATA - GD 3

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 3	3/13/2013	12	8.00	9.28	10.70	0.29	0.028	<0.10	0.44	11.0
GD 3	5/20/2013	12	8.09	7.01	23.40	0.15	0.026	<0.10	0.63	13.0
GD 3	9/23/2013	12	7.80	6.50	26.40	<0.10	0.025	<0.10	0.58	10.0
GD 3	12/10/2013	46	7.85	9.23	9.30	0.21	0.085	0.14	0.64	23.0
GD 3	2/6/2014	90	7.13	10.58	6.10	0.21	<0.025	0.12	0.68	27.0
GD 3	6/26/2014	15	8.13	8.00	*	0.12	<0.025	<0.10	0.40	14.0
GD 3	9/30/2014	20	8.11	6.69	25.06	<0.10	<0.025	<0.10	0.32	19.0
GD 3	11/19/2014	18	8.36	10.88	9.30	<0.10	<0.025	<0.10	0.26	15.0
GD 3	3/23/2015	13	8.32	7.84	16.50	0.22	<0.025	<0.10	0.34	10.0
GD 3	4/22/2015	26	7.86	6.74	20.60	0.18	0.079	<0.10	0.36	21.0
GD 3	9/30/2015	10	7.94	4.91	24.90	0.10	<0.025	0.13	0.74	11.5
GD 3	11/19/2015	40	7.61	7.74	16.00	0.25	<0.025	0.10	<0.25	22.0
GD 3	3/15/2016	26	8.04	8.62	18.70	0.42	0.071	<0.10	<0.25	11.7
GD 3	6/29/2016	6	7.84	2.78	29.94	<0.10	0.088	<0.10	<0.25	10.7
GD 3	8/9/2016	8	7.98	5.09	30.01	<0.10	<0.025	<0.10	0.39	10.0
GD 3	12/7/2016	5.9	7.91	10.55	12.00	<0.10	<0.025	<0.10	0.36	8.1
GD 3	3/2/2017	14	8.21	5.01	14.35	0.24	<0.025	0.14	0.65	15.6
GD 3	7/5/2017	11.2	7.48	6.23	27.3	<0.10	<0.025	<0.10	0.56	14.4
GD 3	8/16/2017	7.4	8.01	6.24	28.8	<0.10	<0.025	<0.10	0.39	8.5
GD 3	10/25/2017	8.9	7.54	7.25	19.1	<0.10	<0.025	<0.10	0.39	13.6
GD 3	3/28/2018	9.1	8.06	9.34	16.6	0.241	<0.025	<0.10	<0.25	10.8
GD 3	6/29/2018	12.9	7.68	5.63	27.3	<0.10	<0.025	<0.10	0.511	12.7
GD 3	8/2/2018	13.4	7.69	5.72	26.6	<0.10	<0.025	<0.10	0.569	20.8
GD 3	12/10/2018	41.4	7.40	11.09	6.8	<0.10	<0.025	0.128	0.519	31.3
GD 3	4/15/2019	15.3	7.71	8.02	19.9	0.233	<0.025	<0.10	<0.250	14.7
GD 3	6/12/2019	9.6	7.24	8.31	27.3	<0.10	<0.025	<0.10	<0.250	13.0
GD 3	8/27/2019	202.8	7.18	8.33	28.8	<0.10	<0.025	0.159	0.434	6.5
GD 3	10/29/2019	26.2	7.84	9.63	17.2	<0.10	<0.025	<0.10	0.453	13.0
GD 3	3/30/2020	17.4	7.58	8.83	18.8	0.216	<0.025	<0.10	0.281	18.0
GD 3	6/16/2020	11.6	8.03	8.20	27.5	<0.100	<0.030	<0.100	0.363	9.5

NTU - Nephelometric Turbidity Units

* - unknown reading due to equipment malfunction

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.20 - ANALYTICAL DATA - SME 3

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 3	3/13/2013	17	7.84	7.44	11.30	0.20	0.038	<0.10	0.69	15.0
SME 3	5/20/2013	19	8.11	6.09	23.60	0.17	0.028	<0.10	0.69	19.0
SME 3	9/23/2013	15		5.32	26.50	<0.10	0.029	<0.10	0.53	13.0
SME 3	12/10/2013	48	7.69	8.85	9.60	<0.10	0.086	<0.10	0.62	20.0
SME 3	2/6/2014	83	7.09	10.62	6.30	0.25	<0.025	<0.10	0.69	33.0
SME 3	6/26/2014	50	8.04	7.03	*	<0.10	0.047	<0.10	0.53	30.0
SME 3	9/30/2014	17	8.08	5.98	25.33	<0.10	<0.025	<0.10	0.66	18.0
SME 3	11/19/2014	22	8.30	10.40	9.30	0.12	0.035	<0.10	<0.25	19.0
SME 3	3/23/2015	25	8.13	7.72	21.20	0.24	0.026	<0.10	0.46	16.0
SME 3	4/22/2015	12	7.76	6.70	21.80	0.15	<0.025	<0.10	0.45	14.0
SME 3	9/30/2015	18	7.96	6.19	25.60	0.13	<0.025	0.13	0.42	24.4
SME 3	11/19/2015	65	7.56	7.44	15.80	0.25	0.032	<0.10	<0.25	37.8
SME 3	3/15/2016	68	8.35	7.51	19.20	0.30	<0.025	<0.10	<0.25	78.8
SME 3	6/29/2016	18	7.80	2.56	30.16	<0.10	0.062	<0.10	0.37	15.3
SME 3	8/9/2016	15	7.52	3.43	29.53	<0.10	<0.025	<0.10	0.56	10.8
SME 3	12/7/2016	8.5	7.90	10.91	11.85	<0.10	<0.025	0.15	1.78	9.4
SME 3	3/2/2017	14.6	7.95	4.60	13.64	0.27	<0.025	<0.10	0.73	17.0
SME 3	7/5/2017	12.5	7.54	5.88	27.3	<0.10	0.039	<0.10	0.63	16.3
SME 3	8/16/2017	11.5	7.86	5.00	28.1	<0.10	0.07	<0.10	0.45	18.5
SME 3	10/25/2017	15.3	7.42	8.23	19.4	<0.10	0.053	0.11	0.38	49.7
SME 3	3/28/2018	8.9	7.98	9.44	17.4	0.220	<0.025	<0.10	<0.25	11.2
SME 3	6/29/2018	15.8	7.53	5.39	26.9	<0.10	<0.025	<0.10	0.800	115.0
SME 3	8/2/2018	30.0	7.59	5.66	26.4	<0.10	<0.025	0.11	0.981	56.0
SME 3	12/10/2018	33.1	7.21	10.68	7.0	<0.10	<0.025	0.127	0.433	27.1
SME 3	4/15/2019	552.6	7.78	7.65	19.7	0.234	<0.025	0.285	0.271	371
SME 3	6/12/2019	7.8	7.48	6.87	27.1	<0.10	<0.025	<0.10	<0.250	10.7
SME 3	8/27/2019	55.3	7.91	8.41	29.2	<0.10	<0.025	0.149	0.389	7.0
SME 3	10/29/2019	22.4	7.77	8.44	17.2	<0.10	<0.025	<0.10	0.390	15.4
SME 3	3/30/2020	14.4	7.51	8.91	18.8	0.239	<0.025	<0.10	0.657	18.2
SME 3	6/16/2020	9.2	8.06	7.95	27.1	<0.100	<0.030	0.102	0.466	10.1

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - unknown reading due to equipment malfunction

TABLE B.21 - ANALYTICAL DATA - HB 3**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
HB 3	3/12/2013	33	7.54	9.48	13.90	0.19	0.081	<0.10	0.83	49.0
HB 3	5/20/2013	15	8.21	6.82	27.80	0.17	<0.025	<0.10	0.60	17.0
HB 3	9/23/2013	21	8.02	4.89	25.70	<0.10	0.037	<0.10	0.60	19.0
HB 3	12/10/2013	48	7.90	8.65	10.10	<0.10	0.140	0.15	0.62	20.0
HB 3	2/6/2014	32	7.22	12.24	5.90	0.48	0.030	<0.10	0.37	13.0
HB 3	6/26/2014	12	8.20	7.12	*	<0.10	<0.025	<0.10	0.37	12.0
HB 3	9/30/2014	30	8.05	6.01	24.78	<0.10	<0.025	<0.10	0.48	30.0
HB 3	11/19/2014	56	7.85	8.83	8.80	0.11	0.098	0.12	0.44	51.0
HB 3	3/23/2015	27	8.21	8.40	24.20	0.26	<0.025	<0.10	0.46	35.0
HB 3	4/22/2015	25	7.91	8.36	21.90	0.20	<0.025	<0.10	0.66	22.0
HB 3	9/30/2015	22	7.89	5.05	25.70	<0.10	<0.025	<0.10	0.91	23.0
HB 3	11/19/2015	32	7.83	7.37	17.40	0.38	0.045	<0.10	<0.25	30.2
HB 3	3/15/2016	29	8.52	7.97	19.10	0.30	0.087	<0.10	<0.25	23.8
HB 3	6/29/2016	17	8.02	2.77	30.61	<0.10	<0.025	<0.10	0.51	20.9
HB 3	8/9/2016	11	7.91	4.31	30.19	<0.10	<0.025	<0.10	0.70	14.3
HB 3	12/7/2016	16	7.93	8.44	12.81	0.11	<0.025	0.13	0.73	17.0
HB 3	3/2/2017	50.0	7.75	3.90	14.33	0.33	<0.025	0.12	0.97	57.1
HB 3	7/5/2017	23	7.29	5.36	27.00	<0.10	<0.025	<0.10	0.81	28.5
HB 3	8/16/2017	13.7	7.35	5.04	27.00	<0.10	<0.025	<0.10	0.76	12.7
HB 3	10/25/2017	11.7	6.64	9.93	18.5	<0.10	<0.025	<0.10	0.32	20.4
HB 3	3/28/2018	13.2	7.99	9.47	17.6	0.359	<0.025	<0.10	<0.25	20.2
HB 3	6/29/2018	14.6	7.67	5.55	26.0	<0.10	<0.025	<0.10	0.464	18.2
HB 3	8/2/2018	28.3	7.40	5.64	25.1	<0.10	<0.025	<0.10	0.952	35.3
HB 3	12/10/2018	24.8	7.55	10.98	7.9	0.363	<0.025	0.141	0.426	27.6
HB 3	4/15/2019	22.4	7.73	8.27	19.6	0.233	<0.025	<0.10	<0.250	35.5
HB 3	6/12/2019	12.4	8.13	6.77	26.6	0.129	<0.025	<0.10	<0.250	52.3
HB 3	8/27/2019	78.1	8.21	8.75	29.1	<0.10	<0.025	0.179	0.634	7.3
HB 3	10/29/2019	28.2	7.82	9.88	18.3	<0.10	<0.025	0.166	0.517	17.6
HB 3	3/30/2020	8.9	7.79	8.91	18.5	0.234	<0.025	<0.10	1.20	18.4
HB 3	6/16/2020	20.4	7.33	7.01	26.3	<0.100	<0.030	<0.100	0.30	14.6

NTU - Nephelometric Turbidity Units

* - unknown reading due to equipment malfunction

mg/L - milligrams per liter

NS - Not Sampled

Appendix III

Laboratory Report No. L1227977, dated June 23, 2020

Laboratory Report No. L1229923, dated June 26, 2020

Laboratory Report No. L123088, dated June 28, 2020

S&ME - Huntsville

Sample Delivery Group: L1227977
Samples Received: 06/11/2020
Project Number: 4482-16-056
Description: Gadsden MS4

Report To: Ms. Emily Kennedy
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Entire Report Reviewed By:



Craig Cothron
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	6
Sr: Sample Results	7
AT 5 L1227977-01	7
GD 8 L1227977-02	8
RC 2 L1227977-03	9
SS 13 L1227977-04	10
SS 14 L1227977-05	11
GD 12 L1227977-06	12
CO 14 L1227977-07	13
SME2 L1227977-08	14
GD 6 L1227977-09	15
CO 15 L1227977-10	16
SME 4 L1227977-11	17
Qc: Quality Control Summary	18
Gravimetric Analysis by Method 2540 D-2011	18
Wet Chemistry by Method 351.2	20
Wet Chemistry by Method 353.2	22
Wet Chemistry by Method 365.4	23
Wet Chemistry by Method 4500P E-2011	25
Gl: Glossary of Terms	26
Al: Accreditations & Locations	27
Sc: Sample Chain of Custody	28



SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



AT 5 L1227977-01 WW

				Collected by E. Kennedy	Collected date/time 06/10/20 12:35	Received date/time 06/11/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1492193	1	06/13/20 14:58	06/13/20 15:55	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1495092	1	06/18/20 16:14	06/22/20 00:00	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1492690	1	06/16/20 22:15	06/16/20 22:15	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1495930	1	06/18/20 16:14	06/19/20 19:03	JER	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1491149	1	06/12/20 08:48	06/12/20 08:48	JIC	Mt. Juliet, TN

GD 8 L1227977-02 WW

				Collected by E. Kennedy	Collected date/time 06/10/20 12:22	Received date/time 06/11/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1491998	1	06/13/20 08:45	06/13/20 09:27	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1495092	1	06/18/20 16:14	06/21/20 23:54	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1492690	1	06/16/20 22:17	06/16/20 22:17	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1495930	1	06/18/20 16:14	06/19/20 18:12	JER	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1491149	1	06/12/20 08:48	06/12/20 08:48	JIC	Mt. Juliet, TN

RC 2 L1227977-03 WW

				Collected by E. Kennedy	Collected date/time 06/10/20 12:04	Received date/time 06/11/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1491998	1	06/13/20 08:45	06/13/20 09:27	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1495100	1	06/18/20 16:15	06/19/20 17:16	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1492690	1	06/16/20 22:18	06/16/20 22:18	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1495757	1	06/18/20 16:15	06/19/20 13:03	JER	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1491149	1	06/12/20 08:48	06/12/20 08:48	JIC	Mt. Juliet, TN

SS 13 L1227977-04 WW

				Collected by E. Kennedy	Collected date/time 06/10/20 11:20	Received date/time 06/11/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1491998	1	06/13/20 08:45	06/13/20 09:27	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1495100	1	06/18/20 16:15	06/19/20 17:18	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1492690	1	06/16/20 22:22	06/16/20 22:22	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1495757	1	06/18/20 16:15	06/19/20 13:06	JER	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1491149	1	06/12/20 08:49	06/12/20 08:49	JIC	Mt. Juliet, TN

SS 14 L1227977-05 WW

				Collected by E. Kennedy	Collected date/time 06/10/20 11:33	Received date/time 06/11/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1491998	1	06/13/20 08:45	06/13/20 09:27	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1495100	1	06/18/20 16:15	06/19/20 17:20	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1492690	1	06/16/20 22:27	06/16/20 22:27	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1495757	1	06/18/20 16:15	06/19/20 13:07	JER	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1491149	1	06/12/20 08:49	06/12/20 08:49	JIC	Mt. Juliet, TN



GD 12 L1227977-06 WW

				Collected by	Collected date/time	Received date/time
				E. Kennedy	06/10/20 11:00	06/11/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1492193	1	06/13/20 14:58	06/13/20 15:55	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1495100	1	06/18/20 16:15	06/19/20 17:22	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1492690	1	06/16/20 22:28	06/16/20 22:28	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1495757	1	06/18/20 16:15	06/19/20 13:08	JER	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1491149	1	06/12/20 08:50	06/12/20 08:50	JIC	Mt. Juliet, TN

CO 14 L1227977-07 WW

				Collected by	Collected date/time	Received date/time
				E. Kennedy	06/10/20 10:46	06/11/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1492193	1	06/13/20 14:58	06/13/20 15:55	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1495100	1	06/18/20 16:15	06/19/20 17:24	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1492690	1	06/16/20 22:30	06/16/20 22:30	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1495757	1	06/18/20 16:15	06/19/20 13:12	JER	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1491149	1	06/12/20 08:50	06/12/20 08:50	JIC	Mt. Juliet, TN

SME2 L1227977-08 WW

				Collected by	Collected date/time	Received date/time
				E. Kennedy	06/10/20 10:21	06/11/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1492193	1	06/13/20 14:58	06/13/20 15:55	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1495100	1	06/18/20 16:15	06/19/20 17:28	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1492690	1	06/16/20 22:31	06/16/20 22:31	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1495757	1	06/18/20 16:15	06/19/20 13:16	JER	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1491149	1	06/12/20 08:50	06/12/20 08:50	JIC	Mt. Juliet, TN

GD 6 L1227977-09 WW

				Collected by	Collected date/time	Received date/time
				E. Kennedy	06/10/20 10:15	06/11/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1492193	1	06/13/20 14:58	06/13/20 15:55	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1495100	1	06/18/20 16:15	06/19/20 17:29	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1492690	1	06/16/20 22:32	06/16/20 22:32	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1495757	1	06/18/20 16:15	06/19/20 13:17	JER	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1491149	1	06/12/20 08:51	06/12/20 08:51	JIC	Mt. Juliet, TN

CO 15 L1227977-10 WW

				Collected by	Collected date/time	Received date/time
				E. Kennedy	06/10/20 09:45	06/11/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1492193	1	06/13/20 14:58	06/13/20 15:55	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1495100	1	06/18/20 16:15	06/19/20 17:30	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1492690	1	06/16/20 22:33	06/16/20 22:33	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1495757	1	06/18/20 16:15	06/19/20 13:19	JER	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1491149	1	06/12/20 08:51	06/12/20 08:51	JIC	Mt. Juliet, TN

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



SME 4 L1227977-11 WW

Collected by
E. KennedyCollected date/time
06/10/20 12:00Received date/time
06/11/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1492193	1	06/13/20 14:58	06/13/20 15:55	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1495100	1	06/18/20 16:15	06/19/20 17:31	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1492690	1	06/16/20 22:35	06/16/20 22:35	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1495757	1	06/18/20 16:15	06/19/20 13:20	JER	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1491149	1	06/12/20 08:51	06/12/20 08:51	JIC	Mt. Juliet, TN





All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Craig Cothron
Project Manager

⁴Cn

⁹Sc



Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	22.8		5.00	1	06/13/2020 15:55	WG1492193

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	06/22/2020 00:00	WG1495092

Wet Chemistry by Method 353.2

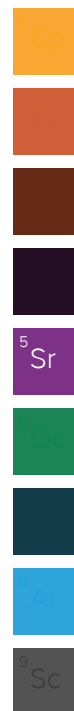
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.825		0.100	1	06/16/2020 22:15	WG1492690

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	0.243	B	0.100	1	06/19/2020 19:03	WG1495930

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	0.248		0.0300	1	06/12/2020 08:48	WG1491149





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	8.00		2.50	1	06/13/2020 09:27	WG1491998

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	06/21/2020 23:54	WG1495092

Wet Chemistry by Method 353.2

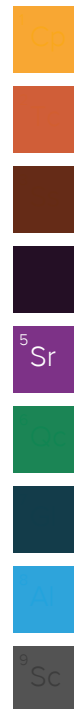
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.211		0.100	1	06/16/2020 22:17	WG1492690

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND	J6	0.100	1	06/19/2020 18:12	WG1495930

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	06/12/2020 08:48	WG1491149





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	10.8		5.00	1	06/13/2020 09:27	WG1491998

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.330		0.250	1	06/19/2020 17:16	WG1495100

Wet Chemistry by Method 353.2

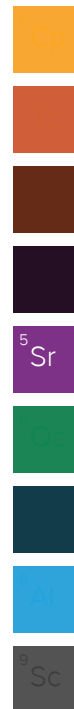
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.210		0.100	1	06/16/2020 22:18	WG1492690

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	06/19/2020 13:03	WG1495757

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	06/12/2020 08:48	WG1491149





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	21.2		5.00	1	06/13/2020 09:27	WG1491998

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.492		0.250	1	06/19/2020 17:18	WG1495100

Wet Chemistry by Method 353.2

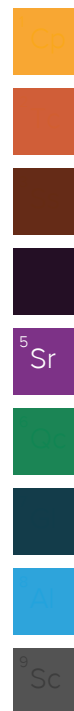
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	06/16/2020 22:22	WG1492690

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	06/19/2020 13:06	WG1495757

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	06/12/2020 08:49	WG1491149





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	40.4		5.00	1	06/13/2020 09:27	WG1491998

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.897		0.250	1	06/19/2020 17:20	WG1495100

Wet Chemistry by Method 353.2

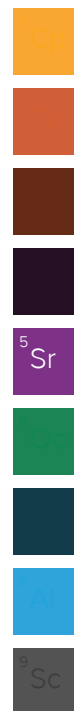
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.246		0.100	1	06/16/2020 22:27	WG1492690

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	0.128	B	0.100	1	06/19/2020 13:07	WG1495757

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	0.0780		0.0300	1	06/12/2020 08:49	WG1491149





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	11.4		5.00	1	06/13/2020 15:55	WG1492193

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.438		0.250	1	06/19/2020 17:22	WG1495100

Wet Chemistry by Method 353.2

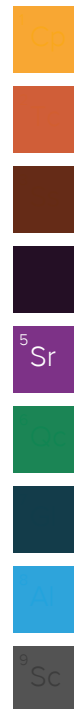
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	06/16/2020 22:28	WG1492690

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND	J6	0.100	1	06/19/2020 13:08	WG1495757

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	06/12/2020 08:50	WG1491149





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	5.60		5.00	1	06/13/2020 15:55	WG1492193

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.482		0.250	1	06/19/2020 17:24	WG1495100

Wet Chemistry by Method 353.2

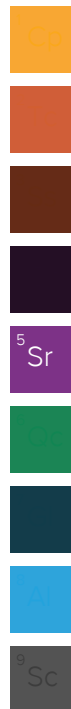
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.244		0.100	1	06/16/2020 22:30	WG1492690

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	06/19/2020 13:12	WG1495757

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	06/12/2020 08:50	WG1491149





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	8.00		5.00	1	06/13/2020 15:55	WG1492193

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.367		0.250	1	06/19/2020 17:28	WG1495100

Wet Chemistry by Method 353.2

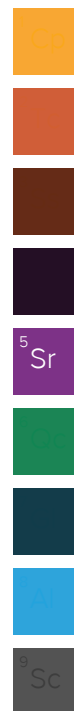
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.117		0.100	1	06/16/2020 22:31	WG1492690

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	06/19/2020 13:16	WG1495757

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	06/12/2020 08:50	WG1491149





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Suspended Solids	10.4		5.00	1	06/13/2020 15:55	WG1492193

Wet Chemistry by Method 351.2

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Kjeldahl Nitrogen, TKN	0.832		0.250	1	06/19/2020 17:29	WG1495100

Wet Chemistry by Method 353.2

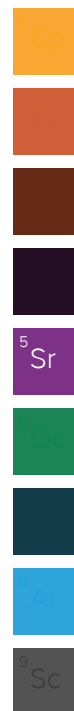
Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Nitrate-Nitrite	0.127		0.100	1	06/16/2020 22:32	WG1492690

Wet Chemistry by Method 365.4

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Phosphorus, Total	ND		0.100	1	06/19/2020 13:17	WG1495757

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Phosphate, Ortho	ND		0.0300	1	06/12/2020 08:51	WG1491149





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	10.4		5.00	1	06/13/2020 15:55	WG1492193

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.456		0.250	1	06/19/2020 17:30	WG1495100

Wet Chemistry by Method 353.2

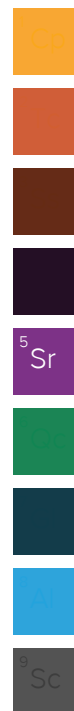
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.148		0.100	1	06/16/2020 22:33	WG1492690

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	06/19/2020 13:19	WG1495757

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	06/12/2020 08:51	WG1491149





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Suspended Solids	20.2		5.00	1	06/13/2020 15:55	WG1492193

Wet Chemistry by Method 351.2

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Kjeldahl Nitrogen, TKN	0.266		0.250	1	06/19/2020 17:31	WG1495100

Wet Chemistry by Method 353.2

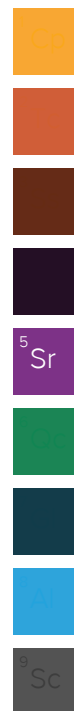
Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Nitrate-Nitrite	0.840		0.100	1	06/16/2020 22:35	WG1492690

Wet Chemistry by Method 365.4

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Phosphorus, Total	0.212	<u>B</u>	0.100	1	06/19/2020 13:20	WG1495757

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Phosphate, Ortho	0.306		0.0300	1	06/12/2020 08:51	WG1491149



Method Blank (MB)

(MB) R3538521-1 06/13/20 09:27

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Suspended Solids	U		0.350	2.50

L1227083-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1227083-01 06/13/20 09:27 • (DUP) R3538521-3 06/13/20 09:27

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	19.5	17.5	1	10.8	P1	5

L1227138-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1227138-01 06/13/20 09:27 • (DUP) R3538521-4 06/13/20 09:27

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	6.60	6.80	1	2.99		5

Laboratory Control Sample (LCS)

(LCS) R3538521-2 06/13/20 09:27

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Suspended Solids	773	680	88.0	85.0-115	



Method Blank (MB)

(MB) R3538387-1 06/13/20 15:55				
	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Suspended Solids	U		0.350	2.50

L1227612-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1227612-02 06/13/20 15:55 • (DUP) R3538387-3 06/13/20 15:55						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	451	434	1	3.87		5

L1227633-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1227633-01 06/13/20 15:55 • (DUP) R3538387-4 06/13/20 15:55						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	388	208	1	60.4	P1	5

Laboratory Control Sample (LCS)

(LCS) R3538387-2 06/13/20 15:55					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Suspended Solids	773	868	112	85.0-115	



Method Blank (MB)

(MB) R3541150-1 06/21/20 23:28				
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1227815-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1227815-01 06/21/20 23:32 • (DUP) R3541150-3 06/21/20 23:34						
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	ND	ND	1	0.000		20

L1227955-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1227955-02 06/21/20 23:51 • (DUP) R3541150-6 06/21/20 23:53						
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	0.720	0.591	1	19.7		20

Laboratory Control Sample (LCS)

(LCS) R3541150-2 06/21/20 23:30					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Kjeldahl Nitrogen, TKN	11.9	12.0	101	75.2-121	

L1227950-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1227950-02 06/21/20 23:47 • (MS) R3541150-4 06/21/20 23:49 • (MSD) R3541150-5 06/21/20 23:50												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Kjeldahl Nitrogen, TKN	5.00	1.08	5.49	6.05	88.2	99.4	1	90.0-110	J6		9.71	20

L1227977-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1227977-02 06/21/20 23:54 • (MS) R3541150-7 06/21/20 23:55							
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Kjeldahl Nitrogen, TKN	5.00	ND	5.14	103	1	90.0-110	



Method Blank (MB)

(MB) R3540796-1 06/19/20 17:14				
	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1227977-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1227977-03 06/19/20 17:16 • (DUP) R3540796-3 06/19/20 17:17						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	0.330	0.320	1	3.08		20

L1227977-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1227977-11 06/19/20 17:31 • (DUP) R3540796-6 06/19/20 17:33						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	0.266	0.280	1	5.13		20

Laboratory Control Sample (LCS)

(LCS) R3540796-2 06/19/20 17:15					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Kjeldahl Nitrogen, TKN	11.9	11.7	98.3	75.2-121	

L1227977-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1227977-06 06/19/20 17:22 • (MS) R3540796-4 06/19/20 17:21 • (MSD) R3540796-5 06/19/20 17:23												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Kjeldahl Nitrogen, TKN	5.00	0.438	5.26	5.05	96.4	92.2	1	90.0-110			4.07	20

L1228170-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1228170-01 06/19/20 17:43 • (MS) R3540796-7 06/19/20 17:45							
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>
Analyte	mg/l	mg/l	mg/l	%		%	
Kjeldahl Nitrogen, TKN	5.00	0.990	5.76	95.4	1	90.0-110	



Method Blank (MB)

(MB) R3539432-1 06/16/20 22:12				
	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1227977-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1227977-01 06/16/20 22:15 • (DUP) R3539432-3 06/16/20 22:16						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Nitrate-Nitrite	0.825	0.819	1	0.730		20

L1227977-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1227977-11 06/16/20 22:35 • (DUP) R3539432-6 06/16/20 22:36						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Nitrate-Nitrite	0.840	0.839	1	0.119		20

Laboratory Control Sample (LCS)

(LCS) R3539432-2 06/16/20 22:13					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Nitrate-Nitrite	4.00	3.99	99.8	90.0-110	

L1227977-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1227977-03 06/16/20 22:18 • (MS) R3539432-4 06/16/20 22:20 • (MSD) R3539432-5 06/16/20 22:21										
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%		
Nitrate-Nitrite	2.50	0.210	2.80	2.85	104	106	1	90.0-110		
									RPD	RPD Limits
									%	%
									1.77	20

L1228001-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1228001-03 06/16/20 22:44 • (MS) R3539432-7 06/16/20 22:45							
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>
Analyte	mg/l	mg/l	mg/l	%		%	
Nitrate-Nitrite	2.50	0.213	2.84	105	1	90.0-110	



Method Blank (MB)

(MB) R3540727-1 06/19/20 13:01				
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphorus,Total	0.0367	⬇	0.0350	0.100

L1227977-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1227977-03 06/19/20 13:03 • (DUP) R3540727-3 06/19/20 13:05						
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	ND	ND	1	0.000		20

L1227977-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1227977-11 06/19/20 13:20 • (DUP) R3540727-6 06/19/20 13:21						
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	0.212	0.202	1	4.83		20

Laboratory Control Sample (LCS)

(LCS) R3540727-2 06/19/20 13:02					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Phosphorus,Total	1.97	1.81	92.1	82.4-117	

L1227977-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1227977-06 06/19/20 13:08 • (MS) R3540727-4 06/19/20 13:10 • (MSD) R3540727-5 06/19/20 13:11												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphorus,Total	2.50	ND	2.22	2.25	86.3	87.5	1	90.0-110	J6	J6	1.34	20

L1228170-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1228170-01 06/19/20 15:09 • (MS) R3540727-7 06/19/20 15:10							
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Phosphorus,Total	2.50	1.63	4.12	99.6	1	90.0-110	



Method Blank (MB)

(MB) R3540800-1 06/19/20 17:36				
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphorus,Total	0.0621	⬇	0.0350	0.100

L1227815-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1227815-01 06/19/20 17:40 • (DUP) R3540800-3 06/19/20 17:41						
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	ND	ND	1	0.000		20

L1227955-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1227955-02 06/19/20 17:59 • (DUP) R3540800-6 06/19/20 18:01						
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	2.07	2.11	1	1.91		20

Laboratory Control Sample (LCS)

(LCS) R3540800-2 06/19/20 17:38					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Phosphorus,Total	1.97	1.82	92.6	82.4-117	

L1227950-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1227950-02 06/19/20 17:56 • (MS) R3540800-4 06/19/20 17:57 • (MSD) R3540800-5 06/19/20 17:58												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphorus,Total	2.50	2.77	5.03	5.03	90.4	90.4	1	90.0-110	E	E	0.000	20

L1227977-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1227977-02 06/19/20 18:12 • (MS) R3540800-7 06/19/20 18:13							
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Phosphorus,Total	2.50	ND	2.29	89.3	1	90.0-110	J6



Method Blank (MB)

(MB) R3537830-1 06/12/20 08:47				
	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1227977-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1227977-02 06/12/20 08:48 • (DUP) R3537830-5 06/12/20 08:48						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphate,Ortho	ND	ND	1	0.000		20

L1227977-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1227977-11 06/12/20 08:51 • (DUP) R3537830-6 06/12/20 08:52						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphate,Ortho	0.306	0.310	1	1.30		20

Laboratory Control Sample (LCS)

(LCS) R3537830-2 06/12/20 08:47					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Phosphate,Ortho	0.245	0.243	99.4	85.0-115	

L1227977-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1227977-01 06/12/20 08:48 • (MS) R3537830-3 06/12/20 08:48 • (MSD) R3537830-4 06/12/20 08:48												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphate,Ortho	0.500	0.248	0.770	0.758	104	102	1	80.0-120			1.57	20





Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

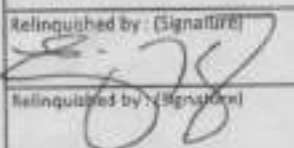
A2LA – ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



S&ME - Huntsville 360 D Quality Circle NW Suite 450 Huntsville, AL 35806 Report to: Ms. Emily Kennedy		Land Accounts Payable 360 D Quality Circle NW Suite 450 Huntsville, AL 35806 Email To: ekennedy@smelinc.com		Pres Chk		Analysis / Container / Preservative										Chain of Custody Page <u>1</u> of <u>1</u>	
Project Description: Gadsden MS4		City/State Collected: Gadsden, AL		Please Circle: PT MT CT ET												 12005 Lebanon Rd Memphis, TN 37127 Phone: 615-758-0000 Phone: 800-767-5000 Fax: 615-758-5800	
Phone: 256-837-8882 Fax: 256-837-6931		Client Project # 4482-16-056		Lab Project # QOREHAL-448216056												SDG # E122	
Collected by (print): E. Kennedy		Site/Facility ID #		P.O. #												Account: QOREHAL Template: T114559 Prelogin: P765178 PWT: 034 - Craig Cochran PB: LC 3128	
Collected by (signature): 		Rush? (Lab MUST Be Notified) ☐ Same Day ☐ Five Day ☐ Next Day ☐ 5 Day (Rad Only) ☐ Two Day ☐ 10 Day (Rad Only) ☐ Three Day		Quote #												Shipped Via FedEX Ground	
Immediately Packed on Jan. N		Date Results Needed		No. of Cans												Remarks Sample # (Lab only)	
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time												
AT 5	Grab	WW	3'	6/10/20	1235	4	X	X	X	X							01
GD 8		WW			1222	4	X	X	X	X							02
RC 2		WW			1204	4	X	X	X	X							03
SS 13		WW			1120	4	X	X	X	X							04
SS 14		WW			1133	4	X	X	X	X							05
GD 12		WW			1100	4	X	X	X	X							06
CO 14		WW	Flow		1046	4	X	X	X	X							07
SME2		WW	3'		1021	4	X	X	X	X							08
GD 6		WW	3'		1015	4	X	X	X	X							09
CO 15		WW	13"		0945	4	X	X	X	X							10
* Matrix: SS - Soil AIE - Air E - Filter GW - Groundwater B - Bioassay WW - Wastewater DW - Drinking Water OT - Other		Remarks:		Samples returned via: ☐ UPS ☐ FedEx ☐ Courier		Tracking # 1663 5761 2460		pH Temp Flow Other		Sample Receipt - Inspector CUC Seal/Protect/Intact: ☒ Y ☐ N CUC Signed/Accurate: ☒ Y ☐ N Bottles Arrive Intact: ☒ Y ☐ N Correct bottles used: ☒ Y ☐ N Sufficient volume sent: ☒ Y ☐ N If Applicable VOA Zero headspace: ☒ Y ☐ N Preservation Correct/Checked: ☒ Y ☐ N H2S Screen <0.5 mg/hr: ☒ Y ☐ N							
Relinquished by: (Signature) 		Date: 6/10/20 Time: 1310		Received by: (Signature) FedEX		Trip Blank Received: Yes ☒ No ☐		HCL / MACH TBR		if preservation required by Login: Date/Time							
Relinquished by: (Signature)		Date: Time:		Received by: (Signature)		Temp AS °C 11-32.9		Batches Received: 44		Hold: Condition: NCE / OK							
Relinquished by: (Signature)		Date: Time:		Received for lab by: (Signature) ISA		Date: 6-11 Time: 0900											

S&ME - Huntsville

Sample Delivery Group: L1229923
Samples Received: 06/17/2020
Project Number: 4482-16-056
Description: Gadsden MS4

Report To: Ms. Emily Kennedy
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Entire Report Reviewed By:



Craig Cothron
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	5
Sr: Sample Results	6
GD 9 L1229923-01	6
GD 7 L1229923-02	7
GD 5 L1229923-03	8
GD 3 L1229923-04	9
SME3 L1229923-05	10
HB 3 L1229923-06	11
SME 5 L1229923-07	12
Qc: Quality Control Summary	13
Gravimetric Analysis by Method 2540 D-2011	13
Wet Chemistry by Method 351.2	14
Wet Chemistry by Method 353.2	16
Wet Chemistry by Method 365.4	17
Wet Chemistry by Method 4500P E-2011	20
Gl: Glossary of Terms	21
Al: Accreditations & Locations	22
Sc: Sample Chain of Custody	23





GD 9 L1229923-01 WW

				Collected by	Collected date/time	Received date/time
				Grant Williams	06/16/20 11:15	06/17/20 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1497816	1	06/23/20 19:09	06/23/20 19:58	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1497125	1	06/22/20 19:00	06/23/20 18:33	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1494718	1	06/24/20 15:36	06/24/20 15:36	BAM	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1497845	1	06/22/20 19:00	06/23/20 21:31	JER	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1494224	1	06/17/20 15:35	06/17/20 15:35	KEG	Mt. Juliet, TN

GD 7 L1229923-02 WW

				Collected by	Collected date/time	Received date/time
				Grant Williams	06/16/20 11:00	06/17/20 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1497816	1	06/23/20 19:09	06/23/20 19:58	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1497125	1	06/22/20 19:00	06/23/20 18:38	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1494718	1	06/24/20 15:37	06/24/20 15:37	BAM	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1497845	1	06/22/20 19:00	06/23/20 21:36	JER	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1494224	1	06/17/20 15:36	06/17/20 15:36	KEG	Mt. Juliet, TN

GD 5 L1229923-03 WW

				Collected by	Collected date/time	Received date/time
				Grant Williams	06/16/20 10:35	06/17/20 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1497816	1	06/23/20 19:09	06/23/20 19:58	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1497909	1	06/23/20 22:38	06/24/20 22:45	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1494718	1	06/24/20 15:39	06/24/20 15:39	BAM	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1498566	1	06/23/20 22:38	06/25/20 16:28	JER	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1494224	1	06/17/20 15:36	06/17/20 15:36	KEG	Mt. Juliet, TN

GD 3 L1229923-04 WW

				Collected by	Collected date/time	Received date/time
				Grant Williams	06/16/20 10:25	06/17/20 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1497816	1	06/23/20 19:09	06/23/20 19:58	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1497909	1	06/23/20 22:38	06/24/20 22:48	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1494718	1	06/24/20 15:40	06/24/20 15:40	BAM	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1498566	1	06/23/20 22:38	06/25/20 16:30	JER	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1494224	1	06/17/20 15:37	06/17/20 15:37	KEG	Mt. Juliet, TN

SME3 L1229923-05 WW

				Collected by	Collected date/time	Received date/time
				Grant Williams	06/16/20 10:15	06/17/20 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1497816	1	06/23/20 19:09	06/23/20 19:58	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1497909	1	06/23/20 22:38	06/24/20 22:49	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1494718	1	06/24/20 15:41	06/24/20 15:41	BAM	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1498566	1	06/23/20 22:38	06/25/20 16:32	JER	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1494224	1	06/17/20 15:37	06/17/20 15:37	KEG	Mt. Juliet, TN



HB 3 L1229923-06 WW

Collected by Grant Williams
Collected date/time 06/16/20 10:00
Received date/time 06/17/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1497816	1	06/23/20 19:09	06/23/20 19:58	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1497909	1	06/23/20 22:38	06/24/20 22:53	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1494718	1	06/24/20 15:42	06/24/20 15:42	BAM	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1498566	1	06/23/20 22:38	06/25/20 16:35	JER	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1494224	1	06/17/20 15:37	06/17/20 15:37	KEG	Mt. Juliet, TN

SME 5 L1229923-07 WW

Collected by Grant Williams
Collected date/time 06/16/20 10:45
Received date/time 06/17/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1497816	1	06/23/20 19:09	06/23/20 19:58	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1497909	1	06/23/20 22:38	06/24/20 22:57	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1494718	1	06/24/20 15:45	06/24/20 15:45	BAM	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1498566	1	06/23/20 22:38	06/25/20 16:37	JER	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1494224	1	06/17/20 15:38	06/17/20 15:38	KEG	Mt. Juliet, TN





All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Craig Cothron
Project Manager

⁴Cn

⁹Sc



Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	11.5		6.25	1	06/23/2020 19:58	WG1497816

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.352		0.250	1	06/23/2020 18:33	WG1497125

Wet Chemistry by Method 353.2

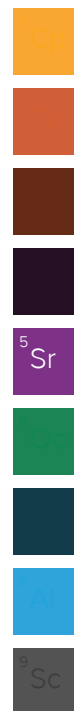
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	06/24/2020 15:36	WG1494718

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	06/23/2020 21:31	WG1497845

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	06/17/2020 15:35	WG1494224





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	8.29		3.58	1	06/23/2020 19:58	WG1497816

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.322	J5	0.250	1	06/23/2020 18:38	WG1497125

Wet Chemistry by Method 353.2

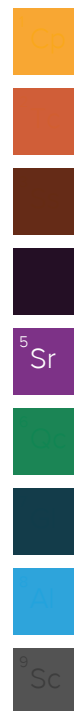
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	06/24/2020 15:37	WG1494718

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	06/23/2020 21:36	WG1497845

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	06/17/2020 15:36	WG1494224





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	7.40		5.00	1	06/23/2020 19:58	WG1497816

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.561	P1	0.250	1	06/24/2020 22:45	WG1497909

Wet Chemistry by Method 353.2

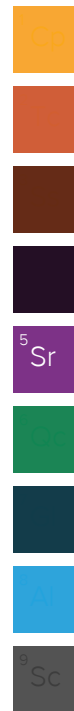
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	06/24/2020 15:39	WG1494718

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND	P1	0.100	1	06/25/2020 16:28	WG1498566

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	06/17/2020 15:36	WG1494224





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	9.47		3.33	1	06/23/2020 19:58	WG1497816

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.363		0.250	1	06/24/2020 22:48	WG1497909

Wet Chemistry by Method 353.2

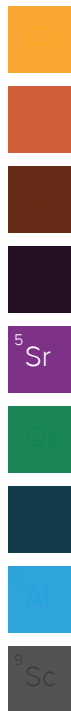
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	06/24/2020 15:40	WG1494718

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	06/25/2020 16:30	WG1498566

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	06/17/2020 15:37	WG1494224





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	10.1		3.33	1	06/23/2020 19:58	WG1497816

Wet Chemistry by Method 351.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.466	J5	0.250	1	06/24/2020 22:49	WG1497909

Wet Chemistry by Method 353.2

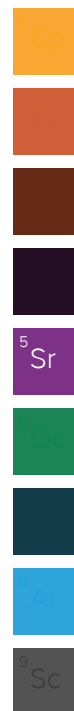
Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	06/24/2020 15:41	WG1494718

Wet Chemistry by Method 365.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphorus, Total	0.102	B	0.100	1	06/25/2020 16:32	WG1498566

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	06/17/2020 15:37	WG1494224





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Suspended Solids	14.6		5.00	1	06/23/2020 19:58	WG1497816

Wet Chemistry by Method 351.2

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Kjeldahl Nitrogen, TKN	0.299		0.250	1	06/24/2020 22:53	WG1497909

Wet Chemistry by Method 353.2

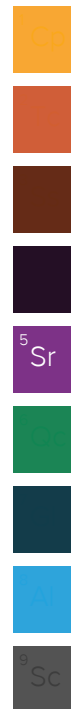
Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Nitrate-Nitrite	ND		0.100	1	06/24/2020 15:42	WG1494718

Wet Chemistry by Method 365.4

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Phosphorus, Total	ND		0.100	1	06/25/2020 16:35	WG1498566

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Phosphate, Ortho	ND		0.0300	1	06/17/2020 15:37	WG1494224





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	12.3		3.33	1	06/23/2020 19:58	WG1497816

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.382	P1	0.250	1	06/24/2020 22:57	WG1497909

Wet Chemistry by Method 353.2

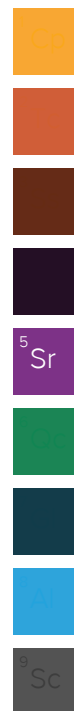
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	06/24/2020 15:45	WG1494718

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	06/25/2020 16:37	WG1498566

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	06/17/2020 15:38	WG1494224



Method Blank (MB)

(MB) R3542573-1 06/23/20 19:58				
	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Suspended Solids	U		0.350	2.50

L1229919-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1229919-01 06/23/20 19:58 • (DUP) R3542573-3 06/23/20 19:58						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	2970	2910	1	2.04		5

L1230125-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1230125-01 06/23/20 19:58 • (DUP) R3542573-4 06/23/20 19:58						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	635	620	1	2.39		5

Laboratory Control Sample (LCS)

(LCS) R3542573-2 06/23/20 19:58					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Suspended Solids	773	760	98.3	85.0-115	





Method Blank (MB)

(MB) R3542074-1 06/23/20 18:22

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1229923-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1229923-01 06/23/20 18:33 • (DUP) R3542074-3 06/23/20 18:34

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	0.352	0.387	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3542074-2 06/23/20 18:23

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Kjeldahl Nitrogen, TKN	11.9	13.7	115	75.2-121	

L1229923-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1229923-02 06/23/20 18:38 • (MS) R3542074-4 06/23/20 18:39 • (MSD) R3542074-5 06/23/20 18:41

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Kjeldahl Nitrogen, TKN	5.00	0.322	6.42	6.47	128	129	1	90.0-110	J5	J5	0.776	20





Method Blank (MB)

(MB) R3542636-1 06/24/20 22:41

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1229923-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1229923-03 06/24/20 22:45 • (DUP) R3542636-3 06/24/20 22:46

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	0.561	0.363	1	42.9	P1	20

L1229923-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1229923-07 06/24/20 22:57 • (DUP) R3542636-6 06/24/20 22:59

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	0.382	0.303	1	23.1	P1	20

Laboratory Control Sample (LCS)

(LCS) R3542636-2 06/24/20 22:42

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Kjeldahl Nitrogen, TKN	11.9	13.0	109	75.2-121	

L1229923-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1229923-05 06/24/20 22:49 • (MS) R3542636-4 06/24/20 22:51 • (MSD) R3542636-5 06/24/20 22:52

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Kjeldahl Nitrogen, TKN	5.00	0.466	6.10	5.48	113	100	1	90.0-110	J5		10.7	20

L1230099-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1230099-02 06/24/20 23:03 • (MS) R3542636-7 06/24/20 23:04

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Kjeldahl Nitrogen, TKN	5.00	1.29	6.65	107	1	90.0-110	





Method Blank (MB)

(MB) R3542571-1 06/24/20 15:19

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1229439-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1229439-01 06/24/20 15:21 • (DUP) R3542571-3 06/24/20 15:22

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Nitrate-Nitrite	0.455	0.449	1	1.33		20

L1229923-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1229923-06 06/24/20 15:42 • (DUP) R3542571-6 06/24/20 15:44

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Nitrate-Nitrite	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3542571-2 06/24/20 15:20

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Nitrate-Nitrite	5.00	4.14	104	90.0-110	

L1229891-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1229891-01 06/24/20 15:27 • (MS) R3542571-4 06/24/20 15:29 • (MSD) R3542571-5 06/24/20 15:34

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Nitrate-Nitrite	2.50	ND	2.74	2.75	107	108	1	90.0-110			0.364	20

L1229923-07 Original Sample (OS) • Matrix Spike (MS)

(OS) L1229923-07 06/24/20 15:45 • (MS) R3542571-7 06/24/20 15:50

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Nitrate-Nitrite	2.50	ND	2.74	110	1	90.0-110	





Method Blank (MB)

(MB) R3542096-1 06/23/20 21:21

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphorus,Total	U		0.0350	0.100

L1229923-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1229923-01 06/23/20 21:31 • (DUP) R3542096-3 06/23/20 21:32

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3542096-2 06/23/20 21:22

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Phosphorus,Total	1.97	2.10	107	82.4-117	

L1229923-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1229923-02 06/23/20 21:36 • (MS) R3542096-4 06/23/20 21:37 • (MSD) R3542096-5 06/23/20 21:39

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphorus,Total	2.50	ND	2.67	2.70	103	105	1	90.0-110			1.12	20



Method Blank (MB)

(MB) R3543076-1 06/25/20 16:11				
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphorus,Total	0.0514		0.0350	0.100

L1229923-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1229923-03 06/25/20 16:28 • (DUP) R3543076-3 06/25/20 16:29						
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	ND	0.108	1	56.8	P1	20

L1229923-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1229923-07 06/25/20 16:37 • (DUP) R3543076-6 06/25/20 16:38						
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	ND	ND	1	0.000		20

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3543076-7 06/25/20 16:47						
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte		mg/l		%		%
Phosphorus,Total		3.04	1	0.982		20

Laboratory Control Sample (LCS)

(LCS) R3543076-2 06/25/20 16:12					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Phosphorus,Total	1.97	2.05	104	82.4-117	





L1229923-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1229923-05 06/25/20 16:32 • (MS) R3543076-4 06/25/20 16:33 • (MSD) R3543076-5 06/25/20 16:34

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Phosphorus,Total	2.50	0.102	2.58	2.58	99.1	99.1	1	90.0-110			0.000	20





Method Blank (MB)

(MB) R3539764-1 06/17/20 15:32

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1229923-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1229923-01 06/17/20 15:35 • (DUP) R3539764-5 06/17/20 15:35

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphate,Ortho	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3539764-2 06/17/20 15:33

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Phosphate,Ortho	0.245	0.247	101	85.0-115	

L1229814-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1229814-01 06/17/20 15:33 • (MS) R3539764-3 06/17/20 15:34 • (MSD) R3539764-4 06/17/20 15:34

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphate,Ortho	0.500	ND	0.434	0.439	86.8	87.8	1	80.0-120			1.15	20





Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



* Boat *

Billing information:

Prep
Chk

Analysis / Container / Preservative

Chain of Custody Page of



Pace Analytical*
National Center for Testing & Research

Email To: ekennedy@smiinc.com

City/State: Gadsden
Collected: Gadsden

Lab Project #
OCBEHAL-448216056

Collected by (print): Grant Williams

203

Collected by signature:


Rush? (Lab MUST Be Notified)

Quote: "

Immediately
Packed on ice N Y J

☐ Same Day	☐ Five Day
☐ Next Day	☐ 5 Day (Rad Only)
☐ Two Day	☐ 10-Day (Rad Only)
☐ Three Day	

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	TS	PH	PT 25	TKN /	TSS 1								Shipped Via: FedEx Ground
																		Remarks
RC 14	Core	WW	SFB	G/16	+240	4	1	X	X	X								
SS 5		WW			1200	4	1	X	X	X								
SME 1		WW			1130	1	1	X	X	X								
GD 9		WW			1115	4	1	X	X	X								-01
GD 7		WW			1100	4	1	X	X	X								-02
GD 5		WW			1035	4	1	X	X	X								-03
GD 3		WW			1025	4	1	X	X	X								-04
SME 3		WW			1015	4	1	X	X	X								-05
HB 3		WW			1000	4	1	X	X	X								-06
SME 0	WW			1045	4	1	X	X	X								-07	

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - Waste Water
DW - Drinking Water
OT - Other

Remarks:

pH Temp

From	Other
1	1
2	2
3	3
4	4
5	5
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100	100

Samples returned viz:

Tracking #

477 Enrg SDR

Relinquished by : (Signature)

Date

Time:

Received by: (Signature) _____

Trip Blank Received: Yes / No

COC Seal Present/Intact: NP Y
 COC Signed/Accurate: Y
 Bottles arrive intact: Y
 Correct bottles used: Y
 Sufficient vials sent: Y
 If Applicable
 VOA Zero Headspace: Y
 Preservatives Correct/Checked: Y
RAD SCREEN: <0.5 mSv/hr

Relinquished by: (Signature)

Date

Fluoride:	

Received by: (Signature)

10/2/82	°C	Bottles Received

If preservation required by Login: Date/Time

Relinquished by : (Signature)

Date	

Slaves

Received for lab by: (Sign: turn)

Date: _____ Time: _____

Hold:

Condition

S&ME - Huntsville

Sample Delivery Group: L1230885
Samples Received: 06/17/2020
Project Number: 4482-18-051
Description: MS4 Monitoring

Report To: Ms. Christa Collins
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Entire Report Reviewed By:



Craig Cothron
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	4
Sr: Sample Results	5
RC14 L1230885-01	5
SS5 L1230885-02	6
SME1 L1230885-03	7
Qc: Quality Control Summary	8
Gravimetric Analysis by Method 2540 D-2011	8
Wet Chemistry by Method 351.2	9
Wet Chemistry by Method 353.2	10
Wet Chemistry by Method 365.4	11
Wet Chemistry by Method 4500P E-2011	12
Gl: Glossary of Terms	13
Al: Accreditations & Locations	14
Sc: Sample Chain of Custody	15





RC14 L1230885-01 WW

Collected by
Grant Williams

Collected date/time
06/16/20 12:40

Received date/time
06/17/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1497819	1	06/23/20 21:15	06/23/20 21:57	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1497911	1	06/23/20 21:00	06/26/20 17:12	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1496490	1	06/23/20 19:06	06/23/20 19:06	BAM	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1499901	1	06/23/20 21:00	06/26/20 17:00	JER	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1495648	1	06/19/20 17:04	06/19/20 17:04	KEG	Mt. Juliet, TN

SS5 L1230885-02 WW

Collected by
Grant Williams

Collected date/time
06/16/20 12:00

Received date/time
06/17/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1497819	1	06/23/20 21:15	06/23/20 21:57	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1497911	1	06/23/20 21:00	06/26/20 17:17	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1496490	1	06/23/20 19:10	06/23/20 19:10	BAM	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1499901	1	06/23/20 21:00	06/26/20 17:03	JER	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1495648	1	06/19/20 17:08	06/19/20 17:08	KEG	Mt. Juliet, TN

SME1 L1230885-03 WW

Collected by
Grant Williams

Collected date/time
06/16/20 11:30

Received date/time
06/17/20 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1497819	1	06/23/20 21:15	06/23/20 21:57	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1497911	1	06/23/20 21:00	06/26/20 17:20	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1496490	1	06/23/20 19:11	06/23/20 19:11	BAM	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1499901	1	06/23/20 21:00	06/26/20 17:06	JER	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1495648	1	06/19/20 17:08	06/19/20 17:08	KEG	Mt. Juliet, TN



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Craig Cothron
Project Manager

Sample Delivery Group (SDG) Narrative

Analysis was performed from an improper container for the following samples.

<u>Lab Sample ID</u>	<u>Project Sample ID</u>	<u>Method</u>
L1230885-01	RC14	4500P E-2011



Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	11.4		5.00	1	06/23/2020 21:57	WG1497819

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.560		0.250	1	06/26/2020 17:12	WG1497911

Wet Chemistry by Method 353.2

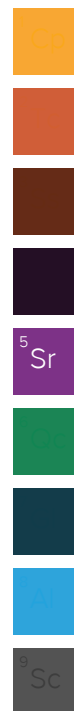
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.141	J5	0.100	1	06/23/2020 19:06	WG1496490

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	06/26/2020 17:00	WG1499901

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND	T8	0.0300	1	06/19/2020 17:04	WG1495648





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	9.67	P1	8.33	1	06/23/2020 21:57	WG1497819

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.534		0.250	1	06/26/2020 17:17	WG1497911

Wet Chemistry by Method 353.2

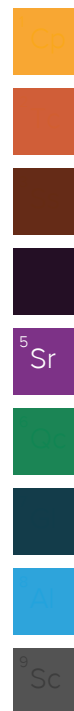
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	06/23/2020 19:10	WG1496490

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	06/26/2020 17:03	WG1499901

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND	T8	0.0300	1	06/19/2020 17:08	WG1495648





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	11.4		5.00	1	06/23/2020 21:57	WG1497819

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.485	J5	0.250	1	06/26/2020 17:20	WG1497911

Wet Chemistry by Method 353.2

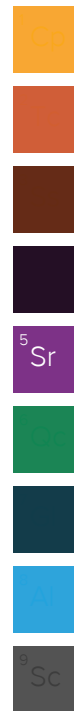
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	06/23/2020 19:11	WG1496490

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	0.129	B	0.100	1	06/26/2020 17:06	WG1499901

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	0.0310	T8	0.0300	1	06/19/2020 17:08	WG1495648





Method Blank (MB)

(MB) R3542598-1 06/23/20 21:57

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Suspended Solids	U		0.350	2.50

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3542598-3 06/23/20 21:57

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	29.0		1	9.01	P1	5

L1230885-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1230885-02 06/23/20 21:57 • (DUP) R3542598-4 06/23/20 21:57

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	9.67	11.3	1	15.8	P1	5

Laboratory Control Sample (LCS)

(LCS) R3542598-2 06/23/20 21:57

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Suspended Solids	773	772	99.9	85.0-115	





Method Blank (MB)

(MB) R3543576-1 06/26/20 16:45

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1230885-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1230885-01 06/26/20 17:12 • (DUP) R3543576-5 06/26/20 17:13

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	0.560	0.608	1	8.22		20

L1230885-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1230885-02 06/26/20 17:17 • (DUP) R3543576-6 06/26/20 17:19

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	0.534	0.560	1	4.75		20

Laboratory Control Sample (LCS)

(LCS) R3543576-2 06/26/20 16:46

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Kjeldahl Nitrogen, TKN	11.9	13.0	109	75.2-121	

L1230410-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1230410-02 06/26/20 18:04 • (MS) R3543576-3 06/26/20 17:09 • (MSD) R3543576-4 06/26/20 17:10

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Kjeldahl Nitrogen, TKN	5.00	0.865	6.64	6.46	116	112	1	90.0-110	J5	J5	2.75	20

L1230885-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1230885-03 06/26/20 17:20 • (MS) R3543576-7 06/26/20 17:21

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Kjeldahl Nitrogen, TKN	5.00	0.485	6.35	117	1	90.0-110	J5





Method Blank (MB)

(MB) R3542063-1 06/23/20 18:51

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1227600-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1227600-03 06/23/20 18:53 • (DUP) R3542063-3 06/23/20 18:55

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Nitrate-Nitrite	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3542063-2 06/23/20 18:52

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Nitrate-Nitrite	4.00	4.27	107	90.0-110	

L1230885-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1230885-01 06/23/20 19:06 • (MS) R3542063-4 06/23/20 19:07 • (MSD) R3542063-5 06/23/20 19:09

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Nitrate-Nitrite	2.50	0.141	3.05	3.08	116	118	1	90.0-110	J5	J5	0.979	20





Method Blank (MB)

(MB) R3543557-1 06/26/20 16:30

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphorus,Total	0.0497	⬇	0.0350	0.100

L1230885-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1230885-01 06/26/20 17:00 • (DUP) R3543557-5 06/26/20 17:02

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	ND	ND	1	0.000		20

L1230885-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1230885-02 06/26/20 17:03 • (DUP) R3543557-6 06/26/20 17:04

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3543557-2 06/26/20 16:31

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Phosphorus,Total	1.97	2.06	105	82.4-117	

L1230410-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1230410-02 06/26/20 16:54 • (MS) R3543557-3 06/26/20 16:55 • (MSD) R3543557-4 06/26/20 16:57

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphorus,Total	2.50	1.39	4.12	4.09	109	108	1	90.0-110			0.731	20

L1230885-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1230885-03 06/26/20 17:06 • (MS) R3543557-7 06/26/20 17:07

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Phosphorus,Total	2.50	0.129	2.69	102	1	90.0-110	



Method Blank (MB)

(MB) R3540766-1 06/19/20 17:02				
	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1230885-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1230885-02 06/19/20 17:08 • (DUP) R3540766-5 06/19/20 17:08					
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u> DUP RPD Limits
Analyte	mg/l	mg/l		%	%
Phosphate,Ortho	ND	ND	1	0.000	20

Laboratory Control Sample (LCS)

(LCS) R3540766-2 06/19/20 17:03					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Phosphate,Ortho	0.245	0.243	99.4	85.0-115	

L1230885-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1230885-01 06/19/20 17:04 • (MS) R3540766-3 06/19/20 17:07 • (MSD) R3540766-4 06/19/20 17:08												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphate,Ortho	0.500	ND	0.431	0.432	86.2	86.4	1	80.0-120			0.232	20





Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Troy Dunlap



Login #: L1230885	Client: QOREHAL	Date: 6/17/20	Evaluated by: Troy Dunlap

Non-Conformance (check applicable items)

Sample Integrity	Chain of Custody Clarification	If Broken Container:
Parameter(s) past holding time	Login Clarification Needed	Insufficient packing material around container
Temperature not in range	Chain of custody is incomplete	Insufficient packing material inside cooler
Improper container type	Please specify Metals requested.	Improper handling by carrier (FedEx / UPS / Courier)
pH not in range.	Please specify TCLP requested.	Sample was frozen
Insufficient sample volume.	Received additional samples not listed on coc.	Container lid not intact
Sample is biphasic.	Sample ids on containers do not match ids on coc	If no Chain of Custody:
Viials received with headspace.	Trip Blank not received.	Received by:
Broken container	Client did not "X" analysis.	Date/Time:
Broken container:	Chain of Custody is missing	Temp./Cont. Rec./pH:
Sufficient sample remains		Carrier:
		Tracking#

Login Comments: Received out of temperature at 11.5°C

Client informed by:	Call	Email	X	Voice Mail	Date: 6/18/20	Time: 2:22

TSR Initials: cc

Client Contact: Christa Lyons

Login Instructions

Run as received.



Monitoring Report Third Quarter 2020
Gadsden Alabama Urbanized Area
Phase II Small MS4
NPDES General Permit ALR040000
Gadsden, Etowah County, Alabama
S&ME Project No. 4482-19-065

PREPARED FOR:

Gadsden-Etowah MS4 Steering Committee

PREPARED BY:

S&ME, Inc.

**360D Quality Circle NW, Ste 450
Huntsville, AL 35806**

December 3, 2020



Table of Contents

1.0	Introduction	1
1.1	NPDES Permit.....	1
1.2	Water Quality Concerns	2
1.3	Monitoring Program	2
2.0	Rainfall Data	2
3.0	Monitoring Event	3
3.1	Monitoring Locations.....	3
3.2	Sampling Procedures	4
3.3	Field Documentation.....	4
3.4	Quality Assurance / Quality Control	5
3.4.1	<i>Sample Containers and Preservation</i>	<i>5</i>
3.4.2	<i>Quality Assurance</i>	<i>6</i>
3.4.3	<i>Sample Shipment.....</i>	<i>6</i>
4.0	Analytical Results	6
5.0	Recordkeeping.....	6
6.0	Certification of the Monitoring Report	7
7.0	Acknowledgement.....	8

List of Tables

Table 1-1 Responsible Official and Authorization Dates	1
Table 1-2: Permit Numbers for MS4 Entities.....	2
Table 2-1 Quarterly Rainfall Data	3
Table 3-1 Monitoring Point Coordinates	3
Table 3-2 Sample Containers and Preservation	5
Table 5-0 Storm Water Steering Committee	6



Appendices

Appendix I

Figure 1 – Gadsden, Alabama Urbanized Area

Figure 2 – MS4 Monitoring Locations Map

Appendix II

Table B.1 – Field Observations

Table B.2 – Analytical Data

Tables B.3 to B.21 – Historical Analytical Data

Appendix III

Laboratory Report No. L1264619, dated September 28, 2020

Laboratory Report No. L1264638, dated September 29, 2020



1.0 Introduction

S&ME, Inc. has prepared this Monitoring Report for the Gadsden, Alabama Urbanized Area Phase II small MS4 in accordance with S&ME Proposal No. 44-1900353, dated September 11, 2019. Authorization date and responsible official for each entity are provided in Table 1.1.

Table 1-1 Responsible Official and Authorization Dates

Name	Entity	Date
Wally Burns, Mayor	City of Southside	May 26, 2020
Tim Graves, County Engineer	Etowah County	April 6, 2020
Sherman Guyton, Mayor	City of Gadsden	October 3, 2019
Larry Means, Mayor	City of Attalla	October 11, 2019
Scott Reeves, Mayor	City of Hokes Bluff	September 20, 2019
Charles Gilchrist, Mayor	City of Glencoe	October 7, 2019
Terry John Calhoun, Mayor	City of Rainbow City	April 20, 2020

1.1 NPDES Permit

The Storm Water Phase II Final Rule issued by the United States Environmental Protection Agency (USEPA) in 1999 requires nationwide coverage of all operators of small MS4s located within the boundaries of an “urbanized area” as defined by the latest decennial Census. Based on the results of the 2010 census, the Bureau of the Census designated The City of Gadsden, Rainbow City, City of Southside, City of Glencoe, City of Hokes Bluff, City of Attalla, and portions of unincorporated Etowah County as the *Gadsden, Alabama Urbanized Area*. A map outlining the approximate boundary of the *Gadsden, Alabama Urbanized Area* is included as **Figure 1** in **Appendix I**. The regulated small municipal separate storm sewer system (MS4) for the urbanized area is collectively referred to as the Gadsden-Etowah MS4.

In 2016, the Alabama Department of Environmental Management (ADEM) issued National Pollutant Discharge Elimination System (NPDES) General Permit ALR040000 for discharges from regulated small municipal separate storm sewer systems to the Gadsden-Etowah MS4 with an effective date of October 1, 2016. Permit numbers for each entity are provided in Table 1.2.



Table 1-2: Permit Numbers for MS4 Entities

Entity	ADEM Permit Number
City of Attalla	ALR0400052
City of Gadsden	ALR0400053
City of Glencoe	ALR0400054
City of Hokes Bluff	ALR0400055
City of Rainbow City	ALR0400056
City of Southside	ALR0400057
Etowah County	ALR0400009

1.2 Water Quality Concerns

Section 303(d) of the Clean Water Act (CWA), as amended by the Water Quality Act of 1987, and EPA's Water Quality Planning and Management Regulations (40CFR130) require states to identify waterbodies not in compliance with the water quality standards applicable to their designated use classifications. Section 303(d) then requires that total maximum daily loads (TMDLs) be determined for all pollutants causing violation of applicable water quality standards in each identified segment.

Neely Henry Lake is the primary receiving water for the Gadsden-Etowah MS4. In 1996, the ADEM identified five of the six reservoirs on the Coosa River within the State of Alabama's borders as being impaired, including Neely Henry Lake. In 2008 the EPA approved TMDLs for Neely Henry Lake related to Nutrients (Total Phosphorous), pH, and Dissolved Oxygen. The Gadsden-Etowah MS4 is required to achieve a 30% reduction in Total Phosphorus loading.

1.3 Monitoring Program

Part III.B of the NPDES General Permit requires that the Permittee develop and implement a Storm Water Management Program Plan (SWMP). Part IV.D of the NPDES General Permit requires that the SWMP include monitoring provisions to document that the waste load allocations prescribed in the TMDL are being achieved.

Section 2 of the SWMP, dated January 1, 2017, provides the specific details of the monitoring program. The intent of the monitoring program is to document that discharges from the MS4 meet the permit requirements. Where deviations are documented and/or expected, the collected monitoring data will be used to determine the extent and cause of the pollutant of concern.

2.0 Rainfall Data

The Gadsden-Etowah MS4 is required to achieve a 30% reduction in Total Phosphorus discharge loading. The largest loading of phosphorous to the Coosa River from the Gadsden-Etowah MS4 is expected to occur during runoff events; therefore, the SWMP requires that monitoring be conducted within 72 hours of a qualifying rain event of 0.75 inch.



Prior to this sampling event, a rain event was observed at the four weather stations located in the vicinity of the urbanized area; however, we performed sampling activities for dry weather conditions. The locations of the weather stations are identified on **Figure 2** in **Appendix I**.

Table 2-1 Quarterly Rainfall Data

GAUGE NAME	LOCATION	LAT.	LONG.	PRECIP 9/19/20	PRECIP 9/20/20
MD5866*	Rainbow City, AL	33.922°	-86.099°	NA	NA
KGAD	Gadsden Municipal Airport	33.973°	-86.088°	0.01 in.	0.00 in.
KALHOKES2	Hokes Bluff Hokes Bluff, AL	33.993°	-85.806°	0.00 in.	0.00 in.
KALGADSD3	Noccalula Falls Gadsden, AL	34.056°	-85.994°	0.00 in.	0.00 in.
KALRAINB19	Rainbow City, AL	33.942°	-86.030°	0.00 in.	0.00 in.

* data was not available at MD5866 weather station

3.0 Monitoring Event

On September 21, 2020, S&ME personnel mobilized to conduct storm water monitoring at the land and boat access monitoring points for the third quarter of 2020.

Land and boat access monitoring was successfully sampled on September 21, 2020. Excluding sampling dates (after a rain event for the boat access monitoring points), the quarterly monitoring events were carried out in accordance with Section 2 of the Gadsden-Etowah MS4 Storm Water Management Program (SWMPP), dated January 1, 2017.

3.1 Monitoring Locations

The primary monitoring locations selected for determining compliance of the Gadsden-Etowah MS4 with the 2008 phosphorous TMDL are identified on **Figure 2** in **Appendix I**. Coordinates for each point are listed in Table 3-1.

Table 3-1 Monitoring Point Coordinates

OUTFALL ID	LATITUDE	LONGITUDE	ACCESS	WATERBODY EVALUATED
AT 5	34.006446°	-86.069061°	LAND	Big Wills Creek / Little Wills Creek
GD 8	33.999535°	-86.024463°	LAND	Black Creek
RC 2	33.967683°	-86.039476°	LAND	Horton Creek
SS 13	33.891352°	-86.049229°	LAND	Neely Henry Lake



OUTFALL ID	LATITUDE	LONGITUDE	ACCESS	WATERBODY EVALUATED
SS 14	33.885921°	-86.030683°	LAND	U.T. to Neely Henry Lake
GD 12	33.952567°	-86.003495°	LAND	U.T. to Neely Henry Lake
CO 14	33.940904°	-85.967704°	LAND	U.T. to Neely Henry Lake
SME 2	34.002461°	-86.001571°	LAND	U.T. to Coosa River
GD 6	34.015350°	-85.995617°	LAND	Town Creek
CO 15	33.972280°	-85.965354°	LAND	U.T. to Neely Henry Lake
RC 14	33.905786°	-86.111656°	BOAT	Rook Creek / Dry Creek
SS 5	33.941329°	-86.021569°	BOAT	U.T. to Coosa River
SME 1	33.990184°	-86.004048°	BOAT	Big Wills Creek / Black Creek
GD 9	33.989718°	-85.998472°	BOAT	U.T. to Coosa River (East Gadsden)
GD 7	34.008361°	-85.999777°	BOAT	Storm sewer outfall to Coosa River
GD 5	34.014324°	-85.924013°	BOAT	Big Cove Creek / Little Cove Creek
GD 3	34.012380°	-85.953651°	BOAT	U.T. to Neely Henry Lake
SME 3	34.009698°	-85.956230°	BOAT	Coal Creek
HB 3	34.002129°	-85.882808°	BOAT	U.T. to Neely Henry Lake

3.2 Sampling Procedures

Samples collected on land were obtained using a stainless steel 1-quart bucket attached to a 30-foot telescoping fiberglass pole. S&ME personnel extended the pole to mid-channel at each location and collected a sample at mid-depth or two (2) feet below the water surface, whichever was shallower. The sample was then poured into a 6-quart stainless steel bucket. Four to five quarts were collected and mixed in the 6-quart bucket prior to analysis. The stainless steel buckets were decontaminated prior to use and between samples.

Samples collected from the boat were obtained using a horizontal Van Dorn sampler. S&ME personnel inserted the sampler into the water upstream of the boat, lowered it to a depth of five (5) feet below the water surface then triggered the seals. The collected sample was discharged from a valve in the sampler. Duplicate samples were obtained using the Van Dorn sampler to collect two 2-liter samples, then mixing them in a 6-quart stainless steel bucket. The Van Dorn sampler was decontaminated prior to use and in between samples.

3.3 Field Documentation

The following observations were documented in the field at each monitoring location:

- ◆ Monitoring point ID
- ◆ Date and time
- ◆ Person conducting the sampling
- ◆ Equipment used



- ◆ Depth of sample collection
- ◆ Weather conditions
- ◆ Waterbody conditions

The following parameters were measured in the field at the time of sample collection:

- ◆ Turbidity
- ◆ pH
- ◆ Dissolved Oxygen (DO)
- ◆ Temperature

Field parameters were measured using a combination of the following instruments:

- ◆ LaMotte 2020 Turbidimeter
- ◆ Hach 2100Q Turbidimeter
- ◆ YSI 556 Multi-Probe Meter
- ◆ YSI Pro DSS Multi-Probe Meter

The recorded field observations are included on **Table B.1** in **Appendix II**. The recorded field parameters are included on **Table B.2** in **Appendix II**.

3.4 Quality Assurance / Quality Control

The following handling procedures were employed in general accordance with EPA and ADEM guidance to safeguard the quality of the collected samples.

3.4.1 Sample Containers and Preservation

All samples were collected in new laboratory-provided containers containing analyte-appropriate preservatives as listed below:

Table 3-2 Sample Containers and Preservation

PARAMETER	CONTAINER	PRESERVATIVE	HOLD TIME
Total Suspended Solids (TSS)	HDPE - 1 L	NONE	7 days
Total Phosphorous	HDPE - 250 mL	H ₂ SO ₄	48 hours
Orthophosphate	HDPE - 250 mL	NONE	48 hours
Nitrate-Nitrite	HDPE - 250 mL	H ₂ SO ₄	28 days
Total Kjeldahl Nitrogen (TKN)	HDPE - 250 mL	H ₂ SO ₄	28 days

Prior to filling, sample containers were labeled with the following information in waterproof ink:

- ◆ Project number



- ◆ Sample location
- ◆ Collection date and time
- ◆ Preservative
- ◆ Analysis to be performed

3.4.2 *Quality Assurance*

Two duplicate samples were submitted to the laboratory. One duplicate sample of monitoring point AT 5 was collected by the land team during the sampling event and labeled as SME 4. One duplicate sample of monitoring point HB 3 was collected by the boat team during the sampling event and labeled as SME 5.

3.4.3 *Sample Shipment*

After filling, the sample containers were sealed and immediately placed on ice in a protective container for shipment to the analytical laboratory. A Chain of Custody form was completed and accompanied the samples from the field to the laboratory. A copy of the Chain of Custody is included in **Appendix III**.

4.0 Analytical Results

The laboratory analytical results for the September 21, 2020 quarterly monitoring event are included on **Table B.2** provided in **Appendix II**. The laboratory reports and Chain of Custody are included in **Appendix III**.

5.0 Recordkeeping

Each quarterly monitoring report will be incorporated into the Annual Update of the Storm Water Management Plan. Monitoring reports will be retained by each municipality for a minimum of 3 years.

The Storm Water Steering Committee is responsible for the coordination and implementation of the Storm Water Management Plan. Current membership of the Storm Water Steering Committee is as follows:

Table 5-0 Storm Water Steering Committee

ENTITY	CONTACT	PHONE NO.	EMAIL
City of Gadsden	Jeremy Ward	256-549-4527	jward@cityofgadsden.com
City of Gadsden	Heath Williamson	256-549-4520	hwilliamson@cityofgadsden.com
City of Attalla	Jason Nicholson	256-441-9200	jason.attalla@gmail.com
City of Rainbow City	Joel Jarmon	256-413-1240	jgarmon@rbcalabama.com
City of Southside	Judd Rich	256-442-9775	juddrich@cityofsouthside.com
City of Glencoe	Todd Means	256-492-1424	toddmeans@cityofglencoe.net
City of Hokes Bluff	Lisa Johnson	256-492-2414	hbcity@cityofhokesbluff.net



Etowah County	Tim Graves	256-549-5358	tgraves@etowahcounty.org
Etowah County	Robert Nail	256-549-5358	rnail@etowahcounty.org

One copy of this Monitoring Report has been provided to each member of the Storm Water Steering Committee.

6.0 Certification of the Monitoring Report

I certify under penalty of law that this document and all attachments were prepared under my directions or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine or imprisonment for knowing violations.

Signature of Responsible Official

Date

Print Name and Title

MS4 Entity



7.0 Acknowledgement

S&ME, Inc. certifies that the information provided in this monitoring report reflects the conditions reported, encountered, and discovered at the time of report preparation. When performing this scope of services, S&ME, Inc., observed the degree of care and skill generally exercised by other consultants undertaking similar studies at the same time, under similar circumstances and conditions, and in the same geographic area.

S&ME sincerely appreciates the opportunity to provide watershed monitoring services for the Gadsden-Etowah MS4. Should questions remain or if additional information is required, please do not hesitate to contact the undersigned.

S&ME, Inc.

A handwritten signature in blue ink that reads "Christa C. Lyons".

Christa C. Lyons
Project Manager

A handwritten signature in blue ink that reads "Deborah J. Jones".

Deborah J. Jones, P.E.
Senior Engineer

Appendices

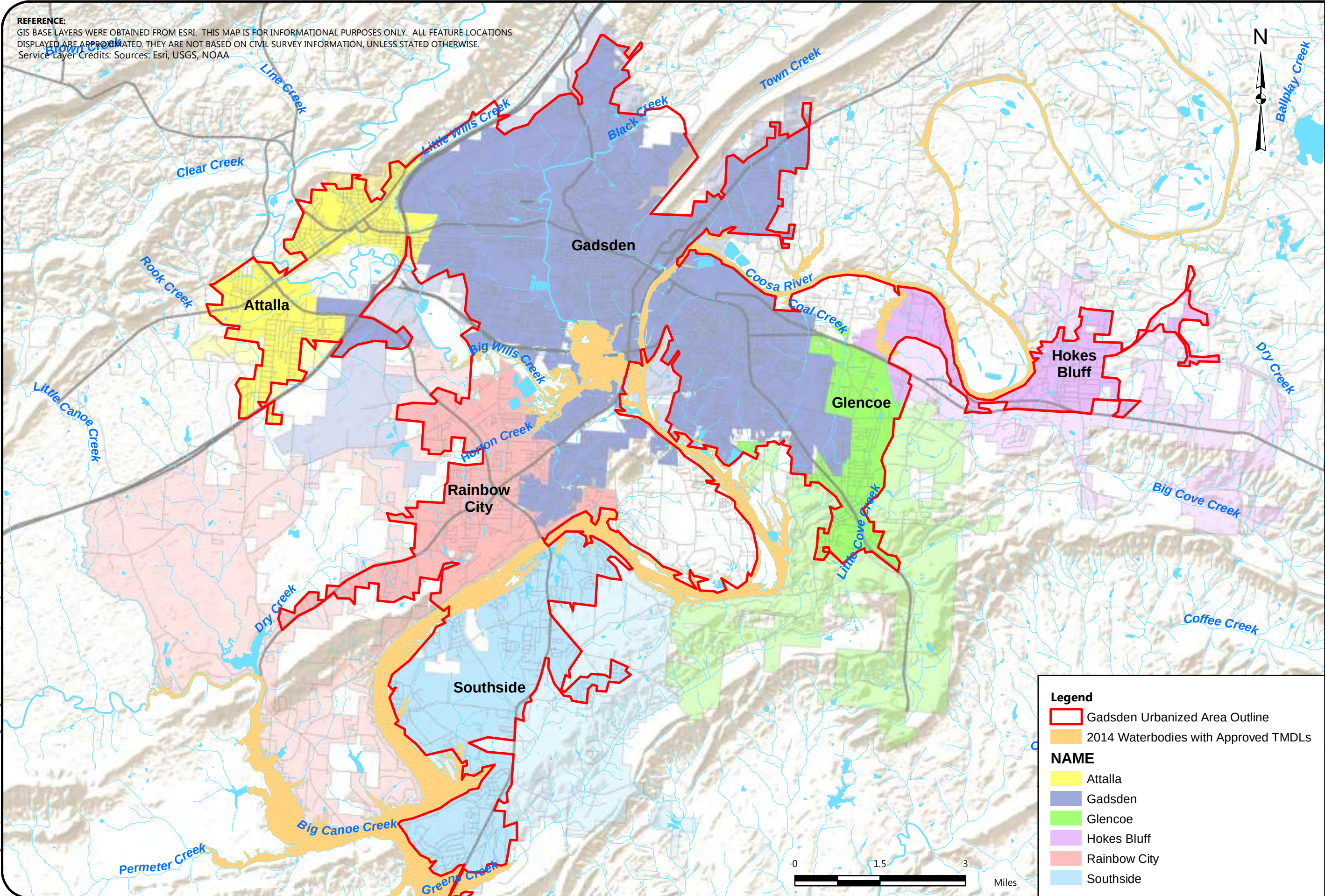
Appendix I

Figure 1 – Gadsden, Alabama Urbanized Area

Figure 2 – MS4 Monitoring Locations Map

Drawing Path: Q:\GIS Files\Gadsden MS4 Figures\Fig_1_TMDL and UA.mxd plotted by ekennedy 09-15-2017

REFERENCE:
GIS BASE LAYERS WERE OBTAINED FROM ESRI. THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS
DISPLAYED ARE APPROXIMATED. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.
Service Layer Credits: Sources: Esri, USGS, NOAA



Legend

- Gadsden Urbanized Area Outline
- 2014 Waterbodies with Approved TMDLs

NAME

- Attalla
- Gadsden
- Glencoe
- Hokes Bluff
- Rainbow City
- Southside



GADSDEN-ETOWAH MS4 BOUNDARIES

GADSDEN ALABAMA URBANIZED AREA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040009

SCALE:
1:100,000

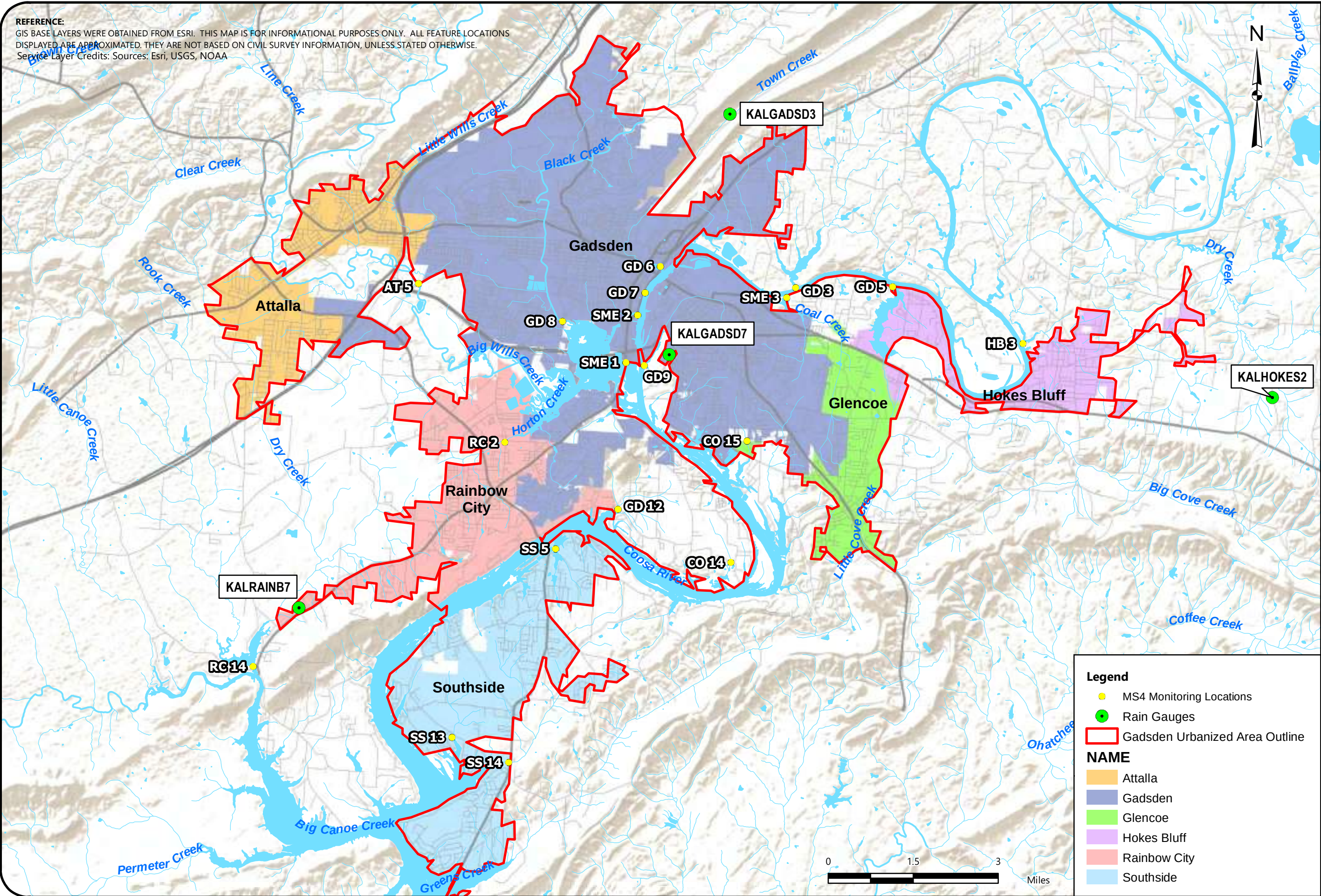
DATE:
09-15-17

PROJECT NUMBER
4482-16-056

FIGURE NO.

1

REFERENCE:
GIS BASE LAYERS WERE OBTAINED FROM ESRI. THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS
DISPLAYED ARE APPROXIMATED. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.
Service Layer Credits: Sources: Esri, USGS, NOAA



Legend

- MS4 Monitoring Locations
- Rain Gauges
- Gadsden Urbanized Area Outline

NAME

- Attalla
- Gadsden
- Glencoe
- Hokes Bluff
- Rainbow City
- Southside



MS4 MONITORING LOCATIONS

GADSDEN ALABAMA URBANIZED AREA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040009

SCALE:
1:100,000

DATE:
01-15-18

PROJECT NUMBER
4482-18-002

FIGURE NO.

Appendix II

Table B.1 – Field Observations

Table B.2 – Analytical Data

Tables B.3 to B.21 – Historical Analytical Data

TABLE B.1 - FIELD OBSERVATIONS**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	TIME	DEPTH (FT)	PERSONNEL	WEATHER CONDITIONS	WATERBODY CONDITIONS
AT 5	9/21/2020	1150	-3'	EJK/EAB	Breezy and sunny	Slow, smooth
GD 8	9/21/2020	1121	-3'	EJK/EAB	Breezy and sunny	Fast, smooth
RC 2	9/21/2020	1144	-3'	EJK/EAB	Breezy and sunny	Fast, smooth
SS 13	9/21/2020	1042	-3	EJK/EAB	Breezy and sunny	Slow, smooth
SS 14	9/21/2020	1030	-3'	EJK/EAB	Breezy and sunny	Slow, smooth
GD 12	9/21/2020	958	-3'	EJK/EAB	Breezy and sunny	Rough, fast
CO 14	9/21/2020	DRY	DRY	EJK/EAB	DRY	DRY
SME 2	9/21/2020	930	-3'	EJK/EAB	Breezy and sunny	Fast, rough
GD 6	9/21/2020	916	-3'	EJK/EAB	Breezy and sunny	Fast, rough
CO 15	9/21/2020	900	-10"	EJK/EAB	Breezy and sunny	Slow, rough
RC 14	9/21/2020	1310	-5'	GPW	Sunny	Smooth
SS 5	9/21/2020	1235	-5'	GPW	Sunny	Smooth
SME 1	9/21/2020	1145	-5'	GPW	Sunny	Smooth
GD 9	9/21/2020	1235	-5'	GPW	Sunny	Smooth
GD 7	9/21/2020	1120	-5'	GPW	Sunny	Smooth
GD 5	9/21/2020	1040	-5'	GPW	Sunny	Smooth
GD 3	9/21/2020	1055	-5'	GPW	Sunny	Smooth
SME 3	9/21/2020	1103	-5'	GPW	Sunny	Smooth
HB 3	9/21/2020	1018	-5'	GPW	Sunny	Smooth

TABLE B.2 - ANALYTICAL DATA
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
AT 5	9/21/2020	-0.3	8.08	8.21	20.6	0.603	0.491	0.399	<0.250	11.3
GD 8	9/21/2020	-0.7	8.19	6.36	22.8	0.171	<0.03	<0.100	0.290	7.40
RC 2	9/21/2020	-0.7	7.24	7.03	19.6	<0.100	<0.03	<0.100	<0.250	5.20
SS 13	9/21/2020	-0.8	7.36	6.58	21.9	<0.100	<0.03	0.200	<0.250	7.80
SS 14	9/21/2020	-1.0	7.62	7.59	20.7	0.345	0.0750	<0.100	0.281	8.40
GD 12	9/21/2020	-0.6	7.18	7.15	19.9	0.103	<0.03	<0.100	<0.250	7.6
CO 14	9/21/2020	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
SME 2	9/21/2020	-0.8	7.84	8.02	23.6	<0.100	<0.03	<0.100	<0.250	11.0
GD 6	9/21/2020	-1.0	7.96	8.48	21.4	<0.100	<0.03	<0.100	<0.250	8.60
CO 15	9/21/2020	-0.7	7.31	8.18	17.9	<0.100	<0.03	<0.100	<0.250	5.60
SME 4	9/21/2020	DUPLICATE OF AT5				0.608	0.473	0.402	<0.250	10.8
RC 14	9/21/2020	13.7	7.49	9.65	21.9	<0.100	<0.030	0.202	0.307	8.20
SS 5	9/21/2020	16.5	7.36	11.45	22.6	<0.100	<0.030	<0.100	0.512	11.0
SME 1	9/21/2020	13.8	7.71	6.92	22.2	<0.100	<0.030	<0.100	<0.250	9.00
GD 9	9/21/2020	11.6	7.38	6.41	23.3	<0.100	<0.030	<0.100	<0.250	9.00
GD 7	9/21/2020	13.6	7.42	12.45	23.7	<0.100	<0.030	<0.100	<0.250	9.60
GD 5	9/21/2020	10.8	7.65	6.33	23.2	<0.100	<0.030	<0.100	<0.250	7.90
GD 3	9/21/2020	13.5	7.51	6.73	23.4	<0.100	<0.030	0.106	<0.250	9.80
SME 3	9/21/2020	15.3	7.67	6.50	23.0	<0.100	<0.030	<0.100	0.660	10.7
HB 3	9/21/2020	12.1	7.80	7.69	23.5	<0.100	<0.030	<0.100	0.279	8.30
SME 5	9/21/2020	DUPLICATE OF HB 3				<0.100	<0.030	<0.100	<0.250	8.00

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled (Dry)

Bold - maximum reading for constituent

NA - not available at this time

* - unknown reading due to equipment malfunction

TABLE B.3 - ANALYTICAL DATA - AT 5**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
AT 5	3/12/2013	15	7.80	11.04	12.55	0.61	0.150	0.14	0.37	20.0
AT 5	5/8/2013	25	5.08	2.59	14.69	0.31	0.099	0.11	0.56	19.0
AT 5	9/23/2013	21	5.96	3.95	22.88	1.30	0.400	0.35	0.37	22.0
AT 5	12/10/2013	68	5.32	11.43	8.21	0.79	0.290	0.34	0.97	64.0
AT 5	2/6/2014	40	4.06	15.29	7.28	0.80	0.130	0.13	0.35	32.0
AT 5	6/26/2014	70	7.85	7.61	23.89	0.77	0.340	0.28	0.38	19.0
AT 5	9/30/2014	15	5.78	6.63	21.03	0.94	0.490	0.54	<0.25	14.0
AT 5	11/19/2014	47	5.08	10.23	6.91	1.30	0.410	0.39	0.50	27.0
AT 5	3/23/2015	17	8.69	9.39	14.50	0.71	0.130	0.14	0.27	15.0
AT5	4/22/2015	53	6.93	11.13	18.40	0.69	0.110	0.13	<0.25	76.0
AT5	9/30/2015	15	6.37	9.45	21.63	1.82	0.664	0.86	<0.25	16.4
AT5	11/19/2015	934	7.38	19.33	14.98	0.67	0.261	0.31	1.47	74.6
AT 5	3/15/2016	30	7.93	20.43	16.86	0.58	0.068	<0.10	0.77	26.7
AT 5	6/29/2016	18	7.99	6.57	25.40	0.80	0.598	0.71	<0.25	14.5
AT 5	8/9/2016	17	7.89	6.47	25.80	0.98	0.482	0.50	0.27	18.3
AT5	12/7/2016	26.5	7.08	10.19	11.3	0.66	0.450	0.47	<0.25	16.9
AT5	3/2/2017	51	8.14	8.86	13.40	1.08	0.267	0.37	0.53	44.6
AT 5	6/21/2017	11.7	7.98	6.74	23.3	0.62	0.226	0.37	0.54	70.0
AT 5	8/17/2017	9.5	8.09	6.77	26.0	0.89	0.258	0.28	0.69	12.0
AT 5	10/26/2017	9.8	7.95	8.25	15.7	0.94	0.226	0.25	<0.25	9.4
AT 5	3/27/2018	14.5	7.79	9.03	12.9	0.849	0.162	0.148	<0.25	15.9
AT 5	6/26/2018	16.4	8.06	6.89	25.5	0.849	0.230	0.246	0.411	25.2
AT 5	8/1/2018	77.9	7.33	7.16	22.3	0.510	0.285	0.401	0.680	107.0
AT 5	12/11/2018	29.2	7.59	10.73	9.4	1.090	0.066	0.204	0.579	46.2
AT 5	4/17/2019	12.2	7.63	8.99	17.9	0.638	0.061	<0.10	<0.250	14.4
AT 5	6/11/2019	24.6	7.18	3.48	22.2	0.822	0.206	0.290	0.486	15.9
AT 5	8/28/2019	20.7	7.84	7.42	27.1	0.534	0.404	0.485	1.070	23.5
AT 5	10/28/2019	22.5	7.84	8.45	15.1	0.665	0.523	0.499	<0.250	17.0
AT 5	3/31/2020	23.1	8.09	9.07	16.6	0.657	0.0320	0.102	<0.250	27.1
AT 5	6/10/2020	19.4	7.56	7.35	23.2	0.825	0.248	0.243	<0.250	22.8
AT 5	9/21/2020	-0.3	8.08	8.21	20.6	0.603	0.491	0.399	<0.250	11.3

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.4 - ANALYTICAL DATA - GD 8**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 8	3/12/2013	7	7.65	11.73	9.85	0.13	<0.025	<0.10	0.25	4.5
GD 8	5/8/2013	19	6.71	1.72	14.47	0.11	<0.025	<0.10	0.38	19.0
GD 8	9/23/2013	18	6.22	3.98	22.74	<0.10	<0.025	<0.10	0.41	9.6
GD 8	12/10/2013	31	6.04	13.33	8.10	0.28	0.040	<0.10	0.35	32.0
GD 8	2/6/2014	16	3.87	16.32	6.48	0.25	<0.025	<0.10	0.13	13.0
GD 8	6/26/2014	31	8.19	6.64	26.15	0.25	<0.025	<0.10	0.48	7.3
GD 8	9/30/2014	12	7.32	5.06	23.19	0.14	<0.025	<0.10	0.42	6.0
GD 8	11/19/2014	25	5.16	9.01	5.87	0.23	<0.025	<0.01	0.32	13.0
GD 8	3/23/2015	11	8.67	9.76	14.8	0.22	<0.025	<0.10	<0.25	4.8
GD 8	4/22/2015	20	7.40	11.71	17.70	0.16	<0.025	<0.10	<0.25	15.0
GD 8	9/30/2015	9	7.79	9.48	24.33	0.18	<0.025	<0.10	0.48	6.8
GD 8	11/19/2015	212	6.94	23.30	15.13	0.23	<0.025	0.10	0.85	79.6
GD 8	3/15/2016	11	7.88	16.81	16.98	0.13	<0.025	<0.10	0.47	8.3
GD 8	6/29/2016	33	8.50	6.60	29.30	<0.10	<0.025	<0.10	0.45	39.8
GD 8	8/9/2016	13	8.90	5.87	28.90	0.22	<0.025	<0.10	0.67	6.3
GD 8	12/7/2016	10.1	7.75	8.84	12.1	0.31	<0.025	<0.10	0.41	7.0
GD 8	3/2/2017	20	8.14	9.76	12.20	0.28	<0.025	<0.10	0.34	3.6
GD 8	6/21/2017	7.9	8.73	6.50	25.0	<0.10	<0.025	<0.10	0.64	7.0
GD 8	8/17/2017	6.8	8.55	6.30	28.70	0.13	<0.025	<0.10	0.54	8.9
GD 8	10/26/2017	6.1	8.17	8.25	16.3	<0.10	<0.025	<0.10	0.35	4.0
GD 8	3/27/2018	8.9	8.09	9.52	12.1	0.215	<0.025	<0.10	<0.25	6.5
GD 8	6/26/2018	5.8	8.50	5.74	29.7	0.150	<0.025	<0.10	0.670	5.8
GD 8	8/1/2018	45.8	6.89	7.39	22.9	0.556	0.072	0.11	0.641	53.2
GD 8	12/11/2018	16.0	7.87	11.71	9.2	0.326	<0.025	<0.10	0.406	24.4
GD 8	4/17/2019	6.7	8.05	9.30	17.6	0.115	<0.025	<0.10	0.437	<5.00
GD 8	6/11/2019	9.4	7.19	2.94	25.8	0.181	<0.025	<0.10	0.948	4.1
GD 8	8/28/2019	14.2	8.26	6.07	30.2	0.212	<0.025	<0.10	0.992	11.8
GD 8	10/28/2019	29.6	7.83	8.22	16.2	0.435	<0.025	0.109	0.255	12.9
GD 8	3/31/2020	19.3	7.97	9.30	16.6	0.133	<0.025	0.132	0.348	18.0
GD 8	6/10/2020	10.8	7.97	7.13	24.9	0.211	<0.03	<0.100	<0.25	8.0
GD 8	9/21/2020	-0.7	8.19	6.36	22.8	0.171	<0.03	<0.100	0.290	7.4

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.5 - ANALYTICAL DATA - RC 2**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 2	3/12/2013	29	7.73	9.83	10.53	0.12	0.088	<0.10	0.75	14.0
RC 2	5/8/2013	19	6.16	3.06	16.36	0.19	<0.025	<0.10	0.55	12.0
RC 2	9/23/2013	11	6.24	3.00	23.61	<0.10	<0.025	<0.10	0.43	6.3
RC 2	12/10/2013	34	6.07	11.71	8.38	0.11	0.062	<0.10	0.54	10.0
RC 2	2/6/2014	30	3.89	17.28	5.62	0.26	<0.025	<0.10	0.43	9.6
RC 2	6/26/2014	18	7.90	6.81	24.81	0.15	<0.025	<0.10	0.44	7.2
RC 2	9/30/2014	3	7.27	5.55	22.25	<0.10	<0.025	<0.10	0.40	2.5
RC 2	11/19/2014	27	5.65	7.14	5.72	0.17	<0.025	<0.10	0.43	11.0
RC 2	3/23/2015	45	8.23	9.07	16.00	0.15	0.044	<0.10	0.81	18.0
RC 2	4/22/2015	14	7.64	11.42	18.40	0.26	<0.025	<0.10	<0.25	4.8
RC 2	9/30/2015	7	5.93	9.28	23.33	<0.10	<0.025	<0.10	<0.25	4.6
RC 2	11/19/2015	114	7.36	21.94	15.29	0.27	<0.025	0.13	0.75	14.4
RC 2	3/15/2016	15	7.62	16.67	14.61	0.18	<0.025	<0.10	0.43	6.0
RC 2	6/29/2016	12	7.78	4.31	28.30	<0.10	0.077	<0.10	0.35	10.9
RC 2	8/9/2016	25	8.12	5.05	26.50	0.14	<0.025	<0.10	0.45	9.9
RC 2	12/7/2016	17.2	7.86	7.47	12.0	0.20	<0.025	<0.10	0.53	11.9
RC 2	3/2/2017	25	7.71	7.74	13.10	0.17	<0.025	<0.10	0.45	8.0
RC 2	6/21/2017	14.2	7.91	5.61	23.7	<0.10	<0.025	<0.10	0.51	12.3
RC 2	8/17/2017	18.2	8.08	4.94	27.90	<0.10	<0.025	0.13	0.72	72.2
RC 2	10/26/2017	18.1	7.57	7.05	15.2	<0.10	<0.025	<0.10	0.27	17.5
RC 2	3/27/2018	18.2	7.91	8.43	12.4	0.146	<0.025	<0.10	<0.25	12.5
RC 2	6/26/2018	18.8	7.94	6.19	26.5	0.101	<0.025	<0.10	0.802	13.0
RC 2	8/1/2018	56.8	7.40	7.10	22.4	<0.10	<0.025	<0.10	0.506	84.4
RC 2	12/11/2018	16.0	7.54	11.41	7.7	0.316	<0.025	<0.10	0.479	3.1
RC 2	4/17/2019	7.0	7.77	8.67	18.9	0.165	<0.025	<0.10	0.288	<5.00
RC 2	6/11/2019	14.3	6.83	3.78	23.0	<0.10	<0.025	<0.10	0.520	5.2
RC 2	8/28/2019	14.4	8.01	7.30	28.0	<0.10	<0.025	<0.10	0.748	4.8
RC 2	10/28/2019	11.4	7.55	9.42	14.9	0.132	<0.025	0.20	<0.250	3.4
RC 2	3/31/2020	84.5	7.90	9.10	15.7	0.190	0.0290	0.118	0.574	90.0
RC 2	6/10/2020	20.5	7.87	6.37	25.6	0.210	<0.03	<0.100	0.330	10.8
RC 2	9/21/2020	-0.7	7.24	7.03	19.6	<0.100	<0.03	<0.100	<0.250	5.2

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.6 - ANALYTICAL DATA - SS 13

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 13	3/12/2013	8	7.04	9.85	11.45	0.34	0.032	<0.10	0.78	4.7
SS 13	5/8/2013	10	6.68	2.94	18.75	0.36	<0.050	<0.10	0.72	5.7
SS 13	9/23/2013	12	7.04	3.38	25.31	<0.10	0.028	<0.10	0.84	9.6
SS 13	12/10/2013	12	6.14	10.93	8.99	0.33	0.077	0.12	0.67	5.6
SS 13	2/6/2014	7	4.26	17.50	5.14	0.42	<0.025	<0.10	0.44	4.1
SS 13	6/26/2014	23	8.33	8.09	28.44	<0.10	<0.025	0.12	0.52	5.4
SS 13	9/30/2014	12	7.41	4.26	24.77	<0.10	<0.025	<0.10	0.44	12.0
SS 13	11/19/2014	13	6.31	6.08	6.44	0.22	0.044	<0.10	0.40	4.8
SS 13	3/23/2015	16	7.33	8.57	15.40	0.22	0.029	<0.10	0.71	7.6
SS 13	4/22/2015	15	6.60	8.93	20.80	0.32	<0.025	<0.10	0.67	10.0
SS 13	9/30/2015	9	7.33	11.54	25.95	<0.10	<0.025	<0.10	0.52	9.0
SS 13	11/19/2015	36	7.07	18.48	15.31	0.24	<0.025	0.18	0.97	4.8
SS 13	3/15/2016	9	6.61	12.42	17.37	0.32	<0.025	<0.10	<0.25	4.7
SS 13	6/29/2016	10	7.86	6.15	30.60	<0.10	<0.025	<0.10	0.53	9.8
SS 13	8/9/2016	20	7.77	5.92	29.10	<0.10	<0.025	<0.10	0.73	24.0
SS 13	12/7/2016	4.8	7.39	6.97	12.5	0.11	<0.025	<0.10	0.45	3.6
SS 13	3/2/2017	12	6.64	7.19	13.40	0.25	<0.025	<0.10	0.75	4.6
SS 13	6/21/2017	8.7	7.54	5.82	26.1	<0.10	<0.025	<0.10	0.82	12.8
SS 13	8/17/2017	9.3	7.93	6.54	30.90	<0.10	<0.025	<0.10	0.81	18.6
SS 13	10/26/2017	5.2	6.70	7.41	15.4	0.12	<0.025	<0.10	0.60	7.2
SS 13	3/27/2018	6.4	8.19	8.23	12.4	0.495	<0.025	<0.10	<0.25	16.2
SS 13	6/26/2018	6.8	7.36	5.67	29.5	<0.10	<0.025	0.140	0.998	10.2
SS 13	8/1/2018	24.2	6.75	6.86	21.9	0.226	0.206	0.308	1.180	20.2
SS 13	12/11/2018	8.2	7.37	10.79	7.4	0.451	<0.025	<0.10	0.655	8.6
SS 13	4/17/2019	6.4	7.42	9.23	19.1	<0.10	<0.025	<0.10	0.624	6.8
SS 13	6/11/2019	8.9	6.59	3.12	23.4	<0.10	<0.025	<0.10	0.929	<6.25
SS 13	8/28/2019	6.7	7.93	7.33	29.7	<0.10	<0.025	<0.10	1.170	24.4
SS 13	10/28/2019	12.3	6.25	3.61	16.0	0.211	0.031	<0.10	0.739	3.7
SS 13	3/31/2020	60.4	6.95	8.64	14.9	0.233	0.0580	0.147	0.928	92.0
SS 13	6/10/2020	10.1	7.27	7.08	28.2	<0.100	<0.03	<0.100	0.492	21.2
SS 13	9/21/2020	-0.8	7.36	6.58	21.9	<0.100	<0.03	0.200	<0.250	7.8

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.7 - ANALYTICAL DATA - SS 14

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 14	3/12/2013	10	7.40	11.23	10.93	0.40	0.087	0.11	0.77	4.7
SS 14	5/8/2013	10	6.47	2.75	16.42	0.45	0.041	<0.10	0.53	5.0
SS 14	9/23/2013	3	6.76	6.49	21.77	0.38	0.036	<0.10	0.45	<2.5
SS 14	12/10/2013	18	5.63	11.33	8.56	0.28	0.160	0.19	0.66	9.2
SS 14	2/6/2014	12	4.19	17.56	5.16	0.62	0.074	<0.10	0.50	14.0
SS 14	6/26/2014	8	8.18	7.58	24.14	0.67	0.080	0.16	0.89	<2.5
SS 14	9/30/2014	8	7.42	3.67	22.35	<0.10	0.031	<0.10	0.52	6.1
SS 14	11/19/2014	16	6.27	7.50	5.48	0.75	0.075	0.22	0.46	9.2
SS 14	3/23/2015	21	7.75	9.53	16.50	0.27	0.110	0.14	1.10	11.0
SS 14	4/22/2015	12	7.43	12.29	17.50	0.62	<0.025	<0.10	0.58	6.3
SS 14	9/30/2015	7	7.16	12.79	24.02	<0.10	0.088	0.18	0.51	6.6
SS 14	11/19/2015	27	6.49	20.71	15.16	0.44	0.131	0.18	1.00	23.3
SS 14	3/15/2016	11	7.18	12.11	16.01	0.50	0.056	<0.10	0.83	8.1
SS 14	6/29/2016	6	7.62	3.61	27.20	<0.10	0.103	0.16	0.65	6.0
SS 14	8/9/2016	22	7.71	5.99	26.90	0.16	0.062	0.12	0.87	12.7
SS 14	12/7/2016	7.6	7.27	7.72	11.9	0.89	0.078	0.15	0.71	<2.5
SS 14	3/2/2017	13	7.60	8.76	12.20	0.48	0.092	0.15	0.84	9.2
SS 14	6/21/2017	21.5	7.74	6.24	23.7	0.25	0.030	0.11	0.73	63.7
SS 14	8/17/2017	6.0	8.12	7.11	31.40	0.12	0.070	<0.10	0.83	24.8
SS 14	10/26/2017	4.3	7.39	7.66	13.9	0.70	0.054	<0.10	0.58	3.6
SS 14	3/27/2018	8.8	7.34	8.96	11.9	0.673	0.044	0.148	<0.25	8.2
SS 14	6/26/2018	7.7	8.47	10.65	29.3	0.206	0.044	0.148	1.01	18.7
SS 14	8/1/2018	42.9	6.35	7.04	22.5	0.109	0.233	0.276	0.89	60.0
SS 14	12/11/2018	8.4	6.95	11.53	7.4	0.812	0.057	0.117	0.635	4.3
SS 14	4/17/2019	6.6	7.60	8.28	22.1	0.598	0.042	<0.10	0.414	6.7
SS 14	6/11/2019	12.6	6.78	3.47	23.8	0.444	0.077	<0.10	0.928	5.9
SS 14	8/28/2019	8.1	7.96	8.18	27.9	<0.10	<0.025	0.174	1.050	8.5
SS 14	10/28/2019	10.9	6.97	7.83	15.1	0.458	0.048	0.167	0.381	2.7
SS 14	3/31/2020	62.4	6.67	9.31	15.2	0.190	0.235	0.348	0.934	145
SS 14	6/10/2020	17.0	7.32	7.20	29.1	0.246	0.078	0.128	0.897	40.4
SS 14	9/21/2020	-1.0	7.62	7.59	20.7	0.345	0.075	<0.100	0.281	8.4

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.8 - ANALYTICAL DATA - GD 12

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 12	3/12/2013	9	7.41	10.93	13.43	0.25	0.030	<0.10	0.54	3.9
GD 12	5/8/2013	15	6.73	2.35	16.53	0.21	0.030	<0.10	0.40	7.5
GD 12	9/23/2013	10	6.76	3.94	26.07	<0.10	0.026	<0.10	0.48	9.0
GD 12	12/10/2013	19	6.15	10.09	10.18	0.22	0.079	0.11	0.45	5.9
GD 12	2/6/2014	12	4.17	16.99	5.76	0.31	<0.025	<0.10	0.28	3.9
GD 12	6/26/2014	29	8.38	9.40	26.72	0.11	0.035	0.12	0.62	32.0
GD 12	9/30/2014	11	7.68	5.77	24.68	<0.10	<0.025	<0.10	0.39	11.0
GD 12	11/19/2014	15	6.95	5.93	5.85	0.28	<0.025	0.13	0.39	6.6
GD 12	3/23/2015	18	7.80	9.56	16.80	0.24	<0.025	<0.10	0.59	8.1
GD 12	4/22/2015	17	7.45	11.04	19.80	0.25	<0.025	<0.10	0.43	14.0
GD 12	9/30/2015	7	7.30	11.07	24.67	<0.10	<0.025	<0.10	0.70	8.5
GD 12	11/19/2015	23	7.07	19.14	14.68	0.28	0.100	0.15	0.77	12.0
GD 12	3/15/2016	10	7.43	13.14	16.05	0.25	0.032	<0.10	0.43	4.6
GD 12	6/29/2016	13	8.22	7.68	31.20	<0.10	0.036	<0.10	0.38	12.0
GD 12	8/9/2016	22	7.57	4.39	27.60	<0.10	<0.025	<0.10	0.63	13.3
GD 12	12/7/2016	10.3	7.18	6.65	11.4	0.14	<0.025	<0.10	0.60	4.0
GD 12	3/2/2017	15	7.79	10.12	11.70	0.22	<0.025	0.12	0.58	6.1
GD 12	6/21/2017	16.1	7.43	5.12	24.3	<0.10	<0.025	<0.10	0.77	16.8
GD 12	8/17/2017	6.3	8.13	5.80	29.90	<0.10	<0.025	<0.10	0.58	13.3
GD 12	10/26/2017	9.8	6.74	7.53	13.2	0.2	<0.025	<0.10	0.31	7.8
GD 12	3/27/2018	6.3	7.71	9.24	11.5	0.356	<0.025	<0.10	<0.25	4.2
GD 12	6/26/2018	9.9	7.44	4.35	26.1	0.102	<0.025	<0.10	0.528	13.2
GD 12	8/1/2018	42.3	7.05	7.33	22.7	0.108	0.159	0.286	1.23	43.8
GD 12	12/11/2018	9.5	6.68	11.46	7.8	0.313	<0.025	<0.10	0.574	4.3
GD 12	4/17/2019	9.1	7.45	9.20	17.5	0.257	<0.025	<0.10	0.272	4.0
GD 12	6/11/2019	19.0	7.20	3.25	22.0	0.223	0.066	0.121	0.820	8.2
GD 12	8/28/2019	11.0	7.83	7.61	28.2	<0.10	<0.025	0.103	0.764	9.4
GD 12	10/28/2019	18.9	5.34	6.65	14.7	0.197	0.044	<0.10	0.387	12.3
GD 12	3/31/2020	76.3	6.71	9.44	14.5	0.177	0.0650	0.167	1.00	143
GD 12	6/10/2020	12.3	6.46	6.44	25.8	<0.100	<0.03	<0.100	0.438	11.4
GD 12	9/21/2020	-0.6	7.18	7.15	19.9	0.103	<0.03	<0.100	<0.250	7.6

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.9 - ANALYTICAL DATA - CO 14

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 14	3/12/2013	8	6.88	9.65	12.92	0.32	<0.025	<0.10	0.42	3.5
CO 14	5/8/2013	13	6.61	3.02	16.37	0.34	<0.12	<0.10	0.74	6.7
CO 14	9/23/2013	15	6.70	3.78	22.58	<0.10	0.036	<0.10	0.30	9.6
CO 14	12/10/2013	14	5.82	11.15	9.37	0.11	0.027	<0.10	0.55	9.7
CO 14	2/6/2014	14	4.02	16.69	5.08	0.58	<0.025	<0.10	0.41	9.1
CO 14	6/26/2014	20	8.25	8.19	22.33	0.34	<0.025	<0.10	0.86	9.0
CO 14	9/30/2014	*	*	*	*	*	*	*	*	*
CO 14	11/19/2014	9.84	6.70	3.86	7.90	<0.10	<0.025	<0.10	0.26	2.8
CO 14	3/23/2015	19	6.85	8.78	17.20	0.25	<0.025	<0.10	0.67	10.0
CO 14	4/22/2015	14	6.23	11.19	18.00	0.49	<0.025	<0.10	0.60	8.6
CO 14	9/30/2015	*	*	*	*	*	*	*	*	*
CO 14	11/19/2015	24	6.64	16.06	15.25	<0.10	<0.025	<0.10	1.27	5.9
CO 14	3/15/2016	16	6.33	13.05	16.42	0.47	<0.025	<0.10	0.71	9.7
CO 14	6/29/2016	*	*	*	*	*	*	*	*	*
CO 14	8/9/2016	*	*	*	*	*	*	*	*	*
CO 14	12/7/2016	*	*	*	*	*	*	*	*	*
CO 14	3/2/2017	19	6.34	8.58	13.60	0.11	<0.025	<0.10	0.60	5.2
CO 14	6/21/2017	9.0	6.57	6.49	22.9	<0.10	<0.025	<0.10	0.76	19.0
CO 14	8/17/2017	13.8	7.83	6.22	28.0	<0.10	<0.025	<0.10	0.85	50.6
CO 14	10/26/2017	8.1	6.43	8.40	14.2	<0.10	<0.025	<0.10	0.44	4.7
CO 14	3/27/2018	8.2	7.63	9.45	11.4	0.601	<0.025	<0.10	<0.25	9.5
CO 14	6/26/2018	NS	NS	NS	NS	NS	NS	NS	NS	NS
CO 14	8/1/2018	40.2	6.99	7.42	22.1	<0.10	<0.025	<0.10	0.76	28.3
CO 14	12/11/2018	7.6	7.38	10.74	7.7	0.184	<0.025	<0.10	0.567	4.9
CO 14	4/17/2019	9.3	7.91	8.99	19.0	0.460	<0.025	<0.10	2.96	9.4
CO 14	6/11/2019	17.5	7.07	3.56	22.4	<0.10	<0.025	0.14	0.773	5.6
CO 14	8/28/2019	*	*	*	*	*	*	*	*	*
CO 14	10/28/2019	*	*	*	*	*	*	*	*	*
CO 14	3/31/2020	77.6	7.84	9.07	15.0	0.402	<0.025	<0.10	0.532	106
CO 14	6/10/2020	13.8	7.64	7.20	24.4	0.244	<0.03	<0.100	0.482	5.6
CO 14	9/21/2020	*	*	*	*	*	*	*	*	*

NTU - Nephelometric Turbidity Units

* - outfall was dry

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.10 - ANALYTICAL DATA - SME 2**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 2	3/12/2013	6	7.12	9.28	14.17	0.28	0.032	<0.10	0.47	8.1
SME 2	5/8/2013	26	7.67	6.46	21.40	0.24	0.042	<0.10	0.92	21.0
SME 2	9/23/2013	7	6.92	5.51	26.24	<0.10	0.039	<0.10	0.34	7.1
SME 2	12/10/2013	12	5.71	11.05	11.01	0.31	0.100	0.15	0.42	7.0
SME 2	2/6/2014	20	4.21	14.38	6.13	0.39	0.053	<0.10	0.59	14.0
SME 2	6/26/2014	15	8.16	7.22	26.98	0.11	<0.025	<0.10	0.38	8.7
SME 2	9/30/2014	6	7.97	5.33	26.53	<0.10	<0.025	<0.10	0.52	7.4
SME 2	11/19/2014	10	7.06	3.53	10.20	0.14	0.039	0.16	<0.25	6.8
SME 2	3/23/2015	11	7.96	9.34	17.60	0.24	<0.025	<0.10	0.45	10.0
SME 2	4/22/2015	9	7.93	11.46	24.50	0.13	<0.025	<0.10	0.48	9.1
SME 2	9/30/2015	7	7.62	12.67	25.91	0.10	<0.025	0.10	0.50	8.7
SME 2	11/19/2015	22	6.55	14.30	19.12	0.22	0.062	0.22	1.21	82.3
SME 2	3/15/2016	8	7.86	13.43	20.73	<0.10	<0.025	<0.10	0.49	6.3
SME 2	6/29/2016	8	8.23	7.24	30.40	0.19	<0.025	<0.10	0.29	8.0
SME 2	8/9/2016	10	8.01	6.58	30.60	<0.10	<0.025	<0.10	0.59	8.2
SME 2	12/7/2016	6.0	7.52	6.86	12.7	<0.10	<0.025	0.10	0.47	5.8
SME 2	3/2/2017	12	8.03	8.55	15.20	0.27	<0.025	<0.10	0.72	11.4
SME 2	6/21/2017	5.2	7.18	4.64	26.6	<0.10	<0.025	<0.10	0.89	11.4
SME 2	8/17/2017	6.5	7.76	6.43	30.6	<0.10	<0.025	<0.10	0.73	15.3
SME 2	10/26/2017	5.2	7.03	6.87	17.6	<0.10	<0.025	<0.10	0.38	8.5
SME 2	3/27/2018	11.1	7.44	8.64	12.9	0.161	<0.025	<0.10	<0.25	17.5
SME 2	6/26/2018	10.8	7.97	6.43	29.6	0.111	<0.025	<0.10	0.731	9.9
SME 2	8/1/2018	29.6	7.39	6.46	23.4	0.371	0.099	0.13	0.423	24.8
SME 2	12/11/2018	9.7	7.82	9.99	7.9	0.212	<0.025	0.166	0.368	5.1
SME 2	4/17/2019	5.0	7.82	7.80	20.5	0.105	<0.025	<0.10	0.783	6.0
SME 2	6/11/2019	12.3	6.68	3.43	24.4	<0.10	<0.025	<0.10	0.676	9.2
SME 2	8/28/2019	6.6	7.83	6.26	29.2	<0.10	<0.025	<0.10	0.452	5.9
SME 2	10/28/2019	24.9	7.64	7.42	16.8	<0.10	<0.025	0.107	0.341	18.2
SME 2	3/31/2020	9.5	7.02	7.31	18.2	<0.10	<0.025	<0.10	0.521	10.2
SME 2	6/10/2020	10.4	7.81	6.40	27.0	0.117	<0.03	<0.100	0.367	8.0
SME 2	9/21/2020	-0.8	7.84	8.02	23.6	<0.100	<0.03	<0.100	<0.250	11.0

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.11 - ANALYTICAL DATA - GD 6

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 6	3/12/2013	10	8.03	9.65	11.90	0.21	0.036	<0.10	0.29	5.8
GD 6	5/8/2013	19	6.81	2.35	19.02	0.23	0.033	<0.10	0.40	8.3
GD 6	9/23/2013	6	7.28	5.17	26.93	<0.10	<0.025	<0.10	0.36	5.8
GD 6	12/10/2013	26	5.98	11.41	10.64	0.37	0.041	<0.10	0.17	8.6
GD 6	2/6/2014	16	4.34	15.80	6.85	0.26	0.057	<0.10	0.16	5.5
GD 6	6/26/2014	14	8.31	8.95	27.29	<0.10	<0.025	<0.10	0.42	7.0
GD 6	9/30/2014	7	8.35	6.53	26.78	<0.10	<0.025	<0.10	0.55	7.0
GD 6	11/19/2014	13	7.17	3.36	9.67	0.22	<0.025	0.28	0.38	9.8
GD 6	3/23/2015	17	7.95	8.95	18.40	0.22	<0.025	<0.10	0.26	8.2
GD 6	4/22/2015	15	7.59	10.82	19.80	0.22	<0.025	<0.10	0.28	8.0
GD 6	9/30/2015	14	8.19	12.31	25.47	<0.10	<0.025	0.10	0.97	12.4
GD 6	11/19/2015	43	6.97	15.87	17.75	0.47	0.037	0.13	0.77	16.0
GD 6	3/15/2016	16	7.68	11.58	19.98	0.12	0.043	<0.10	0.50	7.9
GD 6	6/29/2016	10	8.86	9.64	31.50	<0.10	<0.025	<0.10	0.40	11.2
GD 6	8/9/2016	10	8.26	6.98	30.70	<0.10	<0.025	<0.10	0.62	10.3
GD 6	12/7/2016	11.5	7.43	8.13	14.3	0.37	<0.025	<0.10	0.49	7.5
GD 6	3/2/2017	14	8.05	8.02	14.70	0.25	<0.025	<0.10	0.51	9.0
GD 6	6/21/2017	7.7	7.67	4.99	26.8	<0.10	<0.025	0.11	0.93	21.0
GD 6	8/17/2017	7.0	8.02	7.72	31.2	<0.10	<0.025	<0.10	0.68	13.2
GD 6	10/26/2017	8.3	6.25	7.84	15.8	0.13	<0.025	<0.10	0.39	12.0
GD 6	3/27/2018	10.1	7.97	9.00	12.1	0.233	<0.025	1.76	<0.25	10.9
GD 6	6/26/2018	8.0	8.02	6.78	29.6	0.108	<0.025	<0.10	0.782	9.6
GD 6	8/1/2018	25.4	7.66	7.52	22.7	0.335	0.090	0.1	0.636	21.9
GD 6	12/11/2018	13.8	7.97	10.92	8.2	0.397	<0.025	<0.10	0.362	5.8
GD 6	4/17/2019	9.0	7.10	8.00	20.5	0.198	<0.025	<0.10	0.624	9.6
GD 6	6/11/2019	17.9	7.07	3.68	23.8	<0.10	<0.025	<0.10	0.728	12.4
GD 6	8/28/2019	9.1	7.94	6.32	28.5	<0.10	<0.025	<0.10	0.607	6.5
GD 6	10/28/2019	18.4	7.48	6.63	16.4	0.198	<0.025	<0.10	0.467	9.9
GD 6	3/31/2020	16.0	6.06	8.86	16.1	0.212	<0.025	0.127	<0.250	8.40
GD 6	6/10/2020	7.4	7.04	6.36	26.5	0.127	<0.03	<0.100	0.832	10.40
GD 6	9/21/2020	-1.0	7.96	8.48	21.4	<0.100	<0.03	<0.100	<0.250	8.60

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.12 - ANALYTICAL DATA - CO 15

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 15	3/12/2013	32	7.41	8.91	14.40	<0.10	0.097	<0.10	0.53	9.0
CO 15	5/8/2013	27	7.51	8.04	18.10	0.10	<0.12	<0.10	0.59	11.0
CO 15	9/23/2013	13	7.09	4.01	27.18	<0.10	0.027	<0.10	0.34	11.0
CO 15	12/10/2013	42	6.09	11.25	9.83	0.18	0.068	<0.10	0.56	13.0
CO 15	2/6/2014	32	4.22	16.10	6.28	0.21	<0.025	<0.10	0.46	12.0
CO 15	6/26/2014	105	8.16	7.00	25.55	<0.10	0.140	<0.10	0.59	46.0
CO 15	9/30/2014	8	7.88	6.67	23.28	<0.10	<0.025	<0.10	<0.25	8.6
CO 15	11/19/2014	44	7.38	3.68	9.43	0.20	0.030	<0.10	0.32	12.0
CO 15	3/23/2015	56	7.85	9.53	18.50	0.14	0.067	<0.10	0.61	19.0
CO 15	4/22/2015	26	7.62	10.14	21.90	0.14	<0.025	<0.10	0.40	11.0
CO 15	9/30/2015	15	7.68	12.73	22.88	<0.10	<0.025	<0.10	0.75	11.8
CO 15	11/19/2015	50	7.30	19.45	16.98	0.24	0.042	0.18	0.42	17.5
CO 15	3/15/2016	29	7.66	12.39	19.83	<0.10	<0.025	<0.10	0.78	12.4
CO 15	6/29/2016	*	*	*	*	*	*	*	*	*
CO 15	8/9/2016	38	8.03	6.78	29.60	<0.10	<0.025	<0.10	<0.25	22.0
CO 15	12/7/2016	13.6	7.50	9.78	12.1	<0.10	<0.025	<0.10	0.67	14.8
CO 15	3/2/2017	38.2	7.77	8.32	16.00	0.15	<0.025	<0.10	0.52	17.4
CO 15	6/21/2017	6.4	7.56	5.12	26.70	<0.10	<0.025	<0.10	0.97	18.3
CO 15	8/17/2017	21.7	8.29	6.47	30.10	<0.10	<0.025	<0.10	0.69	12.4
CO 15	10/26/2017	10.8	4.43	8.24	13.6	<0.10	<0.025	<0.10	0.39	6.4
CO 15	3/27/2018	14.5	7.87	9.33	12.1	<0.10	<0.025	<0.10	<0.25	8.0
CO 15	6/26/2018	13.8	7.87	7.33	26.5	<0.10	<0.025	0.270	0.573	12.4
CO 15	8/1/2018	58.8	7.25	7.12	23.0	<0.10	0.040	0.122	0.852	71.5
CO 15	12/11/2018	111.3	8.73	11.94	7.0	0.168	<0.025	0.107	1.160	10.1
CO 15	4/17/2019	17.0	7.80	9.17	19.1	0.144	<0.025	<0.10	0.574	11.5
CO 15	6/11/2019	21.9	6.56	3.10	22.8	<0.10	<0.025	<0.10	1.00	9.8
CO 15	8/28/2019	70.8	8.07	7.52	25.7	0.166	0.026	0.130	1.54	20.4
CO 15	10/28/2019	30.7	7.31	9.63	15.0	0.120	<0.025	<0.10	0.61	10.2
CO 15	3/31/2020	61.8	6.46	9.25	15.7	0.102	0.0320	0.158	0.625	72.4
CO 15	6/10/2020	18.7	6.24	6.22	25.0	0.148	<0.03	<0.100	0.456	10.4
CO 15	9/21/2020	-0.7	7.31	8.18	17.9	<0.100	<0.03	<0.100	<0.250	5.6

NTU - Nephelometric Turbidity Units

* - outfall was dry

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.13 - ANALYTICAL DATA - RC 14

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 14	3/12/2013	28	8.23	7.53	10.30	<0.10	0.088	<0.10	0.61	21.0
RC 14	5/8/2013	30	6.72	1.78	21.40	0.14	<0.12	<0.10	0.63	16.0
RC 14	9/23/2013	18	7.86	6.68	24.70	<0.10	<0.025	<0.10	0.58	13.0
RC 14	12/10/2013	40	8.45	9.50	8.20	<0.10	0.100	0.11	0.69	16.0
RC 14	2/6/2014	67	7.15	10.94	4.90	0.16	0.036	0.11	0.70	18.0
RC 14	6/26/2014	6	8.21	6.30	*	<0.10	<0.025	<0.10	0.39	5.9
RC 14	9/30/2014	12	7.20	6.20	23.50	<0.10	<0.025	<0.10	0.40	12.0
RC 14	9/19/2014	50	8.20	10.10	7.50	<0.10	0.085	0.13	0.52	28.0
RC 14	3/23/2015	70	8.03	7.80	18.20	0.26	0.070	<0.10	1.10	34.0
RC 14	4/22/2015	30	7.77	7.25	18.10	0.20	<0.025	<0.10	0.40	15.0
RC 14	9/30/2015	17	8.28	5.63	24.40	<0.10	<0.025	<0.10	0.45	12.6
RC 14	11/19/2015	95	7.32	6.07	17.71	0.14	<0.025	0.14	0.63	36.0
RC 14	3/15/2016	85	8.13	7.73	18.50	0.11	<0.025	0.30	0.43	69.6
RC 14	6/29/2016	17	7.58	2.17	28.53	<0.10	0.037	<0.10	0.46	17.5
RC 14	8/9/2016	10	7.05	2.35	28.53	<0.10	<0.025	<0.10	0.55	8.5
RC 14	12/7/2016	7.9	7.21	6.47	11.62	<0.10	<0.025	<0.10	0.25	8.6
RC 14	3/2/2017	18.0	7.32	3.55	12.69	0.12	<0.025	<0.10	0.61	14.6
RC 14	7/5/2017	17.7	7.55	6.56	25.7	0.28	0.041	<0.10	0.36	35.0
RC 14	8/16/2017	9.8	7.72	5.54	26.70	0.21	0.042	<0.10	0.40	12.4
RC 14	10/25/2017	18.7	7.64	7.26	17.1	0.24	0.088	0.15	0.47	27.2
RC 14	3/28/2018	9.9	8.03	9.00	18.3	0.148	<0.025	<0.10	<0.25	10.9
RC 14	6/29/2018	12.9	7.64	5.89	27.1	<0.10	<0.025	<0.10	0.722	13.8
RC 14	8/2/2018	21.7	7.30	5.56	23.7	<0.10	0.055	<0.10	0.848	17.3
RC 14	12/10/2018	35.1	7.13	10.63	7.3	<0.10	0.038	0.169	1.400	16.9
RC 14	4/15/2019	45.8	7.68	7.67	19.5	0.108	<0.025	<0.10	0.403	36.0
RC 14	6/12/2019	11.0	8.03	7.39	25.3	0.120	<0.025	<0.10	0.250	12.3
RC 14	8/27/2019	76.4	8.36	8.78	28.4	<0.10	<0.025	0.141	0.391	8.8
RC 14	10/29/2019	17.4	7.90	9.83	17.7	<0.10	<0.025	<0.10	0.478	10.6
RC 14	3/30/2020	12.9	8.10	10.01	21.9	<0.10	<0.025	<0.10	0.451	15.7
RC 14	6/16/2020	11.5	6.79	8.01	26.9	0.141	<0.030	<0.10	0.560	11.4
RC 14	9/21/2020	13.7	7.49	9.65	21.9	<0.100	<0.030	0.202	0.307	8.2

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - unknown reading due to equipment malfunction

TABLE B.14 - ANALYTICAL DATA - SS 5

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 5	3/12/2013	6	8.38	9.87	10.80	0.30	0.031	<0.10	0.39	7.2
SS 5	5/8/2013	24	7.38	7.19	16.80	0.16	<0.12	<0.10	0.62	21.0
SS 5	9/23/2013	14	8.00	5.44	25.80	<0.10	0.029	<0.10	1.30	15.0
SS 5	12/10/2013	23	8.25	9.10	7.70	0.24	0.043	0.11	0.67	13.0
SS 5	2/6/2014	28	7.20	12.09	5.40	0.39	<0.025	<0.10	0.86	12.0
SS 5	6/26/2014	11	8.53	7.01	*	<0.10	<0.025	<0.10	0.40	11.0
SS 5	9/30/2014	11	7.64	6.82	24.44	<0.10	<0.025	<0.10	0.45	11.0
SS 5	11/19/2014	14	8.96	13.13	8.50	<0.10	<0.025	<0.10	0.35	9.6
SS 5	3/23/2015	18	8.50	8.99	17.70	0.26	<0.025	<0.10	0.46	11.0
SS 5	4/22/2015	19	7.76	6.71	20.20	0.15	<0.025	<0.10	0.47	13.0
SS 5	9/30/2015	11	8.26	6.61	25.30	<0.10	<0.025	<0.10	0.61	9.9
SS 5	11/19/2015	19	7.86	8.47	15.90	0.24	<0.025	<0.10	<0.25	11.0
SS 5	3/15/2016	20.0	8.37	8.47	17.20	0.26	<0.025	0.23	0.28	9.5
SS 5	6/29/2016	15	8.01	3.81	29.77	<0.10	0.066	<0.10	0.48	13.2
SS 5	8/9/2016	12	7.86	3.16	29.40	<0.10	<0.025	<0.10	0.46	12.6
SS 5	12/7/2016	6.6	7.94	6.70	12.30	<0.10	<0.025	0.12	0.42	8.0
SS 5	3/2/2017	14.0	7.78	3.92	12.77	0.33	<0.025	<0.10	0.77	16.0
SS 5	7/5/2017	8.4	7.77	7.19	28.90	<0.10	<0.025	<0.10	0.47	12.0
SS 5	8/16/2017	10.2	8.10	4.83	29.90	<0.10	<0.025	<0.10	0.49	15.1
SS 5	10/25/2017	7.5	8.24	8.36	19.2	<0.10	<0.025	<0.10	0.53	11.8
SS 5	3/28/2018	7.0	8.53	10.23	18.5	0.248	<0.025	<0.10	<0.25	8.33
SS 5	6/29/2018	10.4	7.93	5.50	27.5	<0.10	<0.025	<0.10	0.605	13.3
SS 5	8/2/2018	13.5	7.58	6.04	25.8	<0.10	<0.025	<0.10	0.554	12.8
SS 5	12/10/2018	21.9	7.01	11.15	7.3	0.146	<0.025	<0.10	0.522	16.7
SS 5	4/15/2019	15.5	7.35	7.77	19.4	0.168	<0.025	<0.10	0.374	11.7
SS 5	6/12/2019	10.0	8.44	8.78	26.6	<0.10	<0.025	<0.10	<0.250	11.0
SS 5	8/27/2019	24.5	8.66	9.02	28.9	<0.10	<0.025	0.17	0.508	7.1
SS 5	10/29/2019	18.7	8.20	9.33	18.1	0.105	<0.025	0.20	0.631	10.4
SS 5	3/30/2020	9.2	8.35	11.07	20.8	0.127	<0.025	<0.10	0.399	10.6
SS 5	6/16/2020	10.5	8.41	7.99	27.9	<0.100	<0.030	<0.10	0.534	9.7
SS 5	9/21/2020	16.5	7.36	11.45	22.6	<0.100	<0.030	<0.100	0.512	11.0

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - unknown reading due to equipment malfunction

TABLE B.15 - ANALYTICAL DATA - SME 1

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 1	3/12/2013	13	8.19	8.26	13.10	0.54	0.110	0.11	0.34	16.0
SME 1	5/8/2013	24	7.64	8.96	16.00	0.15	0.063	<0.10	0.42	14.0
SME 1	9/23/2013	14	8.26	7.87	27.70	<0.10	0.053	<0.10	0.80	15.0
SME 1	12/10/2013	46	8.05	9.15	7.60	0.55	0.210	0.26	0.47	21.0
SME 1	2/6/2014	61	7.22	11.34	5.90	0.55	0.110	0.13	0.50	23.0
SME 1	6/26/2014	14	8.49	7.05	*	<0.10	<0.025	<0.10	0.31	13.0
SME 1	9/30/2014	28	8.25	7.46	24.67	<0.10	0.044	0.11	0.61	34.0
SME 1	11/19/2014	40	8.31	10.86	7.80	0.74	0.270	0.29	0.55	19.0
SME 1	3/23/2015	21	8.26	8.52	17.30	0.51	0.073	0.10	<0.25	14.0
SME 1	4/22/2015	29	7.14	7.97	18.50	0.40	0.039	<0.10	0.38	18.0
SME 1	9/30/2015	15	8.34	7.03	26.40	<0.10	0.052	0.14	0.81	15.3
SME 1	11/19/2015	50	7.92	7.04	15.90	0.40	0.084	0.13	<0.25	23.2
SME 1	3/15/2016	26	8.44	7.21	18.30	0.45	0.047	<0.10	<0.25	17.7
SME 1	6/29/2016	21	8.80	3.29	30.67	<0.10	0.180	0.25	0.62	20.3
SME 1	8/9/2016	15	8.55	4.98	28.87	<0.10	0.089	0.15	0.55	12.6
SME 1	12/7/2016	31	7.96	10.20	11.98	0.41	0.209	0.27	0.38	17.7
SME 1	3/2/2017	14	7.75	4.31	12.34	0.67	0.127	0.21	0.35	15.0
SME 1	6/29/2017	19.2	9.11	9.21	25.80	<0.10	0.028	<0.10	0.53	18.3
SME 1	8/16/2017	10.6	8.12	6.58	29.70	<0.10	<0.025	0.11	0.52	12.7
SME 1	10/25/2017	5.4	8.02	8.32	17.3	0.4	0.121	0.15	0.29	16.9
SME 1	3/28/2018	19.3	8.10	9.18	17.6	0.633	0.106	<0.10	<0.25	19.8
SME 1	6/29/2018	20.7	7.84	6.37	26.2	0.312	0.121	0.24	0.670	23.3
SME 1	8/2/2018	28.5	7.48	5.82	23.9	0.296	0.145	0.14	0.495	29.5
SME 1	12/10/2018	32.0	7.45	11.48	8.0	0.259	<0.025	<0.10	0.336	31.0
SME 1	4/15/2019	42.2	7.89	7.89	19.7	0.390	0.063	<0.10	0.360	35.0
SME 1	6/12/2019	12.2	7.34	8.73	27.2	<0.10	<0.025	<0.10	<0.250	9.7
SME 1	8/27/2019	135.2	7.45	8.51	28.8	<0.10	<0.025	0.161	0.356	7.1
SME 1	10/29/2019	14.5	7.95	9.21	17.6	0.129	0.049	0.134	0.272	11.0
SME 1	3/30/2020	13.3	7.35	8.61	19.3	0.462	<0.025	<0.10	<0.250	13.3
SME 1	6/16/2020	11.6	8.58	10.36	27.0	<0.100	0.031	0.129	0.485	11.4
SME 1	9/21/2020	13.8	7.71	6.92	22.2	<0.100	<0.030	<0.100	<0.250	9.0

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - unknown reading due to equipment malfunction

TABLE B.16 - ANALYTICAL DATA - GD 9

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 9	2/6/2014	34	7.20	11.27	5.50	0.40	0.063	0.12	0.60	14.0
GD 9	6/26/2014	45	8.22	6.08	*	<0.10	0.029	0.12	0.41	34.0
GD 9	9/30/2014	12	8.30	6.93	24.61	<0.10	<0.025	<0.10	0.30	15.0
GD 9	11/19/2014	23	8.13	9.38	9.30	0.16	0.082	0.25	0.74	15.0
GD 9	3/23/2015	25	8.16	7.58	15.80	0.15	<0.025	<0.10	0.64	18.0
GD 9	4/22/2015	18	7.58	5.58	20.70	0.15	<0.025	<0.10	0.65	14.0
GD 9	9/30/2015	10	7.93	5.37	25.70	<0.10	<0.025	<0.10	0.64	10.8
GD 9	11/19/2015	40	7.67	*	16.50	0.25	0.096	0.12	<0.25	16.7
GD 9	3/15/2016	15	8.49	7.66	17.30	0.33	0.044	<0.10	<0.25	12.1
GD 9	6/29/2016	44	8.20	1.76	29.77	<0.10	<0.025	<0.10	0.65	67.2
GD 9	8/9/2016	11	8.07	4.14	29.00	<0.10	<0.025	<0.10	0.47	9.4
GD 9	12/7/2016	26	7.99	8.01	11.99	<0.10	<0.025	0.13	0.38	38.3
GD 9	3/2/2017	10.7	7.70	4.26	13.60	0.27	<0.025	<0.10	0.67	11.2
GD 9	6/29/2017	15.8	8.37	5.85	26.4	<0.10	<0.025	<0.10	0.72	15.7
GD 9	8/16/2017	11.3	7.82	5.52	29.60	<0.10	<0.025	<0.10	0.38	18.2
GD 9	10/25/2017	18.9	7.50	6.68	18.9	<0.10	0.025	<0.10	0.38	29.7
GD 9	3/28/2018	10.2	8.21	9.75	15.8	0.230	<0.025	<0.10	<0.25	12.4
GD 9	6/29/2018	11.0	7.73	5.45	27.6	<0.10	<0.025	<0.10	0.507	13.9
GD 9	8/2/2018	13.0	7.55	5.17	26.0	0.110	0.067	<0.10	0.600	20.8
GD 9	12/10/2018	26.4	7.90	11.05	7.9	0.292	0.047	0.244	0.442	22.8
GD 9	4/15/2019	221.5	7.51	8.09	20.0	0.194	0.034	<0.10	<0.250	178
GD 9	6/12/2019	7.3	7.21	8.61	27.0	0.116	<0.025	<0.10	<0.250	29.0
GD 9	8/27/2019	76.5	7.81	8.22	28.8	<0.10	<0.025	0.146	0.385	9.3
GD 9	10/29/2019	22.3	7.35	8.91	17.9	<0.10	<0.025	<0.10	0.491	15.0
GD 9	3/30/2020	18.3	7.56	8.54	18.4	0.243	<0.025	0.121	<0.250	16.4
GD 9	6/16/2020	11.4	8.15	7.94	27.1	<0.100	<0.030	<0.100	0.352	11.5
GD 9	9/21/2020	11.6	7.38	6.41	23.3	<0.100	<0.030	<0.100	<0.250	9.0

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - unknown reading due to equipment malfunction

TABLE B.17 - ANALYTICAL DATA - GD 7

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 7	3/12/2013	10	7.98	11.63	15.27	0.39	0.037	<0.10	0.31	8.8
GD 7	5/8/2013	26	7.72	7.46	18.40	0.24	0.063	<0.10	<0.56	20.0
GD 7	9/23/2013	11	7.05	6.31	26.50	<0.10	0.026	<0.10	0.54	9.6
GD 7	12/10/2013	42	8.02	9.68	7.50	0.34	0.084	0.11	0.32	40.0
GD 7	2/6/2014	28	7.27	13.32	4.40	0.52	0.034	<0.10	0.61	13.0
GD 7	6/26/2014	6	8.45	7.04	*	<0.10	<0.025	<0.10	0.52	8.7
GD 7	9/30/2014	12	7.87	6.32	24.39	<0.10	<0.025	<0.10	0.41	13.0
GD 7	11/19/2014	20	8.53	10.10	9.60	0.14	<0.025	0.13	0.46	15.0
GD 7	3/23/2015	13	8.28	8.87	15.40	0.27	<0.025	<0.10	0.35	10.0
GD 7	4/22/2015	28	7.99	6.40	20.20	0.24	<0.025	<0.10	0.47	24.0
GD 7	9/30/2015	8	7.89	5.18	24.90	<0.10	<0.025	<0.10	0.59	9.1
GD 7	11/19/2015	45	7.78	8.23	15.60	0.34	0.051	<0.10	<0.25	34.3
GD 7	3/15/2016	17	8.46	8.51	17.80	0.26	<0.025	<0.10	0.40	13.9
GD 7	6/29/2016	11	7.90	2.22	30.32	<0.10	0.048	<0.10	0.49	8.6
GD 7	8/9/2016	7	7.97	4.08	29.31	<0.10	<0.025	<0.10	0.47	5.7
GD 7	12/7/2016	9.5	7.88	10.14	12.39	<0.10	<0.025	<0.10	0.36	7.8
GD 7	3/2/2017	11	7.80	4.57	13.35	0.36	<0.025	<0.10	0.51	14.4
GD 7	6/29/2017	9.4	8.18	6.59	26.4	<0.10	<0.025	<0.10	0.44	13.4
GD 7	8/16/2017	8.5	7.84	5.66	29.0	<0.10	<0.025	<0.10	0.36	15.3
GD 7	10/25/2017	9.9	7.73	6.93	19.8	<0.10	<0.025	<0.10	0.42	18.4
GD 7	3/28/2018	7.6	8.16	9.33	14.9	0.350	<0.025	<0.10	<0.25	9.19
GD 7	6/29/2018	14.2	7.79	5.56	27.5	<0.10	<0.025	<0.10	0.625	14.60
GD 7	8/2/2018	18.5	7.62	5.51	27.0	<0.10	0.027	<0.10	0.450	32.10
GD 7	12/10/2018	40.8	7.06	11.05	8.0	0.378	<0.025	0.149	0.390	48.7
GD 7	4/15/2019	30.1	7.83	7.85	19.2	0.230	<0.025	<0.10	<0.250	12.0
GD 7	6/12/2019	7.4	7.24	6.68	27.2	0.132	<0.025	<0.10	<0.250	9.3
GD 7	8/27/2019	45.3	7.35	9.35	29.1	<0.10	<0.025	0.156	0.604	6.3
GD 7	10/29/2019	17.6	7.77	8.14	17.2	<0.10	<0.025	<0.10	0.414	17.0
GD 7	3/30/2020	7.8	7.77	10.38	21.1	<0.10	<0.025	<0.10	0.343	12.8
GD 7	6/16/2020	9.1	8.12	8.25	27.3	<0.100	<0.030	<0.100	0.322	8.3
GD 7	9/21/2020	13.6	7.42	12.45	23.7	<0.100	<0.030	<0.100	<0.250	9.60

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - unknown reading due to equipment malfunction

TABLE B.18 - ANALYTICAL DATA - GD 5

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 5	3/13/2013	12	8.33	9.29	10.20	0.26	<0.025	<0.10	0.34	9.6
GD 5	5/20/2013	14	8.28	7.76	22.60	<0.10	<0.025	<0.10	0.62	9.0
GD 5	9/23/2013	12	7.67	6.78	27.10	<0.10	0.027	<0.10	0.45	8.0
GD 5	12/10/2013	58	7.97	9.10	9.10	0.10	0.088	0.10	0.47	18.0
GD 5	2/6/2014	46	7.14	9.88	7.20	0.17	0.038	<0.10	0.37	17.0
GD 5	6/26/2014	17	7.90	6.54	*	<0.10	<0.025	<0.10	0.34	12.0
GD 5	9/30/2014	23	8.28	7.53	25.22	<0.10	<0.025	<0.10	<0.25	18.0
GD 5	11/19/2014	43	8.15	9.30	9.40	0.11	0.051	<0.10	0.43	26.0
GD 5	3/23/2015	24	8.14	8.58	15.90	0.12	<0.025	<0.10	0.34	15.0
GD 5	4/22/2015	25	7.81	7.78	21.70	0.14	<0.025	<0.10	0.65	13.0
GD 5	9/30/2015	18	8.03	6.27	26.30	<0.10	<0.025	0.12	0.56	17.3
GD 5	11/19/2015	90	7.63	7.34	16.60	0.17	0.042	<0.10	<0.25	42.8
GD 5	3/15/2016	24	8.80	7.47	19.40	<0.10	<0.025	<0.10	0.44	13.2
GD 5	6/29/2016	21	8.02	2.27	30.37	<0.10	0.074	<0.10	0.49	15.0
GD 5	8/9/2016	12	8.25	5.55	30.20	<0.10	<0.025	<0.10	0.41	11.0
GD 5	12/7/2016	10	7.73	10.61	11.96	<0.10	<0.025	<0.10	0.34	6.8
GD 5	3/2/2017	12	7.81	4.49	14.26	0.12	<0.025	<0.10	0.49	13.0
GD 5	7/5/2017	15.0	7.32	5.83	26.9	<0.10	<0.025	<0.10	0.73	22.7
GD 5	8/16/2017	8.0	7.89	6.22	28.0	<0.10	<0.025	<0.10	0.40	9.0
GD 5	10/25/2017	9.2	7.36	7.35	18.7	<0.10	<0.025	<0.10	0.35	14.6
GD 5	3/28/2018	6.1	8.18	9.47	18.5	0.127	<0.025	<0.10	<0.25	6.06
GD 5	6/29/2018	16.3	7.76	5.66	27.5	<0.10	<0.025	<0.10	0.689	19.60
GD 5	8/2/2018	18.4	7.59	6.02	25.7	<0.10	<0.025	<0.10	0.332	26.40
GD 5	12/10/2018	37.7	7.87	11.30	7.3	<0.10	<0.025	0.190	0.523	22.3
GD 5	4/15/2019	29.7	7.69	8.02	19.3	0.128	<0.025	1.20	0.411	29.0
GD 5	6/12/2019	6.0	8.02	7.64	27.2	<0.10	<0.025	<0.10	<0.250	9.3
GD 5	8/27/2019	75.2	7.15	7.98	28.7	<0.10	<0.025	0.17	0.506	10.9
GD 5	10/29/2019	29.0	7.85	9.42	17.8	<0.10	<0.025	<0.10	0.477	21.0
GD 5	3/30/2020	14.5	7.65	8.86	19.1	0.130	<0.025	<0.10	0.320	12.1
GD 5	6/16/2020	16.4	7.69	7.75	27.2	<0.100	<0.030	<0.100	0.561	7.4
GD 5	9/21/2020	10.8	7.65	6.33	23.2	<0.100	<0.030	<0.100	<0.250	7.9

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - unknown reading due to equipment malfunction

TABLE B.19 - ANALYTICAL DATA - GD 3

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 3	3/13/2013	12	8.00	9.28	10.70	0.29	0.028	<0.10	0.44	11.0
GD 3	5/20/2013	12	8.09	7.01	23.40	0.15	0.026	<0.10	0.63	13.0
GD 3	9/23/2013	12	7.80	6.50	26.40	<0.10	0.025	<0.10	0.58	10.0
GD 3	12/10/2013	46	7.85	9.23	9.30	0.21	0.085	0.14	0.64	23.0
GD 3	2/6/2014	90	7.13	10.58	6.10	0.21	<0.025	0.12	0.68	27.0
GD 3	6/26/2014	15	8.13	8.00	*	0.12	<0.025	<0.10	0.40	14.0
GD 3	9/30/2014	20	8.11	6.69	25.06	<0.10	<0.025	<0.10	0.32	19.0
GD 3	11/19/2014	18	8.36	10.88	9.30	<0.10	<0.025	<0.10	0.26	15.0
GD 3	3/23/2015	13	8.32	7.84	16.50	0.22	<0.025	<0.10	0.34	10.0
GD 3	4/22/2015	26	7.86	6.74	20.60	0.18	0.079	<0.10	0.36	21.0
GD 3	9/30/2015	10	7.94	4.91	24.90	0.10	<0.025	0.13	0.74	11.5
GD 3	11/19/2015	40	7.61	7.74	16.00	0.25	<0.025	0.10	<0.25	22.0
GD 3	3/15/2016	26	8.04	8.62	18.70	0.42	0.071	<0.10	<0.25	11.7
GD 3	6/29/2016	6	7.84	2.78	29.94	<0.10	0.088	<0.10	<0.25	10.7
GD 3	8/9/2016	8	7.98	5.09	30.01	<0.10	<0.025	<0.10	0.39	10.0
GD 3	12/7/2016	5.9	7.91	10.55	12.00	<0.10	<0.025	<0.10	0.36	8.1
GD 3	3/2/2017	14	8.21	5.01	14.35	0.24	<0.025	0.14	0.65	15.6
GD 3	7/5/2017	11.2	7.48	6.23	27.3	<0.10	<0.025	<0.10	0.56	14.4
GD 3	8/16/2017	7.4	8.01	6.24	28.8	<0.10	<0.025	<0.10	0.39	8.5
GD 3	10/25/2017	8.9	7.54	7.25	19.1	<0.10	<0.025	<0.10	0.39	13.6
GD 3	3/28/2018	9.1	8.06	9.34	16.6	0.241	<0.025	<0.10	<0.25	10.8
GD 3	6/29/2018	12.9	7.68	5.63	27.3	<0.10	<0.025	<0.10	0.511	12.7
GD 3	8/2/2018	13.4	7.69	5.72	26.6	<0.10	<0.025	<0.10	0.569	20.8
GD 3	12/10/2018	41.4	7.40	11.09	6.8	<0.10	<0.025	0.128	0.519	31.3
GD 3	4/15/2019	15.3	7.71	8.02	19.9	0.233	<0.025	<0.10	<0.250	14.7
GD 3	6/12/2019	9.6	7.24	8.31	27.3	<0.10	<0.025	<0.10	<0.250	13.0
GD 3	8/27/2019	202.8	7.18	8.33	28.8	<0.10	<0.025	0.159	0.434	6.5
GD 3	10/29/2019	26.2	7.84	9.63	17.2	<0.10	<0.025	<0.10	0.453	13.0
GD 3	3/30/2020	17.4	7.58	8.83	18.8	0.216	<0.025	<0.10	0.281	18.0
GD 3	6/16/2020	11.6	8.03	8.20	27.5	<0.100	<0.030	<0.100	0.363	9.5
GD 3	9/21/2020	13.5	7.51	6.73	23.4	<0.100	<0.030	0.106	<0.250	9.8

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - unknown reading due to equipment malfunction

TABLE B.20 - ANALYTICAL DATA - SME 3

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 3	3/13/2013	17	7.84	7.44	11.30	0.20	0.038	<0.10	0.69	15.0
SME 3	5/20/2013	19	8.11	6.09	23.60	0.17	0.028	<0.10	0.69	19.0
SME 3	9/23/2013	15		5.32	26.50	<0.10	0.029	<0.10	0.53	13.0
SME 3	12/10/2013	48	7.69	8.85	9.60	<0.10	0.086	<0.10	0.62	20.0
SME 3	2/6/2014	83	7.09	10.62	6.30	0.25	<0.025	<0.10	0.69	33.0
SME 3	6/26/2014	50	8.04	7.03	*	<0.10	0.047	<0.10	0.53	30.0
SME 3	9/30/2014	17	8.08	5.98	25.33	<0.10	<0.025	<0.10	0.66	18.0
SME 3	11/19/2014	22	8.30	10.40	9.30	0.12	0.035	<0.10	<0.25	19.0
SME 3	3/23/2015	25	8.13	7.72	21.20	0.24	0.026	<0.10	0.46	16.0
SME 3	4/22/2015	12	7.76	6.70	21.80	0.15	<0.025	<0.10	0.45	14.0
SME 3	9/30/2015	18	7.96	6.19	25.60	0.13	<0.025	0.13	0.42	24.4
SME 3	11/19/2015	65	7.56	7.44	15.80	0.25	0.032	<0.10	<0.25	37.8
SME 3	3/15/2016	68	8.35	7.51	19.20	0.30	<0.025	<0.10	<0.25	78.8
SME 3	6/29/2016	18	7.80	2.56	30.16	<0.10	0.062	<0.10	0.37	15.3
SME 3	8/9/2016	15	7.52	3.43	29.53	<0.10	<0.025	<0.10	0.56	10.8
SME 3	12/7/2016	8.5	7.90	10.91	11.85	<0.10	<0.025	0.15	1.78	9.4
SME 3	3/2/2017	14.6	7.95	4.60	13.64	0.27	<0.025	<0.10	0.73	17.0
SME 3	7/5/2017	12.5	7.54	5.88	27.3	<0.10	0.039	<0.10	0.63	16.3
SME 3	8/16/2017	11.5	7.86	5.00	28.1	<0.10	0.07	<0.10	0.45	18.5
SME 3	10/25/2017	15.3	7.42	8.23	19.4	<0.10	0.053	0.11	0.38	49.7
SME 3	3/28/2018	8.9	7.98	9.44	17.4	0.220	<0.025	<0.10	<0.25	11.2
SME 3	6/29/2018	15.8	7.53	5.39	26.9	<0.10	<0.025	<0.10	0.800	115.0
SME 3	8/2/2018	30.0	7.59	5.66	26.4	<0.10	<0.025	0.11	0.981	56.0
SME 3	12/10/2018	33.1	7.21	10.68	7.0	<0.10	<0.025	0.127	0.433	27.1
SME 3	4/15/2019	552.6	7.78	7.65	19.7	0.234	<0.025	0.285	0.271	371
SME 3	6/12/2019	7.8	7.48	6.87	27.1	<0.10	<0.025	<0.10	<0.250	10.7
SME 3	8/27/2019	55.3	7.91	8.41	29.2	<0.10	<0.025	0.149	0.389	7.0
SME 3	10/29/2019	22.4	7.77	8.44	17.2	<0.10	<0.025	<0.10	0.390	15.4
SME 3	3/30/2020	14.4	7.51	8.91	18.8	0.239	<0.025	<0.10	0.657	18.2
SME 3	6/16/2020	9.2	8.06	7.95	27.1	<0.100	<0.030	0.102	0.466	10.1
SME 3	9/21/2020	15.3	7.67	6.50	23.0	<0.100	<0.030	<0.100	0.660	10.7

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - unknown reading due to equipment malfunction

TABLE B.21 - ANALYTICAL DATA - HB 3

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
HB 3	3/12/2013	33	7.54	9.48	13.90	0.19	0.081	<0.10	0.83	49.0
HB 3	5/20/2013	15	8.21	6.82	27.80	0.17	<0.025	<0.10	0.60	17.0
HB 3	9/23/2013	21	8.02	4.89	25.70	<0.10	0.037	<0.10	0.60	19.0
HB 3	12/10/2013	48	7.90	8.65	10.10	<0.10	0.140	0.15	0.62	20.0
HB 3	2/6/2014	32	7.22	12.24	5.90	0.48	0.030	<0.10	0.37	13.0
HB 3	6/26/2014	12	8.20	7.12	*	<0.10	<0.025	<0.10	0.37	12.0
HB 3	9/30/2014	30	8.05	6.01	24.78	<0.10	<0.025	<0.10	0.48	30.0
HB 3	11/19/2014	56	7.85	8.83	8.80	0.11	0.098	0.12	0.44	51.0
HB 3	3/23/2015	27	8.21	8.40	24.20	0.26	<0.025	<0.10	0.46	35.0
HB 3	4/22/2015	25	7.91	8.36	21.90	0.20	<0.025	<0.10	0.66	22.0
HB 3	9/30/2015	22	7.89	5.05	25.70	<0.10	<0.025	<0.10	0.91	23.0
HB 3	11/19/2015	32	7.83	7.37	17.40	0.38	0.045	<0.10	<0.25	30.2
HB 3	3/15/2016	29	8.52	7.97	19.10	0.30	0.087	<0.10	<0.25	23.8
HB 3	6/29/2016	17	8.02	2.77	30.61	<0.10	<0.025	<0.10	0.51	20.9
HB 3	8/9/2016	11	7.91	4.31	30.19	<0.10	<0.025	<0.10	0.70	14.3
HB 3	12/7/2016	16	7.93	8.44	12.81	0.11	<0.025	0.13	0.73	17.0
HB 3	3/2/2017	50.0	7.75	3.90	14.33	0.33	<0.025	0.12	0.97	57.1
HB 3	7/5/2017	23	7.29	5.36	27.00	<0.10	<0.025	<0.10	0.81	28.5
HB 3	8/16/2017	13.7	7.35	5.04	27.00	<0.10	<0.025	<0.10	0.76	12.7
HB 3	10/25/2017	11.7	6.64	9.93	18.5	<0.10	<0.025	<0.10	0.32	20.4
HB 3	3/28/2018	13.2	7.99	9.47	17.6	0.359	<0.025	<0.10	<0.25	20.2
HB 3	6/29/2018	14.6	7.67	5.55	26.0	<0.10	<0.025	<0.10	0.464	18.2
HB 3	8/2/2018	28.3	7.40	5.64	25.1	<0.10	<0.025	<0.10	0.952	35.3
HB 3	12/10/2018	24.8	7.55	10.98	7.9	0.363	<0.025	0.141	0.426	27.6
HB 3	4/15/2019	22.4	7.73	8.27	19.6	0.233	<0.025	<0.10	<0.250	35.5
HB 3	6/12/2019	12.4	8.13	6.77	26.6	0.129	<0.025	<0.10	<0.250	52.3
HB 3	8/27/2019	78.1	8.21	8.75	29.1	<0.10	<0.025	0.179	0.634	7.3
HB 3	10/29/2019	28.2	7.82	9.88	18.3	<0.10	<0.025	0.166	0.517	17.6
HB 3	3/30/2020	8.9	7.79	8.91	18.5	0.234	<0.025	<0.10	1.20	18.4
HB 3	6/16/2020	20.4	7.33	7.01	26.3	<0.100	<0.030	<0.100	0.30	14.6
HB 3	9/21/2020	12.1	7.80	7.69	23.5	<0.100	<0.030	<0.100	0.28	8.3

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - unknown reading due to equipment malfunction

Appendix III

Laboratory Report No. L1264619, dated September 28, 2020

Laboratory Report No. L1264638, dated September 29, 2020

S&ME - Huntsville

Sample Delivery Group: L1264619
Samples Received: 09/22/2020
Project Number: 4482-16-056
Description: Gadsden MS4

Report To: Ms. Emily Kennedy
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Entire Report Reviewed By:



Craig Cothron
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	5
Sr: Sample Results	6
RC 14 L1264619-01	6
SS 5 L1264619-02	7
SME 1 L1264619-03	8
GD 9 L1264619-04	9
GD 7 L1264619-05	10
GD 5 L1264619-06	11
GD 3 L1264619-07	12
SME3 L1264619-08	13
HB 3 L1264619-09	14
SME 5 L1264619-10	15
Qc: Quality Control Summary	16
Gravimetric Analysis by Method 2540 D-2011	16
Wet Chemistry by Method 351.2	18
Wet Chemistry by Method 353.2	19
Wet Chemistry by Method 365.4	20
Wet Chemistry by Method 4500P E-2011	21
Gl: Glossary of Terms	22
Al: Accreditations & Locations	23
Sc: Sample Chain of Custody	24



SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



RC 14 L1264619-01 WW

Collected by
Grant Williams

Collected date/time
09/21/20 13:10

Received date/time
09/22/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1549184	1	09/25/20 11:13	09/25/20 20:26	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1548746	1	09/24/20 16:16	09/26/20 12:25	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1549828	1	09/27/20 16:06	09/27/20 16:06	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1549812	1	09/24/20 16:16	09/26/20 15:02	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1547147	1	09/22/20 19:39	09/22/20 19:39	BJD	Mt. Juliet, TN

SS 5 L1264619-02 WW

Collected by
Grant Williams

Collected date/time
09/21/20 12:35

Received date/time
09/22/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1549184	1	09/25/20 11:13	09/25/20 20:26	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1548746	1	09/24/20 16:16	09/26/20 12:32	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1549828	1	09/27/20 16:09	09/27/20 16:09	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1549812	1	09/24/20 16:16	09/26/20 15:05	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1547147	1	09/22/20 19:39	09/22/20 19:39	BJD	Mt. Juliet, TN

SME 1 L1264619-03 WW

Collected by
Grant Williams

Collected date/time
09/21/20 11:45

Received date/time
09/22/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1549184	1	09/25/20 11:13	09/25/20 20:26	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1548746	1	09/24/20 16:16	09/26/20 13:07	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1549828	1	09/27/20 16:12	09/27/20 16:12	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1549812	1	09/24/20 16:16	09/26/20 15:08	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1547147	1	09/22/20 19:40	09/22/20 19:40	BJD	Mt. Juliet, TN

GD 9 L1264619-04 WW

Collected by
Grant Williams

Collected date/time
09/21/20 12:35

Received date/time
09/22/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1549615	1	09/25/20 23:04	09/26/20 00:32	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1548746	1	09/24/20 16:16	09/26/20 13:09	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1549828	1	09/27/20 16:13	09/27/20 16:13	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1549812	1	09/24/20 16:16	09/26/20 15:13	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1547147	1	09/22/20 19:42	09/22/20 19:42	BJD	Mt. Juliet, TN

GD 7 L1264619-05 WW

Collected by
Grant Williams

Collected date/time
09/21/20 11:20

Received date/time
09/22/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1549615	1	09/25/20 23:04	09/26/20 00:32	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1548746	1	09/24/20 16:16	09/26/20 12:28	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1549828	1	09/27/20 16:14	09/27/20 16:14	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1549812	1	09/24/20 16:16	09/26/20 15:16	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1547147	1	09/22/20 19:42	09/22/20 19:42	BJD	Mt. Juliet, TN



GD 5 L1264619-06 WW

				Collected by	Collected date/time	Received date/time
				Grant Williams	09/21/20 10:40	09/22/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1549615	1	09/25/20 23:04	09/26/20 00:32	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1548746	1	09/24/20 16:16	09/26/20 12:36	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1549828	1	09/27/20 17:11	09/27/20 17:11	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1549812	1	09/24/20 16:16	09/26/20 15:17	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1547147	1	09/22/20 19:42	09/22/20 19:42	BJD	Mt. Juliet, TN

GD 3 L1264619-07 WW

				Collected by	Collected date/time	Received date/time
				Grant Williams	09/21/20 10:55	09/22/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1549615	1	09/25/20 23:04	09/26/20 00:32	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1548746	1	09/24/20 16:16	09/26/20 12:38	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1549828	1	09/27/20 17:12	09/27/20 17:12	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1549812	1	09/24/20 16:16	09/26/20 15:19	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1547147	1	09/22/20 19:42	09/22/20 19:42	BJD	Mt. Juliet, TN

SME3 L1264619-08 WW

				Collected by	Collected date/time	Received date/time
				Grant Williams	09/21/20 11:03	09/22/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1549615	1	09/25/20 23:04	09/26/20 00:32	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1548746	1	09/24/20 16:16	09/26/20 12:39	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1549828	1	09/27/20 17:13	09/27/20 17:13	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1549812	1	09/24/20 16:16	09/26/20 15:20	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1547147	1	09/22/20 19:42	09/22/20 19:42	BJD	Mt. Juliet, TN

HB 3 L1264619-09 WW

				Collected by	Collected date/time	Received date/time
				Grant Williams	09/21/20 10:18	09/22/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1549615	1	09/25/20 23:04	09/26/20 00:32	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1548746	1	09/24/20 16:16	09/26/20 12:40	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1549828	1	09/27/20 17:14	09/27/20 17:14	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1549812	1	09/24/20 16:16	09/26/20 15:21	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1547147	1	09/22/20 19:42	09/22/20 19:42	BJD	Mt. Juliet, TN

SME 5 L1264619-10 WW

				Collected by	Collected date/time	Received date/time
				Grant Williams	09/21/20 10:28	09/22/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1549615	1	09/25/20 23:04	09/26/20 00:32	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1548746	1	09/24/20 16:16	09/26/20 12:42	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1549828	1	09/27/20 17:16	09/27/20 17:16	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1549812	1	09/24/20 16:16	09/26/20 15:22	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1547147	1	09/22/20 19:43	09/22/20 19:43	BJD	Mt. Juliet, TN



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Craig Cothron
Project Manager

⁴Cn⁹Sc



Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	8.20		2.50	1	09/25/2020 20:26	WG1549184

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.307	P1	0.250	1	09/26/2020 12:25	WG1548746

Wet Chemistry by Method 353.2

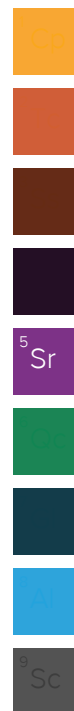
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	09/27/2020 16:06	WG1549828

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	0.202		0.100	1	09/26/2020 15:02	WG1549812

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND	J6	0.0300	1	09/22/2020 19:39	WG1547147





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	11.0	P1	5.00	1	09/25/2020 20:26	WG1549184

Wet Chemistry by Method 351.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.512	J6	0.250	1	09/26/2020 12:32	WG1548746

Wet Chemistry by Method 353.2

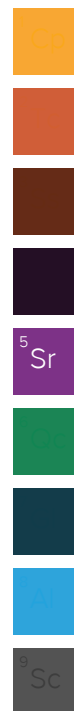
Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND	J5	0.100	1	09/27/2020 16:09	WG1549828

Wet Chemistry by Method 365.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND	J6	0.100	1	09/26/2020 15:05	WG1549812

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	09/22/2020 19:39	WG1547147





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	9.00		5.00	1	09/25/2020 20:26	WG1549184

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	09/26/2020 13:07	WG1548746

Wet Chemistry by Method 353.2

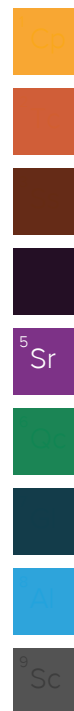
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	09/27/2020 16:12	WG1549828

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND	P1	0.100	1	09/26/2020 15:08	WG1549812

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	09/22/2020 19:40	WG1547147





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	9.00		2.50	1	09/26/2020 00:32	WG1549615

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	09/26/2020 13:09	WG1548746

Wet Chemistry by Method 353.2

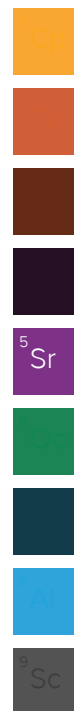
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	09/27/2020 16:13	WG1549828

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND	J6	0.100	1	09/26/2020 15:13	WG1549812

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	09/22/2020 19:42	WG1547147





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	9.60		2.50	1	09/26/2020 00:32	WG1549615

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	09/26/2020 12:28	WG1548746

Wet Chemistry by Method 353.2

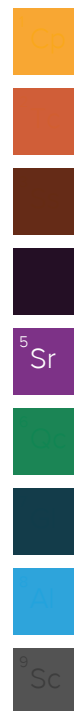
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	09/27/2020 16:14	WG1549828

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	09/26/2020 15:16	WG1549812

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	09/22/2020 19:42	WG1547147





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	7.90		2.50	1	09/26/2020 00:32	WG1549615

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	09/26/2020 12:36	WG1548746

Wet Chemistry by Method 353.2

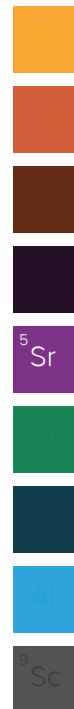
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	09/27/2020 17:11	WG1549828

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	09/26/2020 15:17	WG1549812

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	09/22/2020 19:42	WG1547147





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	9.80		2.50	1	09/26/2020 00:32	WG1549615

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	09/26/2020 12:38	WG1548746

Wet Chemistry by Method 353.2

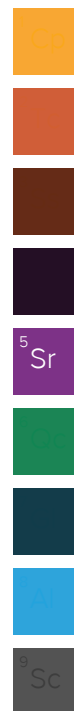
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	09/27/2020 17:12	WG1549828

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	0.106		0.100	1	09/26/2020 15:19	WG1549812

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	09/22/2020 19:42	WG1547147





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	10.7		3.33	1	09/26/2020 00:32	WG1549615

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.660		0.250	1	09/26/2020 12:39	WG1548746

Wet Chemistry by Method 353.2

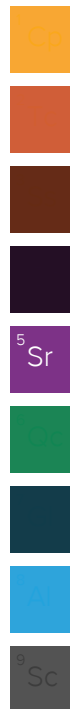
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	09/27/2020 17:13	WG1549828

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	09/26/2020 15:20	WG1549812

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	09/22/2020 19:42	WG1547147





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	8.30		2.50	1	09/26/2020 00:32	WG1549615

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.279		0.250	1	09/26/2020 12:40	WG1548746

Wet Chemistry by Method 353.2

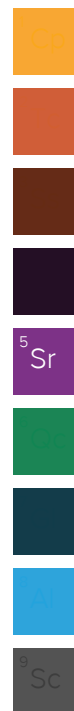
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	09/27/2020 17:14	WG1549828

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	09/26/2020 15:21	WG1549812

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	09/22/2020 19:42	WG1547147





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	8.00		2.50	1	09/26/2020 00:32	WG1549615

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	09/26/2020 12:42	WG1548746

Wet Chemistry by Method 353.2

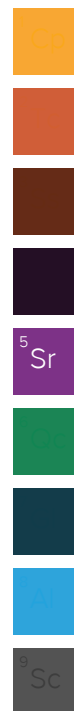
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	09/27/2020 17:16	WG1549828

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	09/26/2020 15:22	WG1549812

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	09/22/2020 19:43	WG1547147





Method Blank (MB)

(MB) R3574775-1 09/25/20 20:26

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Suspended Solids	U		0.350	2.50

L1264562-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1264562-02 09/25/20 20:26 • (DUP) R3574775-3 09/25/20 20:26

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	166	173	1	4.13		5

L1264619-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1264619-02 09/25/20 20:26 • (DUP) R3574775-4 09/25/20 20:26

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	11.0	11.8	1	7.02	P1	5

Laboratory Control Sample (LCS)

(LCS) R3574775-2 09/25/20 20:26

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Suspended Solids	773	688	89.0	85.7-114	



Method Blank (MB)

(MB) R3574720-1 09/26/20 00:32				
	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Suspended Solids	U		0.350	2.50

L1265719-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1265719-03 09/26/20 00:32 • (DUP) R3574720-3 09/26/20 00:32						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	27.6	28.8	1	4.26		5

L1265721-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1265721-01 09/26/20 00:32 • (DUP) R3574720-4 09/26/20 00:32						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	23.4	22.0	1	6.17	P1	5

Laboratory Control Sample (LCS)

(LCS) R3574720-2 09/26/20 00:32					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Suspended Solids	773	688	89.0	85.7-114	



Method Blank (MB)

(MB) R3574704-1 09/26/20 12:16				
	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1264619-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1264619-01 09/26/20 12:25 • (DUP) R3574704-3 09/26/20 12:27						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	0.307	0.633	1	69.4	<u>P1</u>	20

L1264619-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1264619-03 09/26/20 13:07 • (DUP) R3574704-6 09/26/20 13:08						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	ND	0.268	1	14.0		20

Laboratory Control Sample (LCS)

(LCS) R3574704-2 09/26/20 12:17					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Kjeldahl Nitrogen, TKN	15.2	13.4	88.2	75.2-121	

L1264619-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1264619-02 09/26/20 12:32 • (MS) R3574704-4 09/26/20 12:33 • (MSD) R3574704-5 09/26/20 12:35												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Kjeldahl Nitrogen, TKN	5.00	0.512	4.76	4.81	85.0	86.0	1	90.0-110	J6	J6	1.04	20

L1264619-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1264619-04 09/26/20 13:09 • (MS) R3574704-7 09/26/20 13:11							
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>
Analyte	mg/l	mg/l	mg/l	%		%	
Kjeldahl Nitrogen, TKN	5.00	ND	4.91	93.4	1	90.0-110	





Method Blank (MB)

(MB) R3574971-1 09/27/20 15:36

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1263691-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1263691-10 09/27/20 15:39 • (DUP) R3574971-3 09/27/20 15:40

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Nitrate-Nitrite	ND	ND	1	0.000		20

L1264619-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1264619-10 09/27/20 17:16 • (DUP) R3574971-5 09/27/20 17:17

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Nitrate-Nitrite	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3574971-2 09/27/20 15:37

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Nitrate-Nitrite	4.00	2.54	102	90.0-110	

L1264619-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1264619-02 09/27/20 16:09 • (MS) R3574971-4 09/27/20 16:11

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Nitrate-Nitrite	2.50	ND	3.91	156	1	90.0-110	J5

L1265141-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1265141-01 09/27/20 17:18 • (MS) R3574971-6 09/27/20 17:19 • (MSD) R3574971-7 09/27/20 17:21

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Nitrate-Nitrite	2.50	1.09	4.55	4.35	138	130	1	90.0-110	J5	J5	4.49	20

Method Blank (MB)

(MB) R3574755-1 09/26/20 14:58				
	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphorus,Total	U		0.0350	0.100

L1264619-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1264619-01 09/26/20 15:02 • (DUP) R3574755-3 09/26/20 15:03						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	0.202	0.199	1	1.50		20

L1264619-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1264619-03 09/26/20 15:08 • (DUP) R3574755-6 09/26/20 15:10						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	ND	0.127	1	62.9	<u>P1</u>	20

Laboratory Control Sample (LCS)

(LCS) R3574755-2 09/26/20 14:59					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Phosphorus,Total	4.26	3.56	83.7	82.4-117	

L1264619-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1264619-02 09/26/20 15:05 • (MS) R3574755-4 09/26/20 15:06 • (MSD) R3574755-5 09/26/20 15:07												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphorus,Total	2.50	ND	2.02	2.06	78.5	80.1	1	90.0-110	J6	J6	1.96	20

L1264619-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1264619-04 09/26/20 15:13 • (MS) R3574755-7 09/26/20 15:15							
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>
Analyte	mg/l	mg/l	mg/l	%		%	
Phosphorus,Total	2.50	ND	2.10	81.4	1	90.0-110	<u>J6</u>



Method Blank (MB)

(MB) R3573289-1 09/22/20 19:38				
	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1264619-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1264619-02 09/22/20 19:39 • (DUP) R3573289-5 09/22/20 19:39						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphate,Ortho	ND	ND	1	0.000		20

L1264638-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1264638-08 09/22/20 19:44 • (DUP) R3573289-6 09/22/20 19:44						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphate,Ortho	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3573289-2 09/22/20 19:38					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Phosphate,Ortho	0.245	0.239	97.8	85.0-115	

L1264619-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1264619-01 09/22/20 19:39 • (MS) R3573289-3 09/22/20 19:39 • (MSD) R3573289-4 09/22/20 19:39												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphate,Ortho	0.500	ND	0.158	0.158	31.6	31.6	1	80.0-120	<u>J6</u>	<u>J6</u>	0.000	20





Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



S&ME - Huntsville

Sample Delivery Group: L1264638
Samples Received: 09/22/2020
Project Number: 4482-16-056
Description: Gadsden MS4

Report To: Ms. Emily Kennedy
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Entire Report Reviewed By:



Craig Cothron
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	5
Sr: Sample Results	6
AT 5 L1264638-01	6
GD 8 L1264638-02	7
RC 2 L1264638-03	8
SS 13 L1264638-04	9
SS 14 L1264638-05	10
GD 12 L1264638-06	11
SME2 L1264638-07	12
GD 6 L1264638-08	13
CO 15 L1264638-09	14
SME4 L1264638-10	15
Qc: Quality Control Summary	16
Gravimetric Analysis by Method 2540 D-2011	16
Wet Chemistry by Method 351.2	17
Wet Chemistry by Method 353.2	19
Wet Chemistry by Method 365.4	20
Wet Chemistry by Method 4500P E-2011	22
Gl: Glossary of Terms	24
Al: Accreditations & Locations	25
Sc: Sample Chain of Custody	26



SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



AT 5 L1264638-01 WW

				Collected by	Collected date/time	Received date/time
				E. Kennedy	09/21/20 11:50	09/22/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1549748	1	09/26/20 09:41	09/26/20 12:12	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1548746	1	09/24/20 16:16	09/26/20 12:43	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1550241	1	09/28/20 17:53	09/28/20 17:53	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1549812	1	09/24/20 16:16	09/26/20 15:24	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1547147	1	09/22/20 19:43	09/22/20 19:43	BJD	Mt. Juliet, TN

GD 8 L1264638-02 WW

				Collected by	Collected date/time	Received date/time
				E. Kennedy	09/21/20 11:21	09/22/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1549748	1	09/26/20 09:41	09/26/20 12:12	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1548746	1	09/24/20 16:16	09/26/20 12:44	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1550241	1	09/28/20 19:01	09/28/20 19:01	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1549812	1	09/24/20 16:16	09/26/20 15:25	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1547147	1	09/22/20 19:43	09/22/20 19:43	BJD	Mt. Juliet, TN

RC 2 L1264638-03 WW

				Collected by	Collected date/time	Received date/time
				E. Kennedy	09/21/20 11:44	09/22/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1549748	1	09/26/20 09:41	09/26/20 12:12	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1548746	1	09/24/20 16:16	09/26/20 13:04	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1550241	1	09/28/20 17:56	09/28/20 17:56	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1549812	1	09/24/20 16:16	09/26/20 15:29	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1547147	1	09/22/20 19:43	09/22/20 19:43	BJD	Mt. Juliet, TN

SS 13 L1264638-04 WW

				Collected by	Collected date/time	Received date/time
				E. Kennedy	09/21/20 10:42	09/22/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1549748	1	09/26/20 09:41	09/26/20 12:12	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1548746	1	09/24/20 16:16	09/26/20 13:05	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1550241	1	09/28/20 17:57	09/28/20 17:57	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1549812	1	09/24/20 16:16	09/26/20 15:30	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1547147	1	09/22/20 19:43	09/22/20 19:43	BJD	Mt. Juliet, TN

SS 14 L1264638-05 WW

				Collected by	Collected date/time	Received date/time
				E. Kennedy	09/21/20 10:30	09/22/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1549748	1	09/26/20 09:41	09/26/20 12:12	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1549329	1	09/25/20 15:52	09/26/20 11:28	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1550241	1	09/28/20 18:10	09/28/20 18:10	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1549804	1	09/25/20 15:52	09/26/20 13:06	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1547147	1	09/22/20 19:44	09/22/20 19:44	BJD	Mt. Juliet, TN

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



GD 12 L1264638-06 WW

				Collected by	Collected date/time	Received date/time
				E. Kennedy	09/21/20 09:58	09/22/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1549748	1	09/26/20 09:41	09/26/20 12:12	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1549329	1	09/25/20 15:52	09/26/20 11:31	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1550241	1	09/28/20 18:14	09/28/20 18:14	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1549804	1	09/25/20 15:52	09/26/20 13:08	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1547147	1	09/22/20 19:44	09/22/20 19:44	BJD	Mt. Juliet, TN

SME2 L1264638-07 WW

				Collected by	Collected date/time	Received date/time
				E. Kennedy	09/21/20 09:30	09/22/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1549748	1	09/26/20 09:41	09/26/20 12:12	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1549329	1	09/25/20 15:52	09/26/20 11:57	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1550241	1	09/28/20 18:46	09/28/20 18:46	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1549804	1	09/25/20 15:52	09/26/20 13:12	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1547147	1	09/22/20 19:44	09/22/20 19:44	BJD	Mt. Juliet, TN

GD 6 L1264638-08 WW

				Collected by	Collected date/time	Received date/time
				E. Kennedy	09/21/20 09:16	09/22/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1549748	1	09/26/20 09:41	09/26/20 12:12	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1549329	1	09/25/20 15:52	09/26/20 12:00	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1550241	1	09/28/20 18:47	09/28/20 18:47	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1549804	1	09/25/20 15:52	09/26/20 13:17	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1547147	1	09/22/20 19:44	09/22/20 19:44	BJD	Mt. Juliet, TN

CO 15 L1264638-09 WW

				Collected by	Collected date/time	Received date/time
				E. Kennedy	09/21/20 09:00	09/22/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1549748	1	09/26/20 09:41	09/26/20 12:12	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1549329	1	09/25/20 15:52	09/26/20 11:35	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1550241	1	09/28/20 18:48	09/28/20 18:48	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1549804	1	09/25/20 15:52	09/26/20 13:20	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1547148	1	09/23/20 02:43	09/23/20 02:43	BJD	Mt. Juliet, TN

SME4 L1264638-10 WW

				Collected by	Collected date/time	Received date/time
				E. Kennedy	09/21/20 10:00	09/22/20 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1549748	1	09/26/20 09:41	09/26/20 12:12	TH	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1549329	1	09/25/20 15:52	09/26/20 11:37	MCG	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1550241	1	09/28/20 18:49	09/28/20 18:49	SDL	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1549804	1	09/25/20 15:52	09/26/20 13:21	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1547148	1	09/23/20 02:44	09/23/20 02:44	BJD	Mt. Juliet, TN



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Craig Cothron
Project Manager

⁴Cn

⁹Sc



Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	11.3		4.18	1	09/26/2020 12:12	WG1549748

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	09/26/2020 12:43	WG1548746

Wet Chemistry by Method 353.2

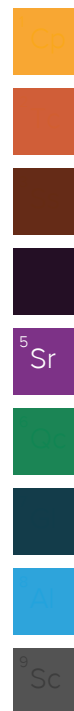
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.603		0.100	1	09/28/2020 17:53	WG1550241

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	0.399		0.100	1	09/26/2020 15:24	WG1549812

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	0.491		0.0300	1	09/22/2020 19:43	WG1547147





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	7.40		5.00	1	09/26/2020 12:12	WG1549748

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.290		0.250	1	09/26/2020 12:44	WG1548746

Wet Chemistry by Method 353.2

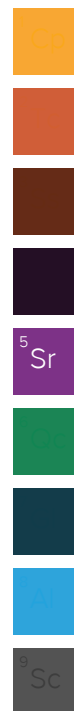
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.171		0.100	1	09/28/2020 19:01	WG1550241

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	09/26/2020 15:25	WG1549812

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	09/22/2020 19:43	WG1547147





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	5.20		5.00	1	09/26/2020 12:12	WG1549748

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	09/26/2020 13:04	WG1548746

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	09/28/2020 17:56	WG1550241

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	09/26/2020 15:29	WG1549812

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	09/22/2020 19:43	WG1547147



Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	7.80		5.00	1	09/26/2020 12:12	WG1549748

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	09/26/2020 13:05	WG1548746

Wet Chemistry by Method 353.2

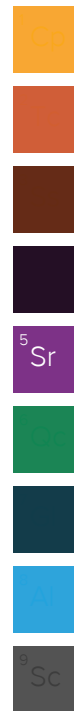
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	09/28/2020 17:57	WG1550241

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	0.200		0.100	1	09/26/2020 15:30	WG1549812

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	09/22/2020 19:43	WG1547147





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	8.40		5.00	1	09/26/2020 12:12	WG1549748

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.281		0.250	1	09/26/2020 11:28	WG1549329

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.345		0.100	1	09/28/2020 18:10	WG1550241

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	09/26/2020 13:06	WG1549804

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	0.0750		0.0300	1	09/22/2020 19:44	WG1547147



Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	7.60		5.00	1	09/26/2020 12:12	WG1549748

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND	J6	0.250	1	09/26/2020 11:31	WG1549329

Wet Chemistry by Method 353.2

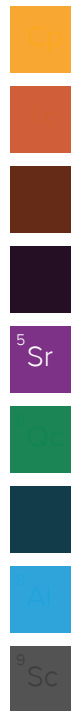
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.103		0.100	1	09/28/2020 18:14	WG1550241

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND	J6	0.100	1	09/26/2020 13:08	WG1549804

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	09/22/2020 19:44	WG1547147





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	11.0		5.00	1	09/26/2020 12:12	WG1549748

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	09/26/2020 11:57	WG1549329

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	09/28/2020 18:46	WG1550241

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	09/26/2020 13:12	WG1549804

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	09/22/2020 19:44	WG1547147



Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	8.60		5.00	1	09/26/2020 12:12	WG1549748

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	09/26/2020 12:00	WG1549329

Wet Chemistry by Method 353.2

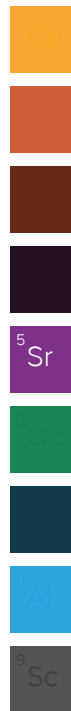
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	09/28/2020 18:47	WG1550241

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND	J6	0.100	1	09/26/2020 13:17	WG1549804

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	09/22/2020 19:44	WG1547147





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	5.60		5.00	1	09/26/2020 12:12	WG1549748

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	09/26/2020 11:35	WG1549329

Wet Chemistry by Method 353.2

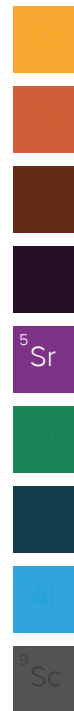
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	09/28/2020 18:48	WG1550241

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	09/26/2020 13:20	WG1549804

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	09/23/2020 02:43	WG1547148





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	10.8		5.00	1	09/26/2020 12:12	WG1549748

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	09/26/2020 11:37	WG1549329

Wet Chemistry by Method 353.2

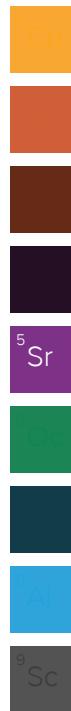
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.608		0.100	1	09/28/2020 18:49	WG1550241

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	0.402	B	0.100	1	09/26/2020 13:21	WG1549804

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	0.473		0.0300	1	09/23/2020 02:44	WG1547148



Method Blank (MB)

(MB) R3574828-1 09/26/20 12:12				
	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Suspended Solids	U		0.350	2.50

L1265951-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1265951-01 09/26/20 12:12 • (DUP) R3574828-3 09/26/20 12:12						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	55.0	44.0	1	22.2	P1	5

L1266470-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1266470-01 09/26/20 12:12 • (DUP) R3574828-4 09/26/20 12:12						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	27.0	28.0	1	3.64		5

Laboratory Control Sample (LCS)

(LCS) R3574828-2 09/26/20 12:12					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Suspended Solids	773	800	103	85.7-114	

Sc

Sc

Sc

6 Qc

Sc

Sc

9 Sc

Method Blank (MB)

(MB) R3574704-1 09/26/20 12:16				
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1264619-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1264619-01 09/26/20 12:25 • (DUP) R3574704-3 09/26/20 12:27						
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	0.307	0.633	1	69.4	P1	20

L1264619-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1264619-03 09/26/20 13:07 • (DUP) R3574704-6 09/26/20 13:08						
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	ND	0.268	1	14.0		20

Laboratory Control Sample (LCS)

(LCS) R3574704-2 09/26/20 12:17					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Kjeldahl Nitrogen, TKN	15.2	13.4	88.2	75.2-121	

L1264619-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1264619-02 09/26/20 12:32 • (MS) R3574704-4 09/26/20 12:33 • (MSD) R3574704-5 09/26/20 12:35												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Kjeldahl Nitrogen, TKN	5.00	0.512	4.76	4.81	85.0	86.0	1	90.0-110	J6	J6	1.04	20

L1264619-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1264619-04 09/26/20 13:09 • (MS) R3574704-7 09/26/20 13:11							
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Kjeldahl Nitrogen, TKN	5.00	ND	4.91	93.4	1	90.0-110	



Method Blank (MB)

(MB) R3574693-1 09/26/20 11:24				
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1264638-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1264638-05 09/26/20 11:28 • (DUP) R3574693-3 09/26/20 11:30						
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	0.281	0.274	1	2.52		20

L1264638-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1264638-07 09/26/20 11:57 • (DUP) R3574693-6 09/26/20 11:58						
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3574693-2 09/26/20 11:26					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Kjeldahl Nitrogen, TKN	15.2	14.0	92.1	75.2-121	

L1264638-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1264638-06 09/26/20 11:31 • (MS) R3574693-4 09/26/20 11:33 • (MSD) R3574693-5 09/26/20 11:34												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Kjeldahl Nitrogen, TKN	5.00	ND	4.50	4.30	86.6	82.6	1	90.0-110	J6	J6	4.55	20

L1264638-08 Original Sample (OS) • Matrix Spike (MS)

(OS) L1264638-08 09/26/20 12:00 • (MS) R3574693-7 09/26/20 12:01							
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Kjeldahl Nitrogen, TKN	5.00	ND	4.99	95.6	1	90.0-110	





Method Blank (MB)

(MB) R3575412-1 09/28/20 17:48

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1264638-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1264638-01 09/28/20 17:53 • (DUP) R3575412-3 09/28/20 17:54

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Nitrate-Nitrite	0.603	0.602	1	0.166		20

L1264638-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1264638-05 09/28/20 18:10 • (DUP) R3575412-6 09/28/20 18:11

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Nitrate-Nitrite	0.345	0.355	1	2.86		20

Laboratory Control Sample (LCS)

(LCS) R3575412-2 09/28/20 17:49

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Nitrate-Nitrite	4.00	2.47	98.8	90.0-110	

L1264885-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1264885-04 09/28/20 19:02 • (MS) R3575412-4 09/28/20 19:03 • (MSD) R3575412-5 09/28/20 19:05

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Nitrate-Nitrite	2.50	1.36	4.22	4.10	114	110	1	90.0-110	J5		2.88	20

L1264638-05 Original Sample (OS) • Matrix Spike (MS)

(OS) L1264638-05 09/28/20 18:10 • (MS) R3575412-7 09/28/20 18:12

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Nitrate-Nitrite	2.50	0.345	3.05	108	1	90.0-110	





Method Blank (MB)

(MB) R3574719-2 09/26/20 13:02

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphorus,Total	0.0678	J	0.0350	0.100

L1264638-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1264638-05 09/26/20 13:06 • (DUP) R3574719-4 09/26/20 13:07

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	ND	0.111	1	10.8		20

L1264638-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1264638-07 09/26/20 13:12 • (DUP) R3574719-7 09/26/20 13:13

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3574719-3 09/26/20 13:03

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Phosphorus,Total	4.26	3.59	84.4	82.4-117	

L1264638-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1264638-06 09/26/20 13:08 • (MS) R3574719-5 09/26/20 13:09 • (MSD) R3574719-6 09/26/20 13:11

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphorus,Total	2.50	ND	1.93	1.93	74.1	74.1	1	90.0-110	J6	J6	0.000	20

L1264638-08 Original Sample (OS) • Matrix Spike (MS)

(OS) L1264638-08 09/26/20 13:17 • (MS) R3574719-8 09/26/20 13:18

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Phosphorus,Total	2.50	ND	2.09	80.2	1	90.0-110	J6



Method Blank (MB)

(MB) R3574755-1 09/26/20 14:58				
	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphorus,Total	U		0.0350	0.100

L1264619-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1264619-01 09/26/20 15:02 • (DUP) R3574755-3 09/26/20 15:03						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	0.202	0.199	1	1.50		20

L1264619-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1264619-03 09/26/20 15:08 • (DUP) R3574755-6 09/26/20 15:10						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	ND	0.127	1	62.9	P1	20

Laboratory Control Sample (LCS)

(LCS) R3574755-2 09/26/20 14:59					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Phosphorus,Total	4.26	3.56	83.7	82.4-117	

L1264619-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1264619-02 09/26/20 15:05 • (MS) R3574755-4 09/26/20 15:06 • (MSD) R3574755-5 09/26/20 15:07												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphorus,Total	2.50	ND	2.02	2.06	78.5	80.1	1	90.0-110	J6	J6	1.96	20

L1264619-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1264619-04 09/26/20 15:13 • (MS) R3574755-7 09/26/20 15:15							
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>
Analyte	mg/l	mg/l	mg/l	%		%	
Phosphorus,Total	2.50	ND	2.10	81.4	1	90.0-110	J6



Method Blank (MB)

(MB) R3573289-1 09/22/20 19:38				
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1264619-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1264619-02 09/22/20 19:39 • (DUP) R3573289-5 09/22/20 19:39						
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphate,Ortho	ND	ND	1	0.000		20

L1264638-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1264638-08 09/22/20 19:44 • (DUP) R3573289-6 09/22/20 19:44						
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphate,Ortho	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3573289-2 09/22/20 19:38					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Phosphate,Ortho	0.245	0.239	97.8	85.0-115	

L1264619-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1264619-01 09/22/20 19:39 • (MS) R3573289-3 09/22/20 19:39 • (MSD) R3573289-4 09/22/20 19:39												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphate,Ortho	0.500	ND	0.158	0.158	31.6	31.6	1	80.0-120	<u>J6</u>	<u>J6</u>	0.000	20





Method Blank (MB)

(MB) R3573332-1 09/23/20 02:38

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1264606-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1264606-01 09/23/20 02:39 • (DUP) R3573332-3 09/23/20 02:40

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphate,Ortho	0.126	0.129	1	2.35		20

Laboratory Control Sample (LCS)

(LCS) R3573332-2 09/23/20 02:38

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Phosphate,Ortho	0.245	0.239	97.8	85.0-115	

L1264639-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1264639-04 09/23/20 02:46 • (MS) R3573332-4 09/23/20 02:47 • (MSD) R3573332-5 09/23/20 02:47

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphate,Ortho	0.500	ND	0.169	0.168	33.8	33.6	1	80.0-120	J6	J6	0.593	20





Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

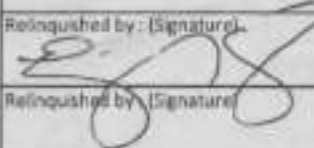
A2LA – ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



S&ME - Huntsville *Land* 360 D Quality Circle NW Suite 450 Huntsville, AL 35806 Report to: Ms. Emily Kennedy		Billing Information: Accounts Payable 360 D Quality Circle NW Suite 450 Huntsville, AL 35806 Email To: ekennedy@smeinc.com		Analysis / Container / Preservative L2 L2 PT 250mLHDPE-H2SO4 TKN / NO2NO3 250mLHDPE-H2SO4 TSS 1L-HDPE NoPres		Chain of Custody Page <u> </u> of <u> </u>  13065 Lebanon Rd Mount Airy, TN 37122 Phone: 615-758-0555 Phone: 800-797-0555 Fax: 615-758-0559 	
Project Description: Gadsden MS4		City/State Collected: Erakston, AL					
Phone: 256-837-8882 Fax: 256-837-6931		Client Project # 4482-16-056		Lab Project # QOREHAL-448216056			
Collected by (print): E. Kennedy		Site/Facility ID #		P.O. #			
Collected by (signature): 		Rush? (Lab MUST Be Notified) ☐ Same Day ☐ Five Day ☐ Next Day ☐ 5 Day (Rad Only) ☐ Two Day ☐ 10 Day (Rad Only) ☐ Three Day		Quote #			
Immediately Packed on Ice: N ☐ Y ☒		Date Results Needed					
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time		
AT 5	Grab	WW	3'	9/21/20	1150	X	X
GD 8	↓	WW	↓	↓	1121	X	X
RC 2	↓	WW	↓	↓	1144	X	X
SS 13	↓	WW	↓	↓	1042	X	X
SS 14	↓	WW	↓	↓	1030	X	X
GD 12	↓	WW	↓	↓	0958	X	X
CO 14	DRY	WW	↓	↓	↓	X	X
SME2	Grab	WW	3'	↓	0930	X	X
GD 6	↓	WW	↓	↓	0916	X	X
CO 15	↓	WW	↓	↓	0900	X	X
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Biosassay WW - WasteWater DW - Drinking Water OT - Other		Remarks:		pH _____ Temp _____ Flow _____ Other _____		Sample Receipt Checklist: CDC Seal Present/Intact: ☒ ☐ CDC Signed/Annotated: ☒ ☐ Bottles arrive intact: ☒ ☐ Correct bottles used: ☒ ☐ Sufficient volume sent: ☒ ☐ If Applicable: VOA Seal Heatseal: ☒ ☐ Preservation Correct/Checked: ☒ ☐ RAD SCREEN: <0.5 mR/hr	
Relinquished by: (Signature) 		Date: 9/21/20 Time: 1230		Received by: (Signature) FedEx		Trip Blank Received: Yes ☒ No ☐ HCL / Meq/L TSS	
Relinquished by: (Signature)		Date: _____ Time: _____		Received by: (Signature)		Temp: _____ °C Bottles Received: 46	
Relinquished by: (Signature)		Date: _____ Time: _____		Received for lab by: (Signature) 		Date: 9/22/20 Time: 1600	

Report to:
Ms. Emily Kennedy

Billing Information

Accounts Payable
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Email To: ekennedy@smelinc.com

Project	
Description:	Gadsden MS4

City/State
Collected

Lab Project # 7
QOREHAL-448216056

Phone: 256-837-8882
Fax: 256-837-6931

Client Project #
4482-16-056

P.O. #

Collected by (print)

Site/Facility ID #

Quote #

Date Results Needed _____

Collected by (signature)

Rush? (Lab MUST be notified)

_____ Same Day	_____ Five Day
_____ Next Day	_____ 5 Day (Rad Only)
_____ Two Day	_____ 10 Day (Rad Only)
_____ Three Day	

Immediately Packed on Ice ☒ N

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time

SME #4	Bar	WW	3'	9/2/20	1000

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other

Remarks:

Samples returned via _____
 UPS FedEx Courier

Tracking # 4457 5000 8610

Relinquished by: (Signature)

Date: 9/21/20	Time: 1230

Received by: Signature

Trip Blank Received: Yes / No
 HQ: ☒ No
 TR: ☐ Yes

Relinquished by (Signature) _____

Date:	Time:

Received by: (Signature)

Temp: °C Bottom Reading: 40

Retinquished by : (Signature)

Date:	Time:

Received for lab by: 

Date: 9/22/22 Total: 903

Sample Receipt Checklist

COC Seal Present/Intact:	NP	1
COC Signed/Accurate:		2
Bottles arrive intact:		3
Correct bottles used:		4
Sufficient volume sent:		5
	if Applicable	
VOA Zero Headspace:		6
Preservation Correct/Checked:		7

BAD SCREEN: <0.5 mBtu

If preservation required by LogIn: Date/Time

model:	Condition
	NCF / 



Monitoring Report Fourth Quarter 2020
Gadsden Alabama Urbanized Area
Phase II Small MS4
NPDES General Permit ALR040000
Gadsden, Etowah County, Alabama
S&ME Project No. 4482-20-044

PREPARED FOR:

Gadsden-Etowah MS4 Steering Committee

PREPARED BY:

S&ME, Inc.

**360D Quality Circle NW, Ste 450
Huntsville, AL 35806**

May 27, 2021



Table of Contents

1.0	Introduction	1
1.1	NPDES Permit.....	1
1.2	Water Quality Concerns	2
1.3	Monitoring Program	2
2.0	Rainfall Data	2
3.0	Monitoring Event	3
3.1	Monitoring Locations.....	3
3.2	Sampling Procedures	4
3.3	Field Documentation.....	4
3.4	Quality Assurance / Quality Control	5
3.4.1	<i>Sample Containers and Preservation</i>	<i>5</i>
3.4.2	<i>Quality Assurance</i>	<i>6</i>
3.4.3	<i>Sample Shipment.....</i>	<i>6</i>
4.0	Analytical Results	6
5.0	Recordkeeping.....	6
6.0	Certification of the Monitoring Report	7
7.0	Acknowledgement.....	7
8.0	Closing	7

List of Tables

Table 1-1 Responsible Official and Authorization Dates	1
Table 1-2: Permit Numbers for MS4 Entities.....	1
Table 2-1 Quarterly Rainfall Data	3
Table 3-1 Monitoring Point Coordinates	3
Table 3-2 Sample Containers and Preservation	5
Table 5-0 Storm Water Steering Committee	6



Appendices

Appendix I

Figure 1 – Gadsden, Alabama Urbanized Area

Figure 2 – MS4 Monitoring Locations Map

Appendix II

Table B.1 – Field Observations

Table B.2 – Analytical Data

Tables B.3 to B.26 – Historical Analytical Data

Appendix III

Laboratory Report No. L1298490, dated December 31, 2020

Laboratory Report No. L1298501, dated December 30, 2020



1.0 Introduction

S&ME, Inc. has prepared this Monitoring Report for the Gadsden, Alabama Urbanized Area Phase II small MS4 in accordance with S&ME Proposal No. 44-2000256, dated September 18, 2020. Authorization date and responsible official for each entity are provided in Table 1.1.

Table 1-1 Responsible Official and Authorization Dates

Name	Entity	Date
Larry Means, Mayor	City of Attalla	October 20, 2020
Sherman Guyton, Mayor	City of Gadsden	October 22, 2020
Chris Hare, Mayor	City of Glencoe	October 19, 2020
Scott Reeves, Mayor	City of Hokes Bluff	November 10, 2020
Joe Taylor, Mayor	City of Rainbow City	October 20, 2020
Dana Snyder, Mayor	City of Southside	October 26, 2020
Tim Graves, Engineer	Etowah County	April 6, 2020

1.1 NPDES Permit

The Storm Water Phase II Final Rule issued by the United States Environmental Protection Agency (USEPA) in 1999 requires nationwide coverage of all operators of small MS4s located within the boundaries of an “urbanized area” as defined by the latest decennial Census. Based on the results of the 2010 census, the Bureau of the Census designated The City of Gadsden, Rainbow City, City of Southside, City of Glencoe, City of Hokes Bluff, City of Attalla, and portions of unincorporated Etowah County as the *Gadsden, Alabama Urbanized Area*. A map outlining the approximate boundary of the *Gadsden, Alabama Urbanized Area* is included as **Figure 1** in **Appendix I**. The regulated small municipal separate storm sewer system (MS4) for the urbanized area is collectively referred to as the Gadsden-Etowah MS4.

In 2016, the Alabama Department of Environmental Management (ADEM) issued National Pollutant Discharge Elimination System (NPDES) General Permit ALR040000 for discharges from regulated small municipal separate storm sewer systems to the Gadsden-Etowah MS4 with an effective date of October 1, 2016. Permit numbers for each entity are provided in Table. 1.2.

Table 1-2: Permit Numbers for MS4 Entities

Entity	ADEM Permit Number
City of Attalla	ALR0400052
City of Gadsden	ALR0400053
City of Glencoe	ALR0400054
City of Hokes Bluff	ALR0400055
City of Rainbow City	ALR0400056



Entity	ADEM Permit Number
City of Southside	ALR0400057
Etowah County	ALR0400009

1.2 Water Quality Concerns

Section 303(d) of the Clean Water Act (CWA), as amended by the Water Quality Act of 1987, and EPA's Water Quality Planning and Management Regulations (40CFR130) require states to identify waterbodies not in compliance with the water quality standards applicable to their designated use classifications. Section 303(d) then requires that total maximum daily loads (TMDLs) be determined for all pollutants causing violation of applicable water quality standards in each identified segment.

Neely Henry Lake is the primary receiving water for the Gadsden-Etowah MS4. In 1996, the ADEM identified five of the six reservoirs on the Coosa River within the State of Alabama's borders as being impaired, including Neely Henry Lake. In 2008 the EPA approved TMDLs for Neely Henry Lake related to Nutrients (Total Phosphorous), pH, and Dissolved Oxygen. The Gadsden-Etowah MS4 is required to achieve a 30% reduction in Total Phosphorus loading.

1.3 Monitoring Program

Part III.B of the NPDES General Permit requires that the Permittee develop and implement a Storm Water Management Program Plan (SWMPP). Part IV.D of the NPDES General Permit requires that the SWMPP include monitoring provisions to document that the waste load allocations prescribed in the TMDL are being achieved.

Section 2 of the SWMPP, dated January 1, 2017, provides the specific details of the monitoring program. The intent of the monitoring program is to document that discharges from the MS4 meet the permit requirements. Where deviations are documented and/or expected, the collected monitoring data will be used to determine the extent and cause of the pollutant of concern.

2.0 Rainfall Data

The Gadsden-Etowah MS4 is required to achieve a 30% reduction in Total Phosphorus discharge loading. The largest loading of phosphorous to the Coosa River from the Gadsden-Etowah MS4 is expected to occur during runoff events; therefore, the SWMPP requires that monitoring be conducted within 72 hours of a qualifying rain event of 0.75 inch.

On December 16, 2020, a rain event was observed at three of the four weather stations located in the vicinity of the urbanized area. The locations of the weather stations are identified on **Figure 2** in **Appendix I**.



Table 2-1 Quarterly Rainfall Data

Gauge Name	Location	Lat.	Long.	Precip 12/15/20	Precip 12/16/20
MD5866*	Rainbow City, AL	33.922°	-86.099°	NA	NA
KGAD	Gadsden Municipal Airport	33.973°	-86.088°	0.85 in.	0.19 in.
KALHOKES2	Hokes Bluff Hokes Bluff, AL	33.993°	-85.806°	0.01 in.	0.24 in.
KALGADSD3	Noccalula Falls Gadsden, AL	34.056°	-85.994°	0.01 in.	0.32 in.
KALRAINB19	Rainbow City, AL	33.942°	-86.030°	0.01 in.	0.22 in.

* Data was not available at MD5866 weather station

3.0 Monitoring Event

On December 17, 2020, S&ME personnel mobilized to conduct storm water monitoring at the land and boat access monitoring points for the fourth quarter of 2020.

Land and boat access monitoring was successfully sampled on December 17, 2020. Excluding sampling dates (after a rain event for the boat access monitoring points), the quarterly monitoring events were carried out in accordance with Section 2 of the Gadsden-Etowah MS4 Storm Water Management Program (SWMPP), dated January 1, 2017.

3.1 Monitoring Locations

The primary monitoring locations selected for determining compliance of the Gadsden-Etowah MS4 with the 2008 phosphorous TMDL are identified on **Figure 2 in Appendix I**. Coordinates for each point are listed in Table 3-1.

Table 3-1 Monitoring Point Coordinates

Outfall ID	Latitude	Longitude	Access	Waterbody Evaluated
AT 5	34.006446°	-86.069061°	LAND	Big Wills Creek / Little Wills Creek
GD 8	33.999535°	-86.024463°	LAND	Black Creek
RC 2	33.967683°	-86.039476°	LAND	Horton Creek
SS 13	33.891352°	-86.049229°	LAND	Neely Henry Lake
SS 14	33.885921°	-86.030683°	LAND	U.T. to Neely Henry Lake
GD 12	33.952567°	-86.003495°	LAND	U.T. to Neely Henry Lake



Outfall ID	Latitude	Longitude	Access	Waterbody Evaluated
SME 2	34.002461°	-86.001571°	LAND	U.T. to Coosa River
GD 6	34.015350°	-85.995617°	LAND	Town Creek
CO 15	33.972280°	-85.965354°	LAND	U.T. to Neely Henry Lake
SME 7	34.006225°	-86.111277°	LAND	Big Wills Creek
SME 8	34.004730°	-85.873852°	LAND	U.T. to Coosa River
RC 14	33.905786°	-86.111656°	BOAT	Rook Creek / Dry Creek
SS 5	33.941329°	-86.021569°	BOAT	U.T. to Coosa River
SME 1	33.990184°	-86.004048°	BOAT	Big Wills Creek / Black Creek
GD 9	33.989718°	-85.998472°	BOAT	U.T. to Coosa River (East Gadsden)
GD 7	34.008361°	-85.999777°	BOAT	Storm sewer outfall to Coosa River
GD 5	34.014324°	-85.924013°	BOAT	Big Cove Creek / Little Cove Creek
HB 3	34.002129°	-85.882808°	BOAT	U.T. to Neely Henry Lake
SME 4	34.001667°	-85.883342°	BOAT	Northern end of the Coosa River Channel
SME 5	33.940514°	-86.029885°	BOAT	Central portion of the Coosa River Channel
SME 6	33.852125°	-86.049695°	BOAT	Confluence of Greens Creek and Coosa River Channel

Following evaluation of the monitoring program for the Annual Report in May of 2020, monitoring points CO14, SME 3, and GD3 were removed from the monitoring program and monitoring points SME 4, SME 5, SME 6, SME 7, and SME 8 were added. The changes to the monitoring program were implemented beginning with the 2020 fourth quarter sampling event.

3.2 Sampling Procedures

Samples accessible by land were obtained using a stainless steel bucket. Samples accessible by boat were obtained using a horizontal Van Dorn sampler. The bucket and Van Dorn sampler were decontaminated prior to use and in between samples.

3.3 Field Documentation

The following observations were documented in the field at each monitoring location:

- Monitoring point ID
- Date and time
- Person conducting the sampling
- Equipment used
- Depth of sample collection
- Weather conditions
- Waterbody conditions



The following parameters were measured in the field at the time of sample collection:

- Turbidity
- pH
- Dissolved Oxygen (DO)
- Temperature

Field parameters were measured using a combination of the following instruments:

- LaMotte 2020 Turbidimeter
- Hach 2100Q Turbidimeter
- YSI 556 Multi-Probe Meter
- YSI Pro DSS Multi-Probe Meter

The recorded field observations are included on **Table B.1** in **Appendix II**. The recorded field parameters are included on **Table B.2** in **Appendix II**.

3.4 Quality Assurance / Quality Control

The following handling procedures were employed in general accordance with EPA and ADEM guidance to safeguard the quality of the collected samples.

3.4.1 Sample Containers and Preservation

All samples were collected in new laboratory-provided containers containing analyte-appropriate preservatives as listed below:

Table 3-2 Sample Containers and Preservation

Parameter	Container	Preservative	Hold Time
Total Suspended Solids (TSS)	HDPE - 1 L	NONE	7 days
Total Phosphorous	HDPE - 250 mL	H ₂ SO ₄	48 hours
Orthophosphate	HDPE - 250 mL	NONE	48 hours
Nitrate-Nitrite	HDPE - 250 mL	H ₂ SO ₄	28 days
Total Kjeldahl Nitrogen (TKN)	HDPE - 250 mL	H ₂ SO ₄	28 days

Prior to filling, sample containers were labeled with the following information in waterproof ink:

- Project number
- Sample location
- Collection date and time
- Preservative
- Analysis to be performed



3.4.2 *Quality Assurance*

Three duplicate samples were submitted to the laboratory. One duplicate sample of monitoring point AT 5 was collected by the land team during the sampling event and labeled as SME 10. One duplicate sample of monitoring point SME 8 was collected by the land team during the sampling event and labeled as SME 9. One duplicate sample of monitoring point HB 3 was collected by the boat team during the sampling event and labeled as SME 11.

3.4.3 *Sample Shipment*

After filling, the sample containers were sealed and immediately placed on ice in a protective container for shipment to the analytical laboratory. A Chain of Custody form was completed and accompanied the samples from the field to the laboratory. A copy of the Chain of Custody is included in **Appendix III**.

4.0 Analytical Results

The laboratory analytical results for the December 17, 2020 quarterly monitoring event are included on **Table B.2** in **Appendix II**. Historical monitoring data is included in Appendix II as **Tables B.3 to B.21**. The laboratory reports and Chain of Custody are included in **Appendix III**.

5.0 Recordkeeping

Each quarterly monitoring report will be incorporated into the Annual Update of the Storm Water Management Plan. Monitoring reports will be retained by each municipality for a minimum of 3 years.

The Storm Water Steering Committee is responsible for the coordination and implementation of the Storm Water Management Plan. Current membership of the Storm Water Steering Committee is as follows:

Table 5-0 Storm Water Steering Committee

Entity	Contact	Phone No.	Email
City of Gadsden	Jeramy Ward	256-549-4527	jward@cityofgadsden.com
City of Gadsden	Heath Williamson	256-549-4520	hwilliamson@cityofgadsden.com
City of Attalla	Jason Nicholson	256-441-9200	jason.attalla@gmail.com
City of Rainbow City	Joel Garmon	256-413-1240	jgarmon@rbcalabama.com
City of Southside	Judd Rich	256-442-9775	juddrich@cityofsouthside.com
City of Glencoe	Todd Means	256-492-1424	toddmeans@cityofglencoe.net
City of Hokes Bluff	Lisa Johnson	256-492-2414	hbcity@cityofhokesbluff.net
Etowah County	Tim Graves	256-549-5358	tgraves@etowahcounty.org
Etowah County	Robert Nail	256-549-5358	rnail@etowahcounty.org

One copy of this Monitoring Report has been provided to each member of the Storm Water Steering Committee.



6.0 Certification of the Monitoring Report

I certify under penalty of law that this document and all attachments were prepared under my directions or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine or imprisonment for knowing violations.

Signature of Responsible Official

Date

Print Name and Title

MS4 Entity

7.0 Acknowledgement

S&ME certifies that the information provided in this monitoring report reflects the conditions reported, encountered, and discovered at the time of report preparation. When performing this scope of services, S&ME observed the degree of care and skill generally exercised by other consultants undertaking similar studies at the same time, under similar circumstances and conditions, and in the same geographic area.

8.0 Closing

S&ME sincerely appreciates the opportunity to provide watershed monitoring services for the Gadsden-Etowah MS4. Should questions remain or if additional information is required, please do not hesitate to contact the undersigned.

S&ME, Inc.

A handwritten signature in blue ink that reads "Sarah L. Yeldell".

Sarah L. Yeldell, P.E.
Project Professional

A handwritten signature in blue ink that reads "Deborah J. Jones".

Deborah J. Jones, P.E.
Senior Engineer

Appendices

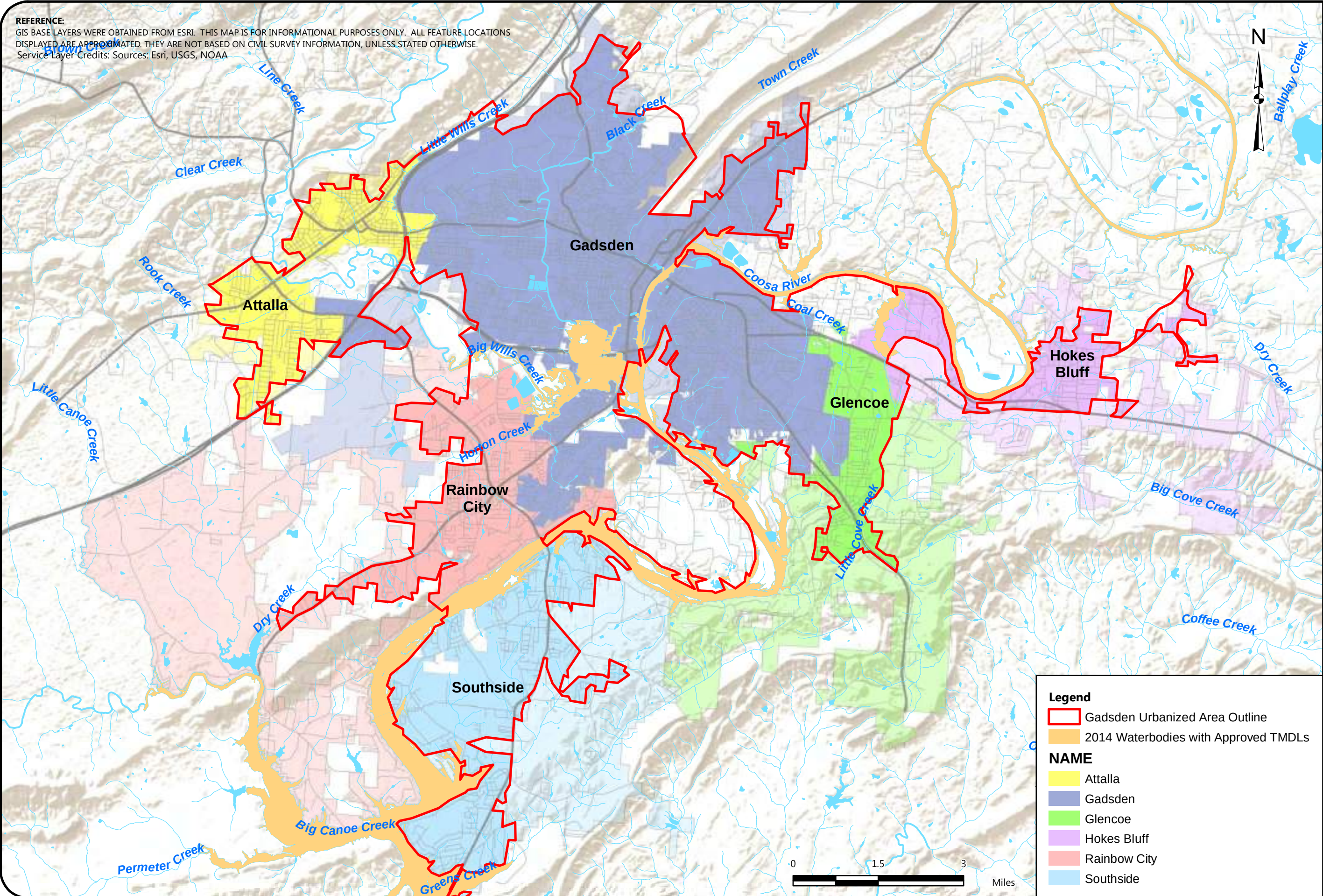
Appendix I

Figure 1 – Gadsden, Alabama Urbanized Area

Figure 2 – MS4 Monitoring Locations Map

Drawing Path: Q:\GIS Files\Gadsden MS4 Figures\Fig_1_TMDL and UA.mxd plotted by ekennedy 09-15-2017

REFERENCE:
GIS BASE LAYERS WERE OBTAINED FROM ESRI. THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS
DISPLAYED ARE APPROXIMATED. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.
Service Layer Credits: Sources: Esri, USGS, NOAA



Legend

- Gadsden Urbanized Area Outline
- 2014 Waterbodies with Approved TMDLs

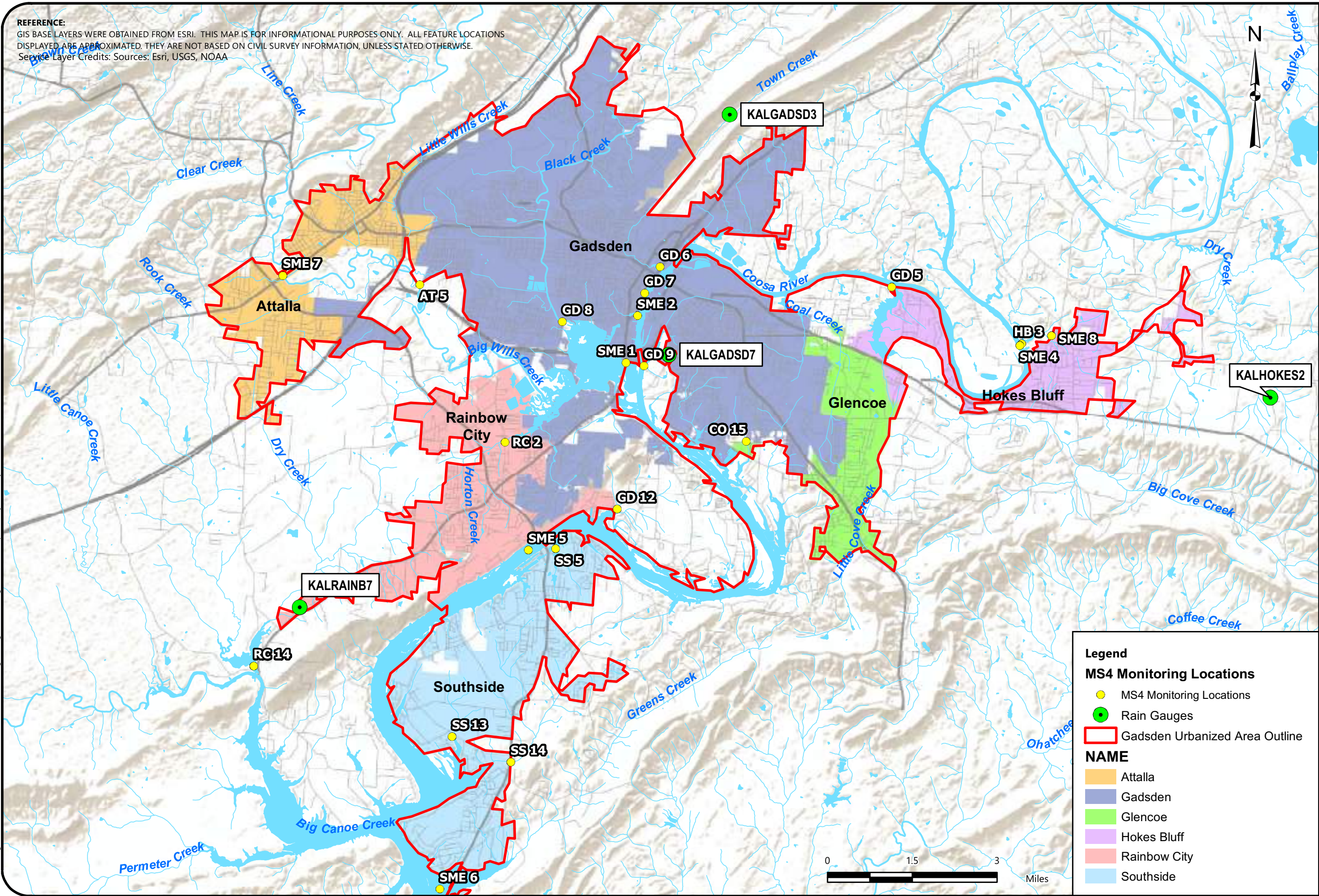
NAME

- Attalla
- Gadsden
- Glencoe
- Hokes Bluff
- Rainbow City
- Southside

	
GADSDEN-ETOWAH MS4 BOUNDARIES	
GADSDEN ALABAMA URBANIZED AREA PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM NPDES GENERAL PERMIT ALR040009	
SCALE: 1:100,000	DATE: 09-15-17
PROJECT NUMBER 4482-16-056	FIGURE NO. 1

Drawing Path: R:\CADDData\Huntsville\GIS Files\Gadsden MS4 Figures\Fig 2. Monitoring Locations.mxd plotted by ekennedy 05-13-2021

REFERENCE:
GIS BASE LAYERS WERE OBTAINED FROM ESRI. THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS
DISPLAYED ARE APPROXIMATED. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.
Service Layer Credits: Sources: Esri, USGS, NOAA



MS4 MONITORING LOCATIONS

GADSDEN ALABAMA URBANIZED AREA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040009

SCALE:
1:100,000

DATE:
05-13-21

PROJECT NUMBER
4482-20-044

FIGURE NO.

2

Appendix II

Table B.1 – Field Observations

Table B.2 – Analytical Data

Tables B.3 to B.26 – Historical Analytical Data

TABLE B.1 - FIELD OBSERVATIONS**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	TIME	DEPTH (FT)	PERSONNEL	WEATHER CONDITIONS	WATERBODY CONDITIONS
AT 5	12/17/2020	1346	-3'	EJK/EAB	Sunny and cold	Fast, smooth
GD 8	12/17/2020	1333	-3'	EJK/EAB	Sunny and cold	Fast, smooth
RC 2	12/17/2020	1312	-3'	EJK/EAB	Sunny and cold	Slow, smooth
SS 13	12/17/2020	1215	-3'	EJK/EAB	Partly cloudy and cold	Slow, smooth
SS 14	12/17/2020	1226	-3'	EJK/EAB	Partly cloudy and cold	Slow, smooth
GD 12	12/17/2020	1155	-3'	EJK/EAB	Cloudy and cold	Slow, smooth
CO 14	removed monitoring point from Stormwater Monitoring Program in September 2020					
SME 2	12/17/2020	1130	-3'	EJK/EAB	Overcast and cold	Slow, smooth
GD 6	12/17/2020	1120	-3'	EJK/EAB	Overcast and cold	Slow, rough
CO 15	12/17/2020	1000	-2'	EJK/EAB	Cloudy and cold	Slow, smooth
SME 7	12/17/2020	1100	Surface	EJK/EAB	Cloudy and cold	Fast
SME 8	12/17/2020	900	-3'	EJK/EAB	Cloudy and cold	Fast, smooth
RC 14	12/17/2020	1335	-5'	GPW	Partly cloudy	Smooth
SS 5	12/17/2020	1215	-5'	GPW	Partly cloudy	Smooth
SME 1	12/17/2020	1125	-5'	GPW	Partly cloudy	Smooth
GD 9	12/17/2020	1120	-5'	GPW	Partly cloudy	Smooth
GD 7	12/17/2020	1115	-5'	GPW	Partly cloudy	Smooth
GD 5	12/17/2020	1053	-5'	GPW	Partly cloudy	Smooth
GD 3	removed monitoring point from Stormwater Monitoring Program in September 2020					
SME 3	removed monitoring point from Stormwater Monitoring Program in September 2020					
HB 3	12/17/2020	1030	-5'	GPW	Partly cloudy	Smooth
SME 4	12/17/2020	1035	-5'	GPW	Partly cloudy	Smooth
SME 5	12/17/2020	1225	-5'	GPW	Partly cloudy	Smooth
SME 6	12/17/2020	1310	-5'	GPW	Partly cloudy	Smooth

TABLE B.2 - ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
AT 5	12/17/2020	28.70	7.91	11.21	9.6	0.831	0.087	<0.100	<0.250	18.6
GD 8	12/17/2020	17.50	8.30	11.68	9.4	0.273	<0.03	<0.100	<0.250	11.5
RC 2	12/17/2020	28.10	7.91	11.23	8.9	0.218	<0.03	<0.100	0.396	5.4
SS 13	12/17/2020	12.30	8.04	10.83	8.3	0.405	<0.03	<0.100	0.432	5.3
SS 14	12/17/2020	11.40	7.94	11.72	8.6	0.546	0.050	<0.100	0.540	5.4
GD 12	12/17/2020	13.10	8.03	11.10	8.5	0.268	<0.03	<0.100	<0.250	3.7
CO 14	removed monitoring point from Stormwater Monitoring Program in September 2020									
SME 2	12/17/2020	13.30	8.04	9.04	9.2	0.272	0.041	<0.100	0.342	6.7
GD 6	12/17/2020	0.50	7.96	10.08	9.0	0.309	<0.03	<0.100	0.377	7.4
CO 15	12/17/2020	2.80	8.98	10.87	10.0	0.161	<0.03	<0.100	0.685	15.6
SME 7	12/17/2020	0.30	7.72	11.22	9.1	0.312	<0.03	<0.100	<0.250	25.9
SME 8	12/17/2020	16.76	8.10	11.01	11.5	0.884	0.094	<0.100	0.541	19.4
SME 9	12/17/2020	DUPLICATE OF SME8				0.861	0.097	<0.100	0.399	22.6
SME 10	12/17/2020	DUPLICATE OF AT5				0.823	0.084	<0.100	<0.250	17.8
RC 14	12/17/2020	25.80	7.72	10.40	9.3	0.261	<0.030	<0.100	0.497	14.4
SS 5	12/17/2020	8.64	8.02	11.24	9.6	0.200	<0.030	<0.100	0.428	10.1
SME 1	12/17/2020	23.19	7.66	10.68	9.2	0.577	0.072	<0.100	0.300	20.9
GD 9	12/17/2020	12.33	7.71	10.62	9.7	0.336	<0.030	<0.100	0.261	13.1
GD 7	12/17/2020	14.40	7.75	10.21	9.5	0.373	<0.030	<0.100	<0.250	18.2
GD 5	12/17/2020	28.70	7.62	9.96	9.7	0.122	<0.030	0.113	0.422	19.8
GD 3	removed monitoring point from Stormwater Monitoring Program in September 2020									
SME 3	removed monitoring point from Stormwater Monitoring Program in September 2020									
HB 3	12/17/2020	31.16	8.07	9.94	9.1	0.195	<0.030	<0.100	0.588	20.4
SME 4	12/17/2020	17.70	7.69	10.82	9.8	0.387	<0.030	<0.100	0.263	17.8
SME 5	12/17/2020	15.24	7.80	10.94	10.0	0.371	<0.030	<0.100	0.258	17.7
SME 6	12/17/2020	13.60	7.96	10.89	10.1	0.368	<0.030	<0.100	<0.250	16.7
SME 11	12/17/2020	DUPLICATE OF HB 3				0.188	<0.030	<0.100	0.505	17.0

NTU - Nephelometric Turbidity Units
mg/L - milligrams per liter
NS - Not Sampled (Dry)

Bold - maximum reading for constituent
NA - not available at this time
* - unknown reading due to equipment malfunction

TABLE B.3 - ANALYTICAL DATA - AT 5**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
AT 5	3/12/2013	15	7.80	11.04	12.55	0.61	0.150	0.14	0.37	20.0
AT 5	5/8/2013	25	5.08	2.59	14.69	0.31	0.099	0.11	0.56	19.0
AT 5	9/23/2013	21	5.96	3.95	22.88	1.30	0.400	0.35	0.37	22.0
AT 5	12/10/2013	68	5.32	11.43	8.21	0.79	0.290	0.34	0.97	64.0
AT 5	2/6/2014	40	4.06	15.29	7.28	0.80	0.130	0.13	0.35	32.0
AT 5	6/26/2014	70	7.85	7.61	23.89	0.77	0.340	0.28	0.38	19.0
AT 5	9/30/2014	15	5.78	6.63	21.03	0.94	0.490	0.54	<0.25	14.0
AT 5	11/19/2014	47	5.08	10.23	6.91	1.30	0.410	0.39	0.50	27.0
AT 5	3/23/2015	17	8.69	9.39	14.50	0.71	0.130	0.14	0.27	15.0
AT5	4/22/2015	53	6.93	11.13	18.40	0.69	0.110	0.13	<0.25	76.0
AT5	9/30/2015	15	6.37	9.45	21.63	1.82	0.664	0.86	<0.25	16.4
AT5	11/19/2015	934	7.38	19.33	14.98	0.67	0.261	0.31	1.47	74.6
AT 5	3/15/2016	30	7.93	20.43	16.86	0.58	0.068	<0.10	0.77	26.7
AT 5	6/29/2016	18	7.99	6.57	25.40	0.80	0.598	0.71	<0.25	14.5
AT 5	8/9/2016	17	7.89	6.47	25.80	0.98	0.482	0.50	0.27	18.3
AT5	12/7/2016	26.5	7.08	10.19	11.3	0.66	0.450	0.47	<0.25	16.9
AT5	3/2/2017	51	8.14	8.86	13.40	1.08	0.267	0.37	0.53	44.6
AT 5	6/21/2017	11.7	7.98	6.74	23.3	0.62	0.226	0.37	0.54	70.0
AT 5	8/17/2017	9.5	8.09	6.77	26.0	0.89	0.258	0.28	0.69	12.0
AT 5	10/26/2017	9.8	7.95	8.25	15.7	0.94	0.226	0.25	<0.25	9.4
AT 5	3/27/2018	14.5	7.79	9.03	12.9	0.849	0.162	0.148	<0.25	15.9
AT 5	6/26/2018	16.4	8.06	6.89	25.5	0.849	0.230	0.246	0.411	25.2
AT 5	8/1/2018	77.9	7.33	7.16	22.3	0.510	0.285	0.401	0.680	107.0
AT 5	12/11/2018	29.2	7.59	10.73	9.4	1.090	0.066	0.204	0.579	46.2
AT 5	4/17/2019	12.2	7.63	8.99	17.9	0.638	0.061	<0.10	<0.250	14.4
AT 5	6/11/2019	24.6	7.18	3.48	22.2	0.822	0.206	0.290	0.486	15.9
AT 5	8/28/2019	20.7	7.84	7.42	27.1	0.534	0.404	0.485	1.070	23.5
AT 5	10/28/2019	22.5	7.84	8.45	15.1	0.665	0.523	0.499	<0.250	17.0
AT 5	3/31/2020	23.1	8.09	9.07	16.6	0.657	0.0320	0.102	<0.250	27.1
AT 5	6/10/2020	19.4	7.56	7.35	23.2	0.825	0.248	0.243	<0.250	22.8
AT 5	9/21/2020	-0.3	8.08	8.21	20.6	0.603	0.491	0.399	<0.250	11.3
AT 5	12/17/2020	28.7	7.91	11.21	9.6	0.831	0.087	<0.10	<0.250	18.6

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.4 - ANALYTICAL DATA - GD 8

**GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 8	3/12/2013	7	7.65	11.73	9.85	0.13	<0.025	<0.10	0.25	4.5
GD 8	5/8/2013	19	6.71	1.72	14.47	0.11	<0.025	<0.10	0.38	19.0
GD 8	9/23/2013	18	6.22	3.98	22.74	<0.10	<0.025	<0.10	0.41	9.6
GD 8	12/10/2013	31	6.04	13.33	8.10	0.28	0.040	<0.10	0.35	32.0
GD 8	2/6/2014	16	3.87	16.32	6.48	0.25	<0.025	<0.10	0.13	13.0
GD 8	6/26/2014	31	8.19	6.64	26.15	0.25	<0.025	<0.10	0.48	7.3
GD 8	9/30/2014	12	7.32	5.06	23.19	0.14	<0.025	<0.10	0.42	6.0
GD 8	11/19/2014	25	5.16	9.01	5.87	0.23	<0.025	<0.01	0.32	13.0
GD 8	3/23/2015	11	8.67	9.76	14.8	0.22	<0.025	<0.10	<0.25	4.8
GD 8	4/22/2015	20	7.40	11.71	17.70	0.16	<0.025	<0.10	<0.25	15.0
GD 8	9/30/2015	9	7.79	9.48	24.33	0.18	<0.025	<0.10	0.48	6.8
GD 8	11/19/2015	212	6.94	23.30	15.13	0.23	<0.025	0.10	0.85	79.6
GD 8	3/15/2016	11	7.88	16.81	16.98	0.13	<0.025	<0.10	0.47	8.3
GD 8	6/29/2016	33	8.50	6.60	29.30	<0.10	<0.025	<0.10	0.45	39.8
GD 8	8/9/2016	13	8.90	5.87	28.90	0.22	<0.025	<0.10	0.67	6.3
GD 8	12/7/2016	10.1	7.75	8.84	12.1	0.31	<0.025	<0.10	0.41	7.0
GD 8	3/2/2017	20	8.14	9.76	12.20	0.28	<0.025	<0.10	0.34	3.6
GD 8	6/21/2017	7.9	8.73	6.50	25.0	<0.10	<0.025	<0.10	0.64	7.0
GD 8	8/17/2017	6.8	8.55	6.30	28.70	0.13	<0.025	<0.10	0.54	8.9
GD 8	10/26/2017	6.1	8.17	8.25	16.3	<0.10	<0.025	<0.10	0.35	4.0
GD 8	3/27/2018	8.9	8.09	9.52	12.1	0.215	<0.025	<0.10	<0.25	6.5
GD 8	6/26/2018	5.8	8.50	5.74	29.7	0.150	<0.025	<0.10	0.670	5.8
GD 8	8/1/2018	45.8	6.89	7.39	22.9	0.556	0.072	0.11	0.641	53.2
GD 8	12/11/2018	16.0	7.87	11.71	9.2	0.326	<0.025	<0.10	0.406	24.4
GD 8	4/17/2019	6.7	8.05	9.30	17.6	0.115	<0.025	<0.10	0.437	<5.00
GD 8	6/11/2019	9.4	7.19	2.94	25.8	0.181	<0.025	<0.10	0.948	4.1
GD 8	8/28/2019	14.2	8.26	6.07	30.2	0.212	<0.025	<0.10	0.992	11.8
GD 8	10/28/2019	29.6	7.83	8.22	16.2	0.435	<0.025	0.109	0.255	12.9
GD 8	3/31/2020	19.3	7.97	9.30	16.6	0.133	<0.025	0.132	0.348	18.0
GD 8	6/10/2020	10.8	7.97	7.13	24.9	0.211	<0.03	<0.100	<0.25	8.0
GD 8	9/21/2020	-0.7	8.19	6.36	22.8	0.171	<0.03	<0.100	0.290	7.4
GD 8	12/17/2020	17.5	8.30	11.68	9.4	0.273	<0.03	<0.100	<0.25	11.5

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.5 - ANALYTICAL DATA - RC 2

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 2	3/12/2013	29	7.73	9.83	10.53	0.12	0.088	<0.10	0.75	14.0
RC 2	5/8/2013	19	6.16	3.06	16.36	0.19	<0.025	<0.10	0.55	12.0
RC 2	9/23/2013	11	6.24	3.00	23.61	<0.10	<0.025	<0.10	0.43	6.3
RC 2	12/10/2013	34	6.07	11.71	8.38	0.11	0.062	<0.10	0.54	10.0
RC 2	2/6/2014	30	3.89	17.28	5.62	0.26	<0.025	<0.10	0.43	9.6
RC 2	6/26/2014	18	7.90	6.81	24.81	0.15	<0.025	<0.10	0.44	7.2
RC 2	9/30/2014	3	7.27	5.55	22.25	<0.10	<0.025	<0.10	0.40	2.5
RC 2	11/19/2014	27	5.65	7.14	5.72	0.17	<0.025	<0.10	0.43	11.0
RC 2	3/23/2015	45	8.23	9.07	16.00	0.15	0.044	<0.10	0.81	18.0
RC 2	4/22/2015	14	7.64	11.42	18.40	0.26	<0.025	<0.10	<0.25	4.8
RC 2	9/30/2015	7	5.93	9.28	23.33	<0.10	<0.025	<0.10	<0.25	4.6
RC 2	11/19/2015	114	7.36	21.94	15.29	0.27	<0.025	0.13	0.75	14.4
RC 2	3/15/2016	15	7.62	16.67	14.61	0.18	<0.025	<0.10	0.43	6.0
RC 2	6/29/2016	12	7.78	4.31	28.30	<0.10	0.077	<0.10	0.35	10.9
RC 2	8/9/2016	25	8.12	5.05	26.50	0.14	<0.025	<0.10	0.45	9.9
RC 2	12/7/2016	17.2	7.86	7.47	12.0	0.20	<0.025	<0.10	0.53	11.9
RC 2	3/2/2017	25	7.71	7.74	13.10	0.17	<0.025	<0.10	0.45	8.0
RC 2	6/21/2017	14.2	7.91	5.61	23.7	<0.10	<0.025	<0.10	0.51	12.3
RC 2	8/17/2017	18.2	8.08	4.94	27.90	<0.10	<0.025	0.13	0.72	72.2
RC 2	10/26/2017	18.1	7.57	7.05	15.2	<0.10	<0.025	<0.10	0.27	17.5
RC 2	3/27/2018	18.2	7.91	8.43	12.4	0.146	<0.025	<0.10	<0.25	12.5
RC 2	6/26/2018	18.8	7.94	6.19	26.5	0.101	<0.025	<0.10	0.802	13.0
RC 2	8/1/2018	56.8	7.40	7.10	22.4	<0.10	<0.025	<0.10	0.506	84.4
RC 2	12/11/2018	16.0	7.54	11.41	7.7	0.316	<0.025	<0.10	0.479	3.1
RC 2	4/17/2019	7.0	7.77	8.67	18.9	0.165	<0.025	<0.10	0.288	<5.00
RC 2	6/11/2019	14.3	6.83	3.78	23.0	<0.10	<0.025	<0.10	0.520	5.2
RC 2	8/28/2019	14.4	8.01	7.30	28.0	<0.10	<0.025	<0.10	0.748	4.8
RC 2	10/28/2019	11.4	7.55	9.42	14.9	0.132	<0.025	0.20	<0.250	3.4
RC 2	3/31/2020	84.5	7.90	9.10	15.7	0.190	0.0290	0.118	0.574	90.0
RC 2	6/10/2020	20.5	7.87	6.37	25.6	0.210	<0.03	<0.100	0.330	10.8
RC 2	9/21/2020	-0.7	7.24	7.03	19.6	<0.100	<0.03	<0.100	<0.250	5.2
RC 2	12/17/2020	28.1	7.91	11.23	8.9	0.218	<0.03	<0.100	0.396	5.4

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.6 - ANALYTICAL DATA - SS 13

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 13	3/12/2013	8	7.04	9.85	11.45	0.34	0.032	<0.10	0.78	4.7
SS 13	5/8/2013	10	6.68	2.94	18.75	0.36	<0.050	<0.10	0.72	5.7
SS 13	9/23/2013	12	7.04	3.38	25.31	<0.10	0.028	<0.10	0.84	9.6
SS 13	12/10/2013	12	6.14	10.93	8.99	0.33	0.077	0.12	0.67	5.6
SS 13	2/6/2014	7	4.26	17.50	5.14	0.42	<0.025	<0.10	0.44	4.1
SS 13	6/26/2014	23	8.33	8.09	28.44	<0.10	<0.025	0.12	0.52	5.4
SS 13	9/30/2014	12	7.41	4.26	24.77	<0.10	<0.025	<0.10	0.44	12.0
SS 13	11/19/2014	13	6.31	6.08	6.44	0.22	0.044	<0.10	0.40	4.8
SS 13	3/23/2015	16	7.33	8.57	15.40	0.22	0.029	<0.10	0.71	7.6
SS 13	4/22/2015	15	6.60	8.93	20.80	0.32	<0.025	<0.10	0.67	10.0
SS 13	9/30/2015	9	7.33	11.54	25.95	<0.10	<0.025	<0.10	0.52	9.0
SS 13	11/19/2015	36	7.07	18.48	15.31	0.24	<0.025	0.18	0.97	4.8
SS 13	3/15/2016	9	6.61	12.42	17.37	0.32	<0.025	<0.10	<0.25	4.7
SS 13	6/29/2016	10	7.86	6.15	30.60	<0.10	<0.025	<0.10	0.53	9.8
SS 13	8/9/2016	20	7.77	5.92	29.10	<0.10	<0.025	<0.10	0.73	24.0
SS 13	12/7/2016	4.8	7.39	6.97	12.5	0.11	<0.025	<0.10	0.45	3.6
SS 13	3/2/2017	12	6.64	7.19	13.40	0.25	<0.025	<0.10	0.75	4.6
SS 13	6/21/2017	8.7	7.54	5.82	26.1	<0.10	<0.025	<0.10	0.82	12.8
SS 13	8/17/2017	9.3	7.93	6.54	30.90	<0.10	<0.025	<0.10	0.81	18.6
SS 13	10/26/2017	5.2	6.70	7.41	15.4	0.12	<0.025	<0.10	0.60	7.2
SS 13	3/27/2018	6.4	8.19	8.23	12.4	0.495	<0.025	<0.10	<0.25	16.2
SS 13	6/26/2018	6.8	7.36	5.67	29.5	<0.10	<0.025	0.140	0.998	10.2
SS 13	8/1/2018	24.2	6.75	6.86	21.9	0.226	0.206	0.308	1.180	20.2
SS 13	12/11/2018	8.2	7.37	10.79	7.4	0.451	<0.025	<0.10	0.655	8.6
SS 13	4/17/2019	6.4	7.42	9.23	19.1	<0.10	<0.025	<0.10	0.624	6.8
SS 13	6/11/2019	8.9	6.59	3.12	23.4	<0.10	<0.025	<0.10	0.929	<6.25
SS 13	8/28/2019	6.7	7.93	7.33	29.7	<0.10	<0.025	<0.10	1.170	24.4
SS 13	10/28/2019	12.3	6.25	3.61	16.0	0.211	0.031	<0.10	0.739	3.7
SS 13	3/31/2020	60.4	6.95	8.64	14.9	0.233	0.0580	0.147	0.928	92.0
SS 13	6/10/2020	10.1	7.27	7.08	28.2	<0.100	<0.03	<0.100	0.492	21.2
SS 13	9/21/2020	-0.8	7.36	6.58	21.9	<0.100	<0.03	0.200	<0.250	7.8
SS 13	12/17/2020	12.3	8.04	10.83	8.3	0.405	<0.03	<0.100	0.432	5.3

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.7 - ANALYTICAL DATA - SS 14**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 14	3/12/2013	10	7.40	11.23	10.93	0.40	0.087	0.11	0.77	4.7
SS 14	5/8/2013	10	6.47	2.75	16.42	0.45	0.041	<0.10	0.53	5.0
SS 14	9/23/2013	3	6.76	6.49	21.77	0.38	0.036	<0.10	0.45	<2.5
SS 14	12/10/2013	18	5.63	11.33	8.56	0.28	0.160	0.19	0.66	9.2
SS 14	2/6/2014	12	4.19	17.56	5.16	0.62	0.074	<0.10	0.50	14.0
SS 14	6/26/2014	8	8.18	7.58	24.14	0.67	0.080	0.16	0.89	<2.5
SS 14	9/30/2014	8	7.42	3.67	22.35	<0.10	0.031	<0.10	0.52	6.1
SS 14	11/19/2014	16	6.27	7.50	5.48	0.75	0.075	0.22	0.46	9.2
SS 14	3/23/2015	21	7.75	9.53	16.50	0.27	0.110	0.14	1.10	11.0
SS 14	4/22/2015	12	7.43	12.29	17.50	0.62	<0.025	<0.10	0.58	6.3
SS 14	9/30/2015	7	7.16	12.79	24.02	<0.10	0.088	0.18	0.51	6.6
SS 14	11/19/2015	27	6.49	20.71	15.16	0.44	0.131	0.18	1.00	23.3
SS 14	3/15/2016	11	7.18	12.11	16.01	0.50	0.056	<0.10	0.83	8.1
SS 14	6/29/2016	6	7.62	3.61	27.20	<0.10	0.103	0.16	0.65	6.0
SS 14	8/9/2016	22	7.71	5.99	26.90	0.16	0.062	0.12	0.87	12.7
SS 14	12/7/2016	7.6	7.27	7.72	11.9	0.89	0.078	0.15	0.71	<2.5
SS 14	3/2/2017	13	7.60	8.76	12.20	0.48	0.092	0.15	0.84	9.2
SS 14	6/21/2017	21.5	7.74	6.24	23.7	0.25	0.030	0.11	0.73	63.7
SS 14	8/17/2017	6.0	8.12	7.11	31.40	0.12	0.070	<0.10	0.83	24.8
SS 14	10/26/2017	4.3	7.39	7.66	13.9	0.70	0.054	<0.10	0.58	3.6
SS 14	3/27/2018	8.8	7.34	8.96	11.9	0.673	0.044	0.148	<0.25	8.2
SS 14	6/26/2018	7.7	8.47	10.65	29.3	0.206	0.044	0.148	1.01	18.7
SS 14	8/1/2018	42.9	6.35	7.04	22.5	0.109	0.233	0.276	0.89	60.0
SS 14	12/11/2018	8.4	6.95	11.53	7.4	0.812	0.057	0.117	0.635	4.3
SS 14	4/17/2019	6.6	7.60	8.28	22.1	0.598	0.042	<0.10	0.414	6.7
SS 14	6/11/2019	12.6	6.78	3.47	23.8	0.444	0.077	<0.10	0.928	5.9
SS 14	8/28/2019	8.1	7.96	8.18	27.9	<0.10	<0.025	0.174	1.050	8.5
SS 14	10/28/2019	10.9	6.97	7.83	15.1	0.458	0.048	0.167	0.381	2.7
SS 14	3/31/2020	62.4	6.67	9.31	15.2	0.190	0.235	0.348	0.934	145
SS 14	6/10/2020	17.0	7.32	7.20	29.1	0.246	0.078	0.128	0.897	40.4
SS 14	9/21/2020	-1.0	7.62	7.59	20.7	0.345	0.075	<0.100	0.281	8.4
SS 14	12/17/2020	11.4	7.94	11.72	8.6	0.546	0.050	<0.100	0.540	5.4

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.8 - ANALYTICAL DATA - GD 12

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 12	3/12/2013	9	7.41	10.93	13.43	0.25	0.030	<0.10	0.54	3.9
GD 12	5/8/2013	15	6.73	2.35	16.53	0.21	0.030	<0.10	0.40	7.5
GD 12	9/23/2013	10	6.76	3.94	26.07	<0.10	0.026	<0.10	0.48	9.0
GD 12	12/10/2013	19	6.15	10.09	10.18	0.22	0.079	0.11	0.45	5.9
GD 12	2/6/2014	12	4.17	16.99	5.76	0.31	<0.025	<0.10	0.28	3.9
GD 12	6/26/2014	29	8.38	9.40	26.72	0.11	0.035	0.12	0.62	32.0
GD 12	9/30/2014	11	7.68	5.77	24.68	<0.10	<0.025	<0.10	0.39	11.0
GD 12	11/19/2014	15	6.95	5.93	5.85	0.28	<0.025	0.13	0.39	6.6
GD 12	3/23/2015	18	7.80	9.56	16.80	0.24	<0.025	<0.10	0.59	8.1
GD 12	4/22/2015	17	7.45	11.04	19.80	0.25	<0.025	<0.10	0.43	14.0
GD 12	9/30/2015	7	7.30	11.07	24.67	<0.10	<0.025	<0.10	0.70	8.5
GD 12	11/19/2015	23	7.07	19.14	14.68	0.28	0.100	0.15	0.77	12.0
GD 12	3/15/2016	10	7.43	13.14	16.05	0.25	0.032	<0.10	0.43	4.6
GD 12	6/29/2016	13	8.22	7.68	31.20	<0.10	0.036	<0.10	0.38	12.0
GD 12	8/9/2016	22	7.57	4.39	27.60	<0.10	<0.025	<0.10	0.63	13.3
GD 12	12/7/2016	10.3	7.18	6.65	11.4	0.14	<0.025	<0.10	0.60	4.0
GD 12	3/2/2017	15	7.79	10.12	11.70	0.22	<0.025	0.12	0.58	6.1
GD 12	6/21/2017	16.1	7.43	5.12	24.3	<0.10	<0.025	<0.10	0.77	16.8
GD 12	8/17/2017	6.3	8.13	5.80	29.90	<0.10	<0.025	<0.10	0.58	13.3
GD 12	10/26/2017	9.8	6.74	7.53	13.2	0.2	<0.025	<0.10	0.31	7.8
GD 12	3/27/2018	6.3	7.71	9.24	11.5	0.356	<0.025	<0.10	<0.25	4.2
GD 12	6/26/2018	9.9	7.44	4.35	26.1	0.102	<0.025	<0.10	0.528	13.2
GD 12	8/1/2018	42.3	7.05	7.33	22.7	0.108	0.159	0.286	1.23	43.8
GD 12	12/11/2018	9.5	6.68	11.46	7.8	0.313	<0.025	<0.10	0.574	4.3
GD 12	4/17/2019	9.1	7.45	9.20	17.5	0.257	<0.025	<0.10	0.272	4.0
GD 12	6/11/2019	19.0	7.20	3.25	22.0	0.223	0.066	0.121	0.820	8.2
GD 12	8/28/2019	11.0	7.83	7.61	28.2	<0.10	<0.025	0.103	0.764	9.4
GD 12	10/28/2019	18.9	5.34	6.65	14.7	0.197	0.044	<0.10	0.387	12.3
GD 12	3/31/2020	76.3	6.71	9.44	14.5	0.177	0.0650	0.167	1.00	143
GD 12	6/10/2020	12.3	6.46	6.44	25.8	<0.100	<0.03	<0.100	0.438	11.4
GD 12	9/21/2020	-0.6	7.18	7.15	19.9	0.103	<0.03	<0.100	<0.250	7.6
GD 12	12/17/2020	13.1	8.03	11.10	8.5	0.268	<0.03	<0.100	<0.250	3.7

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.9 - ANALYTICAL DATA - CO 14

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 14	3/12/2013	8	6.88	9.65	12.92	0.32	<0.025	<0.10	0.42	3.5
CO 14	5/8/2013	13	6.61	3.02	16.37	0.34	<0.12	<0.10	0.74	6.7
CO 14	9/23/2013	15	6.70	3.78	22.58	<0.10	0.036	<0.10	0.30	9.6
CO 14	12/10/2013	14	5.82	11.15	9.37	0.11	0.027	<0.10	0.55	9.7
CO 14	2/6/2014	14	4.02	16.69	5.08	0.58	<0.025	<0.10	0.41	9.1
CO 14	6/26/2014	20	8.25	8.19	22.33	0.34	<0.025	<0.10	0.86	9.0
CO 14	9/30/2014	*	*	*	*	*	*	*	*	*
CO 14	11/19/2014	9.84	6.70	3.86	7.90	<0.10	<0.025	<0.10	0.26	2.8
CO 14	3/23/2015	19	6.85	8.78	17.20	0.25	<0.025	<0.10	0.67	10.0
CO 14	4/22/2015	14	6.23	11.19	18.00	0.49	<0.025	<0.10	0.60	8.6
CO 14	9/30/2015	*	*	*	*	*	*	*	*	*
CO 14	11/19/2015	24	6.64	16.06	15.25	<0.10	<0.025	<0.10	1.27	5.9
CO 14	3/15/2016	16	6.33	13.05	16.42	0.47	<0.025	<0.10	0.71	9.7
CO 14	6/29/2016	*	*	*	*	*	*	*	*	*
CO 14	8/9/2016	*	*	*	*	*	*	*	*	*
CO 14	12/7/2016	*	*	*	*	*	*	*	*	*
CO 14	3/2/2017	19	6.34	8.58	13.60	0.11	<0.025	<0.10	0.60	5.2
CO 14	6/21/2017	9.0	6.57	6.49	22.9	<0.10	<0.025	<0.10	0.76	19.0
CO 14	8/17/2017	13.8	7.83	6.22	28.0	<0.10	<0.025	<0.10	0.85	50.6
CO 14	10/26/2017	8.1	6.43	8.40	14.2	<0.10	<0.025	<0.10	0.44	4.7
CO 14	3/27/2018	8.2	7.63	9.45	11.4	0.601	<0.025	<0.10	<0.25	9.5
CO 14	6/26/2018	NS	NS	NS	NS	NS	NS	NS	NS	NS
CO 14	8/1/2018	40.2	6.99	7.42	22.1	<0.10	<0.025	<0.10	0.76	28.3
CO 14	12/11/2018	7.6	7.38	10.74	7.7	0.184	<0.025	<0.10	0.567	4.9
CO 14	4/17/2019	9.3	7.91	8.99	19.0	0.460	<0.025	<0.10	2.96	9.4
CO 14	6/11/2019	17.5	7.07	3.56	22.4	<0.10	<0.025	0.14	0.773	5.6
CO 14	8/28/2019	*	*	*	*	*	*	*	*	*
CO 14	10/28/2019	*	*	*	*	*	*	*	*	*
CO 14	3/31/2020	77.6	7.84	9.07	15.0	0.402	<0.025	<0.10	0.532	106
CO 14	6/10/2020	13.8	7.64	7.20	24.4	0.244	<0.03	<0.100	0.482	5.6
CO 14	9/21/2020	*	*	*	*	*	*	*	*	*
CO 14	removed Monitoring Point from Stormwater Monitoring Program in September 2020									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - outfall was dry

TABLE B.10 - ANALYTICAL DATA - SME 2

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 2	3/12/2013	6	7.12	9.28	14.17	0.28	0.032	<0.10	0.47	8.1
SME 2	5/8/2013	26	7.67	6.46	21.40	0.24	0.042	<0.10	0.92	21.0
SME 2	9/23/2013	7	6.92	5.51	26.24	<0.10	0.039	<0.10	0.34	7.1
SME 2	12/10/2013	12	5.71	11.05	11.01	0.31	0.100	0.15	0.42	7.0
SME 2	2/6/2014	20	4.21	14.38	6.13	0.39	0.053	<0.10	0.59	14.0
SME 2	6/26/2014	15	8.16	7.22	26.98	0.11	<0.025	<0.10	0.38	8.7
SME 2	9/30/2014	6	7.97	5.33	26.53	<0.10	<0.025	<0.10	0.52	7.4
SME 2	11/19/2014	10	7.06	3.53	10.20	0.14	0.039	0.16	<0.25	6.8
SME 2	3/23/2015	11	7.96	9.34	17.60	0.24	<0.025	<0.10	0.45	10.0
SME 2	4/22/2015	9	7.93	11.46	24.50	0.13	<0.025	<0.10	0.48	9.1
SME 2	9/30/2015	7	7.62	12.67	25.91	0.10	<0.025	0.10	0.50	8.7
SME 2	11/19/2015	22	6.55	14.30	19.12	0.22	0.062	0.22	1.21	82.3
SME 2	3/15/2016	8	7.86	13.43	20.73	<0.10	<0.025	<0.10	0.49	6.3
SME 2	6/29/2016	8	8.23	7.24	30.40	0.19	<0.025	<0.10	0.29	8.0
SME 2	8/9/2016	10	8.01	6.58	30.60	<0.10	<0.025	<0.10	0.59	8.2
SME 2	12/7/2016	6.0	7.52	6.86	12.7	<0.10	<0.025	0.10	0.47	5.8
SME 2	3/2/2017	12	8.03	8.55	15.20	0.27	<0.025	<0.10	0.72	11.4
SME 2	6/21/2017	5.2	7.18	4.64	26.6	<0.10	<0.025	<0.10	0.89	11.4
SME 2	8/17/2017	6.5	7.76	6.43	30.6	<0.10	<0.025	<0.10	0.73	15.3
SME 2	10/26/2017	5.2	7.03	6.87	17.6	<0.10	<0.025	<0.10	0.38	8.5
SME 2	3/27/2018	11.1	7.44	8.64	12.9	0.161	<0.025	<0.10	<0.25	17.5
SME 2	6/26/2018	10.8	7.97	6.43	29.6	0.111	<0.025	<0.10	0.731	9.9
SME 2	8/1/2018	29.6	7.39	6.46	23.4	0.371	0.099	0.13	0.423	24.8
SME 2	12/11/2018	9.7	7.82	9.99	7.9	0.212	<0.025	0.166	0.368	5.1
SME 2	4/17/2019	5.0	7.82	7.80	20.5	0.105	<0.025	<0.10	0.783	6.0
SME 2	6/11/2019	12.3	6.68	3.43	24.4	<0.10	<0.025	<0.10	0.676	9.2
SME 2	8/28/2019	6.6	7.83	6.26	29.2	<0.10	<0.025	<0.10	0.452	5.9
SME 2	10/28/2019	24.9	7.64	7.42	16.8	<0.10	<0.025	0.107	0.341	18.2
SME 2	3/31/2020	9.5	7.02	7.31	18.2	<0.10	<0.025	<0.10	0.521	10.2
SME 2	6/10/2020	10.4	7.81	6.40	27.0	0.117	<0.03	<0.100	0.367	8.0
SME 2	9/21/2020	-0.8	7.84	8.02	23.6	<0.100	<0.03	<0.100	<0.250	11.0
SME 2	12/17/2020	13.3	8.04	9.04	9.2	0.272	0.041	<0.100	0.342	6.7

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.11 - ANALYTICAL DATA - GD 6

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 6	3/12/2013	10	8.03	9.65	11.90	0.21	0.036	<0.10	0.29	5.8
GD 6	5/8/2013	19	6.81	2.35	19.02	0.23	0.033	<0.10	0.40	8.3
GD 6	9/23/2013	6	7.28	5.17	26.93	<0.10	<0.025	<0.10	0.36	5.8
GD 6	12/10/2013	26	5.98	11.41	10.64	0.37	0.041	<0.10	0.17	8.6
GD 6	2/6/2014	16	4.34	15.80	6.85	0.26	0.057	<0.10	0.16	5.5
GD 6	6/26/2014	14	8.31	8.95	27.29	<0.10	<0.025	<0.10	0.42	7.0
GD 6	9/30/2014	7	8.35	6.53	26.78	<0.10	<0.025	<0.10	0.55	7.0
GD 6	11/19/2014	13	7.17	3.36	9.67	0.22	<0.025	0.28	0.38	9.8
GD 6	3/23/2015	17	7.95	8.95	18.40	0.22	<0.025	<0.10	0.26	8.2
GD 6	4/22/2015	15	7.59	10.82	19.80	0.22	<0.025	<0.10	0.28	8.0
GD 6	9/30/2015	14	8.19	12.31	25.47	<0.10	<0.025	0.10	0.97	12.4
GD 6	11/19/2015	43	6.97	15.87	17.75	0.47	0.037	0.13	0.77	16.0
GD 6	3/15/2016	16	7.68	11.58	19.98	0.12	0.043	<0.10	0.50	7.9
GD 6	6/29/2016	10	8.86	9.64	31.50	<0.10	<0.025	<0.10	0.40	11.2
GD 6	8/9/2016	10	8.26	6.98	30.70	<0.10	<0.025	<0.10	0.62	10.3
GD 6	12/7/2016	11.5	7.43	8.13	14.3	0.37	<0.025	<0.10	0.49	7.5
GD 6	3/2/2017	14	8.05	8.02	14.70	0.25	<0.025	<0.10	0.51	9.0
GD 6	6/21/2017	7.7	7.67	4.99	26.8	<0.10	<0.025	0.11	0.93	21.0
GD 6	8/17/2017	7.0	8.02	7.72	31.2	<0.10	<0.025	<0.10	0.68	13.2
GD 6	10/26/2017	8.3	6.25	7.84	15.8	0.13	<0.025	<0.10	0.39	12.0
GD 6	3/27/2018	10.1	7.97	9.00	12.1	0.233	<0.025	1.76	<0.25	10.9
GD 6	6/26/2018	8.0	8.02	6.78	29.6	0.108	<0.025	<0.10	0.782	9.6
GD 6	8/1/2018	25.4	7.66	7.52	22.7	0.335	0.090	0.1	0.636	21.9
GD 6	12/11/2018	13.8	7.97	10.92	8.2	0.397	<0.025	<0.10	0.362	5.8
GD 6	4/17/2019	9.0	7.10	8.00	20.5	0.198	<0.025	<0.10	0.624	9.6
GD 6	6/11/2019	17.9	7.07	3.68	23.8	<0.10	<0.025	<0.10	0.728	12.4
GD 6	8/28/2019	9.1	7.94	6.32	28.5	<0.10	<0.025	<0.10	0.607	6.5
GD 6	10/28/2019	18.4	7.48	6.63	16.4	0.198	<0.025	<0.10	0.467	9.9
GD 6	3/31/2020	16.0	6.06	8.86	16.1	0.212	<0.025	0.127	<0.250	8.40
GD 6	6/10/2020	7.4	7.04	6.36	26.5	0.127	<0.03	<0.100	0.832	10.40
GD 6	9/21/2020	-1.0	7.96	8.48	21.4	<0.100	<0.03	<0.100	<0.250	8.60
GD 6	12/17/2020	0.5	7.96	10.08	9.0	0.309	<0.03	<0.100	0.377	7.40

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.12 - ANALYTICAL DATA - CO 15

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 15	3/12/2013	32	7.41	8.91	14.40	<0.10	0.097	<0.10	0.53	9.0
CO 15	5/8/2013	27	7.51	8.04	18.10	0.10	<0.12	<0.10	0.59	11.0
CO 15	9/23/2013	13	7.09	4.01	27.18	<0.10	0.027	<0.10	0.34	11.0
CO 15	12/10/2013	42	6.09	11.25	9.83	0.18	0.068	<0.10	0.56	13.0
CO 15	2/6/2014	32	4.22	16.10	6.28	0.21	<0.025	<0.10	0.46	12.0
CO 15	6/26/2014	105	8.16	7.00	25.55	<0.10	0.140	<0.10	0.59	46.0
CO 15	9/30/2014	8	7.88	6.67	23.28	<0.10	<0.025	<0.10	<0.25	8.6
CO 15	11/19/2014	44	7.38	3.68	9.43	0.20	0.030	<0.10	0.32	12.0
CO 15	3/23/2015	56	7.85	9.53	18.50	0.14	0.067	<0.10	0.61	19.0
CO 15	4/22/2015	26	7.62	10.14	21.90	0.14	<0.025	<0.10	0.40	11.0
CO 15	9/30/2015	15	7.68	12.73	22.88	<0.10	<0.025	<0.10	0.75	11.8
CO 15	11/19/2015	50	7.30	19.45	16.98	0.24	0.042	0.18	0.42	17.5
CO 15	3/15/2016	29	7.66	12.39	19.83	<0.10	<0.025	<0.10	0.78	12.4
CO 15	6/29/2016	*	*	*	*	*	*	*	*	*
CO 15	8/9/2016	38	8.03	6.78	29.60	<0.10	<0.025	<0.10	<0.25	22.0
CO 15	12/7/2016	13.6	7.50	9.78	12.1	<0.10	<0.025	<0.10	0.67	14.8
CO 15	3/2/2017	38.2	7.77	8.32	16.00	0.15	<0.025	<0.10	0.52	17.4
CO 15	6/21/2017	6.4	7.56	5.12	26.70	<0.10	<0.025	<0.10	0.97	18.3
CO 15	8/17/2017	21.7	8.29	6.47	30.10	<0.10	<0.025	<0.10	0.69	12.4
CO 15	10/26/2017	10.8	4.43	8.24	13.6	<0.10	<0.025	<0.10	0.39	6.4
CO 15	3/27/2018	14.5	7.87	9.33	12.1	<0.10	<0.025	<0.10	<0.25	8.0
CO 15	6/26/2018	13.8	7.87	7.33	26.5	<0.10	<0.025	0.270	0.573	12.4
CO 15	8/1/2018	58.8	7.25	7.12	23.0	<0.10	0.040	0.122	0.852	71.5
CO 15	12/11/2018	111.3	8.73	11.94	7.0	0.168	<0.025	0.107	1.160	10.1
CO 15	4/17/2019	17.0	7.80	9.17	19.1	0.144	<0.025	<0.10	0.574	11.5
CO 15	6/11/2019	21.9	6.56	3.10	22.8	<0.10	<0.025	<0.10	1.00	9.8
CO 15	8/28/2019	70.8	8.07	7.52	25.7	0.166	0.026	0.130	1.54	20.4
CO 15	10/28/2019	30.7	7.31	9.63	15.0	0.120	<0.025	<0.10	0.61	10.2
CO 15	3/31/2020	61.8	6.46	9.25	15.7	0.102	0.0320	0.158	0.625	72.4
CO 15	6/10/2020	18.7	6.24	6.22	25.0	0.148	<0.03	<0.100	0.456	10.4
CO 15	9/21/2020	-0.7	7.31	8.18	17.9	<0.100	<0.03	<0.100	<0.250	5.6
CO 15	12/17/2020	2.8	8.98	10.87	10.0	0.161	<0.03	<0.100	0.685	15.6

NTU - Nephelometric Turbidity Units

* - outfall was dry

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.13 - ANALYTICAL DATA - SME 8

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

[illegible]

NTU - Nephelometric Turbidity Units

* - unknown reading due to equipment malfunction

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.14 - ANALYTICAL DATA - SME 7

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

[illegible]

NTU - Nephelometric Turbidity Units

* - unknown reading due to equipment malfunction

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.15 - ANALYTICAL DATA - RC 14

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 14	3/12/2013	28	8.23	7.53	10.30	<0.10	0.088	<0.10	0.61	21.0
RC 14	5/8/2013	30	6.72	1.78	21.40	0.14	<0.12	<0.10	0.63	16.0
RC 14	9/23/2013	18	7.86	6.68	24.70	<0.10	<0.025	<0.10	0.58	13.0
RC 14	12/10/2013	40	8.45	9.50	8.20	<0.10	0.100	0.11	0.69	16.0
RC 14	2/6/2014	67	7.15	10.94	4.90	0.16	0.036	0.11	0.70	18.0
RC 14	6/26/2014	6	8.21	6.30	*	<0.10	<0.025	<0.10	0.39	5.9
RC 14	9/30/2014	12	7.20	6.20	23.50	<0.10	<0.025	<0.10	0.40	12.0
RC 14	9/19/2014	50	8.20	10.10	7.50	<0.10	0.085	0.13	0.52	28.0
RC 14	3/23/2015	70	8.03	7.80	18.20	0.26	0.070	<0.10	1.10	34.0
RC 14	4/22/2015	30	7.77	7.25	18.10	0.20	<0.025	<0.10	0.40	15.0
RC 14	9/30/2015	17	8.28	5.63	24.40	<0.10	<0.025	<0.10	0.45	12.6
RC 14	11/19/2015	95	7.32	6.07	17.71	0.14	<0.025	0.14	0.63	36.0
RC 14	3/15/2016	85	8.13	7.73	18.50	0.11	<0.025	0.30	0.43	69.6
RC 14	6/29/2016	17	7.58	2.17	28.53	<0.10	0.037	<0.10	0.46	17.5
RC 14	8/9/2016	10	7.05	2.35	28.53	<0.10	<0.025	<0.10	0.55	8.5
RC 14	12/7/2016	7.9	7.21	6.47	11.62	<0.10	<0.025	<0.10	0.25	8.6
RC 14	3/2/2017	18.0	7.32	3.55	12.69	0.12	<0.025	<0.10	0.61	14.6
RC 14	7/5/2017	17.7	7.55	6.56	25.7	0.28	0.041	<0.10	0.36	35.0
RC 14	8/16/2017	9.8	7.72	5.54	26.70	0.21	0.042	<0.10	0.40	12.4
RC 14	10/25/2017	18.7	7.64	7.26	17.1	0.24	0.088	0.15	0.47	27.2
RC 14	3/28/2018	9.9	8.03	9.00	18.3	0.148	<0.025	<0.10	<0.25	10.9
RC 14	6/29/2018	12.9	7.64	5.89	27.1	<0.10	<0.025	<0.10	0.722	13.8
RC 14	8/2/2018	21.7	7.30	5.56	23.7	<0.10	0.055	<0.10	0.848	17.3
RC 14	12/10/2018	35.1	7.13	10.63	7.3	<0.10	0.038	0.169	1.400	16.9
RC 14	4/15/2019	45.8	7.68	7.67	19.5	0.108	<0.025	<0.10	0.403	36.0
RC 14	6/12/2019	11.0	8.03	7.39	25.3	0.120	<0.025	<0.10	0.250	12.3
RC 14	8/27/2019	76.4	8.36	8.78	28.4	<0.10	<0.025	0.141	0.391	8.8
RC 14	10/29/2019	17.4	7.90	9.83	17.7	<0.10	<0.025	<0.10	0.478	10.6
RC 14	3/30/2020	12.9	8.10	10.01	21.9	<0.10	<0.025	<0.10	0.451	15.7
RC 14	6/16/2020	11.5	6.79	8.01	26.9	0.141	<0.030	<0.10	0.560	11.4
RC 14	9/21/2020	13.7	7.49	9.65	21.9	<0.100	<0.030	0.202	0.307	8.2
RC 14	12/17/2020	25.8	7.72	10.40	9.3	0.261	<0.030	<0.10	0.497	14.4

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - unknown reading due to equipment malfunction

TABLE B.16 - ANALYTICAL DATA - SS 5

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 5	3/12/2013	6	8.38	9.87	10.80	0.30	0.031	<0.10	0.39	7.2
SS 5	5/8/2013	24	7.38	7.19	16.80	0.16	<0.12	<0.10	0.62	21.0
SS 5	9/23/2013	14	8.00	5.44	25.80	<0.10	0.029	<0.10	1.30	15.0
SS 5	12/10/2013	23	8.25	9.10	7.70	0.24	0.043	0.11	0.67	13.0
SS 5	2/6/2014	28	7.20	12.09	5.40	0.39	<0.025	<0.10	0.86	12.0
SS 5	6/26/2014	11	8.53	7.01	*	<0.10	<0.025	<0.10	0.40	11.0
SS 5	9/30/2014	11	7.64	6.82	24.44	<0.10	<0.025	<0.10	0.45	11.0
SS 5	11/19/2014	14	8.96	13.13	8.50	<0.10	<0.025	<0.10	0.35	9.6
SS 5	3/23/2015	18	8.50	8.99	17.70	0.26	<0.025	<0.10	0.46	11.0
SS 5	4/22/2015	19	7.76	6.71	20.20	0.15	<0.025	<0.10	0.47	13.0
SS 5	9/30/2015	11	8.26	6.61	25.30	<0.10	<0.025	<0.10	0.61	9.9
SS 5	11/19/2015	19	7.86	8.47	15.90	0.24	<0.025	<0.10	<0.25	11.0
SS 5	3/15/2016	20.0	8.37	8.47	17.20	0.26	<0.025	0.23	0.28	9.5
SS 5	6/29/2016	15	8.01	3.81	29.77	<0.10	0.066	<0.10	0.48	13.2
SS 5	8/9/2016	12	7.86	3.16	29.40	<0.10	<0.025	<0.10	0.46	12.6
SS 5	12/7/2016	6.6	7.94	6.70	12.30	<0.10	<0.025	0.12	0.42	8.0
SS 5	3/2/2017	14.0	7.78	3.92	12.77	0.33	<0.025	<0.10	0.77	16.0
SS 5	7/5/2017	8.4	7.77	7.19	28.90	<0.10	<0.025	<0.10	0.47	12.0
SS 5	8/16/2017	10.2	8.10	4.83	29.90	<0.10	<0.025	<0.10	0.49	15.1
SS 5	10/25/2017	7.5	8.24	8.36	19.2	<0.10	<0.025	<0.10	0.53	11.8
SS 5	3/28/2018	7.0	8.53	10.23	18.5	0.248	<0.025	<0.10	<0.25	8.33
SS 5	6/29/2018	10.4	7.93	5.50	27.5	<0.10	<0.025	<0.10	0.605	13.3
SS 5	8/2/2018	13.5	7.58	6.04	25.8	<0.10	<0.025	<0.10	0.554	12.8
SS 5	12/10/2018	21.9	7.01	11.15	7.3	0.146	<0.025	<0.10	0.522	16.7
SS 5	4/15/2019	15.5	7.35	7.77	19.4	0.168	<0.025	<0.10	0.374	11.7
SS 5	6/12/2019	10.0	8.44	8.78	26.6	<0.10	<0.025	<0.10	<0.250	11.0
SS 5	8/27/2019	24.5	8.66	9.02	28.9	<0.10	<0.025	0.17	0.508	7.1
SS 5	10/29/2019	18.7	8.20	9.33	18.1	0.105	<0.025	0.20	0.631	10.4
SS 5	3/30/2020	9.2	8.35	11.07	20.8	0.127	<0.025	<0.10	0.399	10.6
SS 5	6/16/2020	10.5	8.41	7.99	27.9	<0.100	<0.030	<0.10	0.534	9.7
SS 5	9/21/2020	16.5	7.36	11.45	22.6	<0.100	<0.030	<0.100	0.512	11.0
SS 5	12/17/2020	8.64	8.02	11.24	9.6	0.200	<0.030	<0.100	0.428	10.1

NTU - Nephelometric Turbidity Units

* - unknown reading due to equipment malfunction

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.17 - ANALYTICAL DATA - SME 1

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 1	3/12/2013	13	8.19	8.26	13.10	0.54	0.110	0.11	0.34	16.0
SME 1	5/8/2013	24	7.64	8.96	16.00	0.15	0.063	<0.10	0.42	14.0
SME 1	9/23/2013	14	8.26	7.87	27.70	<0.10	0.053	<0.10	0.80	15.0
SME 1	12/10/2013	46	8.05	9.15	7.60	0.55	0.210	0.26	0.47	21.0
SME 1	2/6/2014	61	7.22	11.34	5.90	0.55	0.110	0.13	0.50	23.0
SME 1	6/26/2014	14	8.49	7.05	*	<0.10	<0.025	<0.10	0.31	13.0
SME 1	9/30/2014	28	8.25	7.46	24.67	<0.10	0.044	0.11	0.61	34.0
SME 1	11/19/2014	40	8.31	10.86	7.80	0.74	0.270	0.29	0.55	19.0
SME 1	3/23/2015	21	8.26	8.52	17.30	0.51	0.073	0.10	<0.25	14.0
SME 1	4/22/2015	29	7.14	7.97	18.50	0.40	0.039	<0.10	0.38	18.0
SME 1	9/30/2015	15	8.34	7.03	26.40	<0.10	0.052	0.14	0.81	15.3
SME 1	11/19/2015	50	7.92	7.04	15.90	0.40	0.084	0.13	<0.25	23.2
SME 1	3/15/2016	26	8.44	7.21	18.30	0.45	0.047	<0.10	<0.25	17.7
SME 1	6/29/2016	21	8.80	3.29	30.67	<0.10	0.180	0.25	0.62	20.3
SME 1	8/9/2016	15	8.55	4.98	28.87	<0.10	0.089	0.15	0.55	12.6
SME 1	12/7/2016	31	7.96	10.20	11.98	0.41	0.209	0.27	0.38	17.7
SME 1	3/2/2017	14	7.75	4.31	12.34	0.67	0.127	0.21	0.35	15.0
SME 1	6/29/2017	19.2	9.11	9.21	25.80	<0.10	0.028	<0.10	0.53	18.3
SME 1	8/16/2017	10.6	8.12	6.58	29.70	<0.10	<0.025	0.11	0.52	12.7
SME 1	10/25/2017	5.4	8.02	8.32	17.3	0.4	0.121	0.15	0.29	16.9
SME 1	3/28/2018	19.3	8.10	9.18	17.6	0.633	0.106	<0.10	<0.25	19.8
SME 1	6/29/2018	20.7	7.84	6.37	26.2	0.312	0.121	0.24	0.670	23.3
SME 1	8/2/2018	28.5	7.48	5.82	23.9	0.296	0.145	0.14	0.495	29.5
SME 1	12/10/2018	32.0	7.45	11.48	8.0	0.259	<0.025	<0.10	0.336	31.0
SME 1	4/15/2019	42.2	7.89	7.89	19.7	0.390	0.063	<0.10	0.360	35.0
SME 1	6/12/2019	12.2	7.34	8.73	27.2	<0.10	<0.025	<0.10	<0.250	9.7
SME 1	8/27/2019	135.2	7.45	8.51	28.8	<0.10	<0.025	0.161	0.356	7.1
SME 1	10/29/2019	14.5	7.95	9.21	17.6	0.129	0.049	0.134	0.272	11.0
SME 1	3/30/2020	13.3	7.35	8.61	19.3	0.462	<0.025	<0.10	<0.250	13.3
SME 1	6/16/2020	11.6	8.58	10.36	27.0	<0.100	0.031	0.129	0.485	11.4
SME 1	9/21/2020	13.8	7.71	6.92	22.2	<0.100	<0.030	<0.100	<0.250	9.0
SME 1	12/17/2020	23.19	7.66	10.68	9.2	0.577	0.072	<0.100	0.300	20.9

NTU - Nephelometric Turbidity Units

* - unknown reading due to equipment malfunction

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.18 - ANALYTICAL DATA - GD 9
GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 9	2/6/2014	34	7.20	11.27	5.50	0.40	0.063	0.12	0.60	14.0
GD 9	6/26/2014	45	8.22	6.08	*	<0.10	0.029	0.12	0.41	34.0
GD 9	9/30/2014	12	8.30	6.93	24.61	<0.10	<0.025	<0.10	0.30	15.0
GD 9	11/19/2014	23	8.13	9.38	9.30	0.16	0.082	0.25	0.74	15.0
GD 9	3/23/2015	25	8.16	7.58	15.80	0.15	<0.025	<0.10	0.64	18.0
GD 9	4/22/2015	18	7.58	5.58	20.70	0.15	<0.025	<0.10	0.65	14.0
GD 9	9/30/2015	10	7.93	5.37	25.70	<0.10	<0.025	<0.10	0.64	10.8
GD 9	11/19/2015	40	7.67	*	16.50	0.25	0.096	0.12	<0.25	16.7
GD 9	3/15/2016	15	8.49	7.66	17.30	0.33	0.044	<0.10	<0.25	12.1
GD 9	6/29/2016	44	8.20	1.76	29.77	<0.10	<0.025	<0.10	0.65	67.2
GD 9	8/9/2016	11	8.07	4.14	29.00	<0.10	<0.025	<0.10	0.47	9.4
GD 9	12/7/2016	26	7.99	8.01	11.99	<0.10	<0.025	0.13	0.38	38.3
GD 9	3/2/2017	10.7	7.70	4.26	13.60	0.27	<0.025	<0.10	0.67	11.2
GD 9	6/29/2017	15.8	8.37	5.85	26.4	<0.10	<0.025	<0.10	0.72	15.7
GD 9	8/16/2017	11.3	7.82	5.52	29.60	<0.10	<0.025	<0.10	0.38	18.2
GD 9	10/25/2017	18.9	7.50	6.68	18.9	<0.10	0.025	<0.10	0.38	29.7
GD 9	3/28/2018	10.2	8.21	9.75	15.8	0.230	<0.025	<0.10	<0.25	12.4
GD 9	6/29/2018	11.0	7.73	5.45	27.6	<0.10	<0.025	<0.10	0.507	13.9
GD 9	8/2/2018	13.0	7.55	5.17	26.0	0.110	0.067	<0.10	0.600	20.8
GD 9	12/10/2018	26.4	7.90	11.05	7.9	0.292	0.047	0.244	0.442	22.8
GD 9	4/15/2019	221.5	7.51	8.09	20.0	0.194	0.034	<0.10	<0.250	178
GD 9	6/12/2019	7.3	7.21	8.61	27.0	0.116	<0.025	<0.10	<0.250	29.0
GD 9	8/27/2019	76.5	7.81	8.22	28.8	<0.10	<0.025	0.146	0.385	9.3
GD 9	10/29/2019	22.3	7.35	8.91	17.9	<0.10	<0.025	<0.10	0.491	15.0
GD 9	3/30/2020	18.3	7.56	8.54	18.4	0.243	<0.025	0.121	<0.250	16.4
GD 9	6/16/2020	11.4	8.15	7.94	27.1	<0.100	<0.030	<0.100	0.352	11.5
GD 9	9/21/2020	11.6	7.38	6.41	23.3	<0.100	<0.030	<0.100	<0.250	9.0
GD 9	12/17/2020	12.33	7.71	10.62	9.7	0.336	<0.030	<0.100	0.261	13.1

NTU - Nephelometric Turbidity Units

* - unknown reading due to equipment malfunction

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.19 - ANALYTICAL DATA - GD 7

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 7	3/12/2013	10	7.98	11.63	15.27	0.39	0.037	<0.10	0.31	8.8
GD 7	5/8/2013	26	7.72	7.46	18.40	0.24	0.063	<0.10	<0.56	20.0
GD 7	9/23/2013	11	7.05	6.31	26.50	<0.10	0.026	<0.10	0.54	9.6
GD 7	12/10/2013	42	8.02	9.68	7.50	0.34	0.084	0.11	0.32	40.0
GD 7	2/6/2014	28	7.27	13.32	4.40	0.52	0.034	<0.10	0.61	13.0
GD 7	6/26/2014	6	8.45	7.04	*	<0.10	<0.025	<0.10	0.52	8.7
GD 7	9/30/2014	12	7.87	6.32	24.39	<0.10	<0.025	<0.10	0.41	13.0
GD 7	11/19/2014	20	8.53	10.10	9.60	0.14	<0.025	0.13	0.46	15.0
GD 7	3/23/2015	13	8.28	8.87	15.40	0.27	<0.025	<0.10	0.35	10.0
GD 7	4/22/2015	28	7.99	6.40	20.20	0.24	<0.025	<0.10	0.47	24.0
GD 7	9/30/2015	8	7.89	5.18	24.90	<0.10	<0.025	<0.10	0.59	9.1
GD 7	11/19/2015	45	7.78	8.23	15.60	0.34	0.051	<0.10	<0.25	34.3
GD 7	3/15/2016	17	8.46	8.51	17.80	0.26	<0.025	<0.10	0.40	13.9
GD 7	6/29/2016	11	7.90	2.22	30.32	<0.10	0.048	<0.10	0.49	8.6
GD 7	8/9/2016	7	7.97	4.08	29.31	<0.10	<0.025	<0.10	0.47	5.7
GD 7	12/7/2016	9.5	7.88	10.14	12.39	<0.10	<0.025	<0.10	0.36	7.8
GD 7	3/2/2017	11	7.80	4.57	13.35	0.36	<0.025	<0.10	0.51	14.4
GD 7	6/29/2017	9.4	8.18	6.59	26.4	<0.10	<0.025	<0.10	0.44	13.4
GD 7	8/16/2017	8.5	7.84	5.66	29.0	<0.10	<0.025	<0.10	0.36	15.3
GD 7	10/25/2017	9.9	7.73	6.93	19.8	<0.10	<0.025	<0.10	0.42	18.4
GD 7	3/28/2018	7.6	8.16	9.33	14.9	0.350	<0.025	<0.10	<0.25	9.19
GD 7	6/29/2018	14.2	7.79	5.56	27.5	<0.10	<0.025	<0.10	0.625	14.60
GD 7	8/2/2018	18.5	7.62	5.51	27.0	<0.10	0.027	<0.10	0.450	32.10
GD 7	12/10/2018	40.8	7.06	11.05	8.0	0.378	<0.025	0.149	0.390	48.7
GD 7	4/15/2019	30.1	7.83	7.85	19.2	0.230	<0.025	<0.10	<0.250	12.0
GD 7	6/12/2019	7.4	7.24	6.68	27.2	0.132	<0.025	<0.10	<0.250	9.3
GD 7	8/27/2019	45.3	7.35	9.35	29.1	<0.10	<0.025	0.156	0.604	6.3
GD 7	10/29/2019	17.6	7.77	8.14	17.2	<0.10	<0.025	<0.10	0.414	17.0
GD 7	3/30/2020	7.8	7.77	10.38	21.1	<0.10	<0.025	<0.10	0.343	12.8
GD 7	6/16/2020	9.1	8.12	8.25	27.3	<0.100	<0.030	<0.100	0.322	8.3
GD 7	9/21/2020	13.6	7.42	12.45	23.7	<0.100	<0.030	<0.100	<0.250	9.60
GD 7	12/17/2020	14.4	7.75	10.21	9.5	0.373	<0.030	<0.100	<0.250	18.20

NTU - Nephelometric Turbidity Units

* - unknown reading due to equipment malfunction

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.20 - ANALYTICAL DATA - GD 5

**GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 5	3/13/2013	12	8.33	9.29	10.20	0.26	<0.025	<0.10	0.34	9.6
GD 5	5/20/2013	14	8.28	7.76	22.60	<0.10	<0.025	<0.10	0.62	9.0
GD 5	9/23/2013	12	7.67	6.78	27.10	<0.10	0.027	<0.10	0.45	8.0
GD 5	12/10/2013	58	7.97	9.10	9.10	0.10	0.088	0.10	0.47	18.0
GD 5	2/6/2014	46	7.14	9.88	7.20	0.17	0.038	<0.10	0.37	17.0
GD 5	6/26/2014	17	7.90	6.54	*	<0.10	<0.025	<0.10	0.34	12.0
GD 5	9/30/2014	23	8.28	7.53	25.22	<0.10	<0.025	<0.10	<0.25	18.0
GD 5	11/19/2014	43	8.15	9.30	9.40	0.11	0.051	<0.10	0.43	26.0
GD 5	3/23/2015	24	8.14	8.58	15.90	0.12	<0.025	<0.10	0.34	15.0
GD 5	4/22/2015	25	7.81	7.78	21.70	0.14	<0.025	<0.10	0.65	13.0
GD 5	9/30/2015	18	8.03	6.27	26.30	<0.10	<0.025	0.12	0.56	17.3
GD 5	11/19/2015	90	7.63	7.34	16.60	0.17	0.042	<0.10	<0.25	42.8
GD 5	3/15/2016	24	8.80	7.47	19.40	<0.10	<0.025	<0.10	0.44	13.2
GD 5	6/29/2016	21	8.02	2.27	30.37	<0.10	0.074	<0.10	0.49	15.0
GD 5	8/9/2016	12	8.25	5.55	30.20	<0.10	<0.025	<0.10	0.41	11.0
GD 5	12/7/2016	10	7.73	10.61	11.96	<0.10	<0.025	<0.10	0.34	6.8
GD 5	3/2/2017	12	7.81	4.49	14.26	0.12	<0.025	<0.10	0.49	13.0
GD 5	7/5/2017	15.0	7.32	5.83	26.9	<0.10	<0.025	<0.10	0.73	22.7
GD 5	8/16/2017	8.0	7.89	6.22	28.0	<0.10	<0.025	<0.10	0.40	9.0
GD 5	10/25/2017	9.2	7.36	7.35	18.7	<0.10	<0.025	<0.10	0.35	14.6
GD 5	3/28/2018	6.1	8.18	9.47	18.5	0.127	<0.025	<0.10	<0.25	6.06
GD 5	6/29/2018	16.3	7.76	5.66	27.5	<0.10	<0.025	<0.10	0.689	19.60
GD 5	8/2/2018	18.4	7.59	6.02	25.7	<0.10	<0.025	<0.10	0.332	26.40
GD 5	12/10/2018	37.7	7.87	11.30	7.3	<0.10	<0.025	0.190	0.523	22.3
GD 5	4/15/2019	29.7	7.69	8.02	19.3	0.128	<0.025	1.20	0.411	29.0
GD 5	6/12/2019	6.0	8.02	7.64	27.2	<0.10	<0.025	<0.10	<0.250	9.3
GD 5	8/27/2019	75.2	7.15	7.98	28.7	<0.10	<0.025	0.17	0.506	10.9
GD 5	10/29/2019	29.0	7.85	9.42	17.8	<0.10	<0.025	<0.10	0.477	21.0
GD 5	3/30/2020	14.5	7.65	8.86	19.1	0.130	<0.025	<0.10	0.320	12.1
GD 5	6/16/2020	16.4	7.69	7.75	27.2	<0.100	<0.030	<0.100	0.561	7.4
GD 5	9/21/2020	10.8	7.65	6.33	23.2	<0.100	<0.030	<0.100	<0.250	7.9
GD 5	12/17/2020	28.7	7.62	9.96	9.7	0.122	<0.030	0.113	0.422	19.8

NTU - Nephelometric Turbidity Units

* - unknown reading due to equipment malfunction

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.21 - ANALYTICAL DATA - GD 3

**GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 3	3/13/2013	12	8.00	9.28	10.70	0.29	0.028	<0.10	0.44	11.0
GD 3	5/20/2013	12	8.09	7.01	23.40	0.15	0.026	<0.10	0.63	13.0
GD 3	9/23/2013	12	7.80	6.50	26.40	<0.10	0.025	<0.10	0.58	10.0
GD 3	12/10/2013	46	7.85	9.23	9.30	0.21	0.085	0.14	0.64	23.0
GD 3	2/6/2014	90	7.13	10.58	6.10	0.21	<0.025	0.12	0.68	27.0
GD 3	6/26/2014	15	8.13	8.00	*	0.12	<0.025	<0.10	0.40	14.0
GD 3	9/30/2014	20	8.11	6.69	25.06	<0.10	<0.025	<0.10	0.32	19.0
GD 3	11/19/2014	18	8.36	10.88	9.30	<0.10	<0.025	<0.10	0.26	15.0
GD 3	3/23/2015	13	8.32	7.84	16.50	0.22	<0.025	<0.10	0.34	10.0
GD 3	4/22/2015	26	7.86	6.74	20.60	0.18	0.079	<0.10	0.36	21.0
GD 3	9/30/2015	10	7.94	4.91	24.90	0.10	<0.025	0.13	0.74	11.5
GD 3	11/19/2015	40	7.61	7.74	16.00	0.25	<0.025	0.10	<0.25	22.0
GD 3	3/15/2016	26	8.04	8.62	18.70	0.42	0.071	<0.10	<0.25	11.7
GD 3	6/29/2016	6	7.84	2.78	29.94	<0.10	0.088	<0.10	<0.25	10.7
GD 3	8/9/2016	8	7.98	5.09	30.01	<0.10	<0.025	<0.10	0.39	10.0
GD 3	12/7/2016	5.9	7.91	10.55	12.00	<0.10	<0.025	<0.10	0.36	8.1
GD 3	3/2/2017	14	8.21	5.01	14.35	0.24	<0.025	0.14	0.65	15.6
GD 3	7/5/2017	11.2	7.48	6.23	27.3	<0.10	<0.025	<0.10	0.56	14.4
GD 3	8/16/2017	7.4	8.01	6.24	28.8	<0.10	<0.025	<0.10	0.39	8.5
GD 3	10/25/2017	8.9	7.54	7.25	19.1	<0.10	<0.025	<0.10	0.39	13.6
GD 3	3/28/2018	9.1	8.06	9.34	16.6	0.241	<0.025	<0.10	<0.25	10.8
GD 3	6/29/2018	12.9	7.68	5.63	27.3	<0.10	<0.025	<0.10	0.511	12.7
GD 3	8/2/2018	13.4	7.69	5.72	26.6	<0.10	<0.025	<0.10	0.569	20.8
GD 3	12/10/2018	41.4	7.40	11.09	6.8	<0.10	<0.025	0.128	0.519	31.3
GD 3	4/15/2019	15.3	7.71	8.02	19.9	0.233	<0.025	<0.10	<0.250	14.7
GD 3	6/12/2019	9.6	7.24	8.31	27.3	<0.10	<0.025	<0.10	<0.250	13.0
GD 3	8/27/2019	202.8	7.18	8.33	28.8	<0.10	<0.025	0.159	0.434	6.5
GD 3	10/29/2019	26.2	7.84	9.63	17.2	<0.10	<0.025	<0.10	0.453	13.0
GD 3	3/30/2020	17.4	7.58	8.83	18.8	0.216	<0.025	<0.10	0.281	18.0
GD 3	6/16/2020	11.6	8.03	8.20	27.5	<0.100	<0.030	<0.100	0.363	9.5
GD 3	9/21/2020	13.5	7.51	6.73	23.4	<0.100	<0.030	0.106	<0.250	9.8
GD3	removed Monitoring Point from Stormwater Monitoring Program in September 2020									

NTU - Nephelometric Turbidity Units

* - unknown reading due to equipment malfunction

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.22 - ANALYTICAL DATA - SME 3

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 3	3/13/2013	17	7.84	7.44	11.30	0.20	0.038	<0.10	0.69	15.0
SME 3	5/20/2013	19	8.11	6.09	23.60	0.17	0.028	<0.10	0.69	19.0
SME 3	9/23/2013	15		5.32	26.50	<0.10	0.029	<0.10	0.53	13.0
SME 3	12/10/2013	48	7.69	8.85	9.60	<0.10	0.086	<0.10	0.62	20.0
SME 3	2/6/2014	83	7.09	10.62	6.30	0.25	<0.025	<0.10	0.69	33.0
SME 3	6/26/2014	50	8.04	7.03	*	<0.10	0.047	<0.10	0.53	30.0
SME 3	9/30/2014	17	8.08	5.98	25.33	<0.10	<0.025	<0.10	0.66	18.0
SME 3	11/19/2014	22	8.30	10.40	9.30	0.12	0.035	<0.10	<0.25	19.0
SME 3	3/23/2015	25	8.13	7.72	21.20	0.24	0.026	<0.10	0.46	16.0
SME 3	4/22/2015	12	7.76	6.70	21.80	0.15	<0.025	<0.10	0.45	14.0
SME 3	9/30/2015	18	7.96	6.19	25.60	0.13	<0.025	0.13	0.42	24.4
SME 3	11/19/2015	65	7.56	7.44	15.80	0.25	0.032	<0.10	<0.25	37.8
SME 3	3/15/2016	68	8.35	7.51	19.20	0.30	<0.025	<0.10	<0.25	78.8
SME 3	6/29/2016	18	7.80	2.56	30.16	<0.10	0.062	<0.10	0.37	15.3
SME 3	8/9/2016	15	7.52	3.43	29.53	<0.10	<0.025	<0.10	0.56	10.8
SME 3	12/7/2016	8.5	7.90	10.91	11.85	<0.10	<0.025	0.15	1.78	9.4
SME 3	3/2/2017	14.6	7.95	4.60	13.64	0.27	<0.025	<0.10	0.73	17.0
SME 3	7/5/2017	12.5	7.54	5.88	27.3	<0.10	0.039	<0.10	0.63	16.3
SME 3	8/16/2017	11.5	7.86	5.00	28.1	<0.10	0.07	<0.10	0.45	18.5
SME 3	10/25/2017	15.3	7.42	8.23	19.4	<0.10	0.053	0.11	0.38	49.7
SME 3	3/28/2018	8.9	7.98	9.44	17.4	0.220	<0.025	<0.10	<0.25	11.2
SME 3	6/29/2018	15.8	7.53	5.39	26.9	<0.10	<0.025	<0.10	0.800	115.0
SME 3	8/2/2018	30.0	7.59	5.66	26.4	<0.10	<0.025	0.11	0.981	56.0
SME 3	12/10/2018	33.1	7.21	10.68	7.0	<0.10	<0.025	0.127	0.433	27.1
SME 3	4/15/2019	552.6	7.78	7.65	19.7	0.234	<0.025	0.285	0.271	371
SME 3	6/12/2019	7.8	7.48	6.87	27.1	<0.10	<0.025	<0.10	<0.250	10.7
SME 3	8/27/2019	55.3	7.91	8.41	29.2	<0.10	<0.025	0.149	0.389	7.0
SME 3	10/29/2019	22.4	7.77	8.44	17.2	<0.10	<0.025	<0.10	0.390	15.4
SME 3	3/30/2020	14.4	7.51	8.91	18.8	0.239	<0.025	<0.10	0.657	18.2
SME 3	6/16/2020	9.2	8.06	7.95	27.1	<0.100	<0.030	0.102	0.466	10.1
SME 3	9/21/2020	15.3	7.67	6.50	23.0	<0.100	<0.030	<0.100	0.660	10.7
SME 3	removed Monitoring Point from Stormwater Monitoring Program in September 2020									

NTU - Nephelometric Turbidity Units

* - unknown reading due to equipment malfunction

mg/L - milligrams per liter

NS - Not Sampled

TABLE B.23 - ANALYTICAL DATA - HB 3

**GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
HB 3	3/12/2013	33	7.54	9.48	13.90	0.19	0.081	<0.10	0.83	49.0
HB 3	5/20/2013	15	8.21	6.82	27.80	0.17	<0.025	<0.10	0.60	17.0
HB 3	9/23/2013	21	8.02	4.89	25.70	<0.10	0.037	<0.10	0.60	19.0
HB 3	12/10/2013	48	7.90	8.65	10.10	<0.10	0.140	0.15	0.62	20.0
HB 3	2/6/2014	32	7.22	12.24	5.90	0.48	0.030	<0.10	0.37	13.0
HB 3	6/26/2014	12	8.20	7.12	*	<0.10	<0.025	<0.10	0.37	12.0
HB 3	9/30/2014	30	8.05	6.01	24.78	<0.10	<0.025	<0.10	0.48	30.0
HB 3	11/19/2014	56	7.85	8.83	8.80	0.11	0.098	0.12	0.44	51.0
HB 3	3/23/2015	27	8.21	8.40	24.20	0.26	<0.025	<0.10	0.46	35.0
HB 3	4/22/2015	25	7.91	8.36	21.90	0.20	<0.025	<0.10	0.66	22.0
HB 3	9/30/2015	22	7.89	5.05	25.70	<0.10	<0.025	<0.10	0.91	23.0
HB 3	11/19/2015	32	7.83	7.37	17.40	0.38	0.045	<0.10	<0.25	30.2
HB 3	3/15/2016	29	8.52	7.97	19.10	0.30	0.087	<0.10	<0.25	23.8
HB 3	6/29/2016	17	8.02	2.77	30.61	<0.10	<0.025	<0.10	0.51	20.9
HB 3	8/9/2016	11	7.91	4.31	30.19	<0.10	<0.025	<0.10	0.70	14.3
HB 3	12/7/2016	16	7.93	8.44	12.81	0.11	<0.025	0.13	0.73	17.0
HB 3	3/2/2017	50.0	7.75	3.90	14.33	0.33	<0.025	0.12	0.97	57.1
HB 3	7/5/2017	23	7.29	5.36	27.00	<0.10	<0.025	<0.10	0.81	28.5
HB 3	8/16/2017	13.7	7.35	5.04	27.00	<0.10	<0.025	<0.10	0.76	12.7
HB 3	10/25/2017	11.7	6.64	9.93	18.5	<0.10	<0.025	<0.10	0.32	20.4
HB 3	3/28/2018	13.2	7.99	9.47	17.6	0.359	<0.025	<0.10	<0.25	20.2
HB 3	6/29/2018	14.6	7.67	5.55	26.0	<0.10	<0.025	<0.10	0.464	18.2
HB 3	8/2/2018	28.3	7.40	5.64	25.1	<0.10	<0.025	<0.10	0.952	35.3
HB 3	12/10/2018	24.8	7.55	10.98	7.9	0.363	<0.025	0.141	0.426	27.6
HB 3	4/15/2019	22.4	7.73	8.27	19.6	0.233	<0.025	<0.10	<0.250	35.5
HB 3	6/12/2019	12.4	8.13	6.77	26.6	0.129	<0.025	<0.10	<0.250	52.3
HB 3	8/27/2019	78.1	8.21	8.75	29.1	<0.10	<0.025	0.179	0.634	7.3
HB 3	10/29/2019	28.2	7.82	9.88	18.3	<0.10	<0.025	0.166	0.517	17.6
HB 3	3/30/2020	8.9	7.79	8.91	18.5	0.234	<0.025	<0.10	1.20	18.4
HB 3	6/16/2020	20.4	7.33	7.01	26.3	<0.100	<0.030	<0.100	0.30	14.6
HB 3	9/21/2020	12.1	7.80	7.69	23.5	<0.100	<0.030	<0.100	0.28	8.3
HB 3	12/17/2020	31.16	8.07	9.94	9.1	0.195	<0.030	<0.100	0.588	20.4

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - unknown reading due to equipment malfunction

TABLE B.24 - ANALYTICAL DATA - SME 4

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

[illegible]

NTU - Nephelometric Turbidity Unit

mg/L - milligrams per liter

NS - Not Sampled

* - unknown reading due to equipment malfunction

TABLE B.25 - ANALYTICAL DATA - SME 5

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

[illegible]

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - unknown reading due to equipment malfunction

TABLE B.26 - ANALYTICAL DATA - SME 6

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

[illegible]

NTU - Nephelometric Turbidity Unit

mg/L - milligrams per liter

NS - Not Sampled

* - unknown reading due to equipment malfunction

Appendix III

Laboratory Report No. L1298490, dated December 31, 2020

Laboratory Report No. L1298501, dated December 30, 2020

S&ME - Huntsville

Sample Delivery Group: L1298490
Samples Received: 12/18/2020
Project Number: 4482-16-056
Description: Gadsden MS4

Report To: Ms. Emily Kennedy
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Entire Report Reviewed By:



Craig Cothron
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com



Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	6
Sr: Sample Results	7
AT 5 L1298490-01	7
GD 8 L1298490-02	8
RC 2 L1298490-03	9
SS 13 L1298490-04	10
SS 14 L1298490-05	11
GD 12 L1298490-06	12
SME6 L1298490-07	13
SME2 L1298490-08	14
GD 6 L1298490-09	15
CO 15 L1298490-10	16
SME7 L1298490-11	17
SME8 L1298490-12	18
SME9 L1298490-13	19
Qc: Quality Control Summary	20
Gravimetric Analysis by Method 2540 D-2011	20
Wet Chemistry by Method 351.2	21
Wet Chemistry by Method 353.2	22
Wet Chemistry by Method 365.4	23
Wet Chemistry by Method 4500P E-2011	24
Gl: Glossary of Terms	25
Al: Accreditations & Locations	26
Sc: Sample Chain of Custody	27





AT 5 L1298490-01 WW

				Collected by	Collected date/time	Received date/time
				E Kennedy	12/17/20 13:46	12/18/20 11:15
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594586	1	12/19/20 06:09	12/19/20 07:18	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598257	1	12/28/20 18:38	12/30/20 03:42	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598271	1	12/30/20 20:00	12/30/20 20:00	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598835	1	12/28/20 18:38	12/30/20 08:46	KAB	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594329	1	12/18/20 20:22	12/18/20 20:22	KEG	Mt. Juliet, TN

GD 8 L1298490-02 WW

				Collected by	Collected date/time	Received date/time
				E Kennedy	12/17/20 13:33	12/18/20 11:15
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594586	1	12/19/20 06:09	12/19/20 07:18	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598257	1	12/28/20 18:38	12/30/20 03:45	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598271	1	12/30/20 18:50	12/30/20 18:50	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598835	1	12/28/20 18:38	12/30/20 08:48	KAB	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594329	1	12/18/20 20:23	12/18/20 20:23	KEG	Mt. Juliet, TN

RC 2 L1298490-03 WW

				Collected by	Collected date/time	Received date/time
				E Kennedy	12/17/20 13:12	12/18/20 11:15
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594586	1	12/19/20 06:09	12/19/20 07:18	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598257	1	12/28/20 18:38	12/30/20 03:46	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598271	1	12/30/20 18:53	12/30/20 18:53	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598835	1	12/28/20 18:38	12/30/20 08:50	KAB	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594329	1	12/18/20 20:25	12/18/20 20:25	KEG	Mt. Juliet, TN

SS 13 L1298490-04 WW

				Collected by	Collected date/time	Received date/time
				E Kennedy	12/17/20 12:15	12/18/20 11:15
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594586	1	12/19/20 06:09	12/19/20 07:18	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598257	1	12/28/20 18:38	12/30/20 03:48	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598271	1	12/30/20 18:55	12/30/20 18:55	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598835	1	12/28/20 18:38	12/30/20 08:51	KAB	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594329	1	12/18/20 20:25	12/18/20 20:25	KEG	Mt. Juliet, TN

SS 14 L1298490-05 WW

				Collected by	Collected date/time	Received date/time
				E Kennedy	12/17/20 12:26	12/18/20 11:15
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594586	1	12/19/20 06:09	12/19/20 07:18	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598257	1	12/28/20 18:38	12/30/20 03:49	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598271	1	12/30/20 18:56	12/30/20 18:56	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598835	1	12/28/20 18:38	12/30/20 08:52	KAB	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594329	1	12/18/20 20:25	12/18/20 20:25	KEG	Mt. Juliet, TN



GD 12 L1298490-06 WW

				Collected by	Collected date/time	Received date/time
				E Kennedy	12/17/20 11:55	12/18/20 11:15
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594586	1	12/19/20 06:09	12/19/20 07:18	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598257	1	12/28/20 18:38	12/30/20 03:50	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598271	1	12/30/20 18:57	12/30/20 18:57	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598835	1	12/28/20 18:38	12/30/20 08:54	KAB	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594329	1	12/18/20 20:26	12/18/20 20:26	KEG	Mt. Juliet, TN

SME6 L1298490-07 WW

				Collected by	Collected date/time	Received date/time
				E Kennedy	12/17/20 09:00	12/18/20 11:15
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594586	1	12/19/20 06:09	12/19/20 07:18	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598257	1	12/28/20 18:38	12/30/20 03:54	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598271	1	12/30/20 18:58	12/30/20 18:58	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598835	1	12/28/20 18:38	12/30/20 08:55	KAB	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594329	1	12/18/20 20:26	12/18/20 20:26	KEG	Mt. Juliet, TN

SME2 L1298490-08 WW

				Collected by	Collected date/time	Received date/time
				E Kennedy	12/17/20 11:30	12/18/20 11:15
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594586	1	12/19/20 06:09	12/19/20 07:18	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598257	1	12/28/20 18:38	12/30/20 03:57	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598271	1	12/30/20 19:00	12/30/20 19:00	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598835	1	12/28/20 18:38	12/30/20 09:00	KAB	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594329	1	12/18/20 20:26	12/18/20 20:26	KEG	Mt. Juliet, TN

GD 6 L1298490-09 WW

				Collected by	Collected date/time	Received date/time
				E Kennedy	12/17/20 11:20	12/18/20 11:15
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594586	1	12/19/20 06:09	12/19/20 07:18	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598257	1	12/28/20 18:38	12/30/20 03:59	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598271	1	12/30/20 19:05	12/30/20 19:05	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598835	1	12/28/20 18:38	12/30/20 09:01	KAB	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594329	1	12/18/20 20:27	12/18/20 20:27	KEG	Mt. Juliet, TN

CO 15 L1298490-10 WW

				Collected by	Collected date/time	Received date/time
				E Kennedy	12/17/20 10:00	12/18/20 11:15
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594586	1	12/19/20 06:09	12/19/20 07:18	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598257	1	12/28/20 18:38	12/30/20 04:00	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598271	1	12/30/20 19:07	12/30/20 19:07	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598835	1	12/28/20 18:38	12/30/20 09:03	KAB	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594329	1	12/18/20 20:27	12/18/20 20:27	KEG	Mt. Juliet, TN

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



SME7 L1298490-11 WW

Collected by
E Kennedy

Collected date/time
12/17/20 11:00

Received date/time
12/18/20 11:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594586	1	12/19/20 06:09	12/19/20 07:18	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598257	1	12/28/20 18:38	12/30/20 04:01	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598271	1	12/30/20 19:10	12/30/20 19:10	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598835	1	12/28/20 18:38	12/30/20 09:04	KAB	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594329	1	12/18/20 20:27	12/18/20 20:27	KEG	Mt. Juliet, TN

SME8 L1298490-12 WW

Collected by
E Kennedy

Collected date/time
12/17/20 12:30

Received date/time
12/18/20 11:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594586	1	12/19/20 06:09	12/19/20 07:18	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598257	1	12/28/20 18:38	12/30/20 04:03	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598271	1	12/30/20 19:11	12/30/20 19:11	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598835	1	12/28/20 18:38	12/30/20 09:05	KAB	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594329	1	12/18/20 20:28	12/18/20 20:28	KEG	Mt. Juliet, TN

SME9 L1298490-13 WW

Collected by
E Kennedy

Collected date/time
12/17/20 12:00

Received date/time
12/18/20 11:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594586	1	12/19/20 06:09	12/19/20 07:18	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598257	1	12/28/20 18:38	12/30/20 04:04	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598271	1	12/30/20 19:12	12/30/20 19:12	JER	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598835	1	12/28/20 18:38	12/30/20 09:06	KAB	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594329	1	12/18/20 20:28	12/18/20 20:28	KEG	Mt. Juliet, TN



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Craig Cothron
Project Manager

⁴Cn

⁹Sc



Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	18.6		2.50	1	12/19/2020 07:18	WG1594586

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	12/30/2020 03:42	WG1598257

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.831		0.100	1	12/30/2020 20:00	WG1598271

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	12/30/2020 08:46	WG1598835

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	0.0870		0.0300	1	12/18/2020 20:22	WG1594329



Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	11.5		2.50	1	12/19/2020 07:18	WG1594586

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	12/30/2020 03:45	WG1598257

Wet Chemistry by Method 353.2

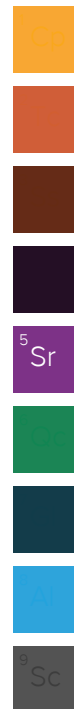
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.273		0.100	1	12/30/2020 18:50	WG1598271

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	12/30/2020 08:48	WG1598835

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	12/18/2020 20:23	WG1594329





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	5.40		2.50	1	12/19/2020 07:18	WG1594586

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.396		0.250	1	12/30/2020 03:46	WG1598257

Wet Chemistry by Method 353.2

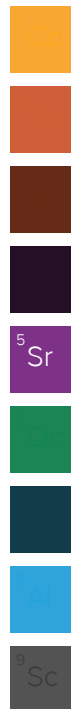
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.218		0.100	1	12/30/2020 18:53	WG1598271

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	12/30/2020 08:50	WG1598835

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	12/18/2020 20:25	WG1594329





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	5.30		2.50	1	12/19/2020 07:18	WG1594586

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.432		0.250	1	12/30/2020 03:48	WG1598257

Wet Chemistry by Method 353.2

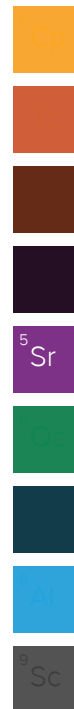
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.405		0.100	1	12/30/2020 18:55	WG1598271

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	12/30/2020 08:51	WG1598835

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	12/18/2020 20:25	WG1594329





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Suspended Solids	5.40		2.50	1	12/19/2020 07:18	WG1594586

Wet Chemistry by Method 351.2

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Kjeldahl Nitrogen, TKN	0.540		0.250	1	12/30/2020 03:49	WG1598257

Wet Chemistry by Method 353.2

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Nitrate-Nitrite	0.546		0.100	1	12/30/2020 18:56	WG1598271

Wet Chemistry by Method 365.4

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Phosphorus, Total	ND		0.100	1	12/30/2020 08:52	WG1598835

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Phosphate, Ortho	0.0500		0.0300	1	12/18/2020 20:25	WG1594329



Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	3.70		2.50	1	12/19/2020 07:18	WG1594586

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	12/30/2020 03:50	WG1598257

Wet Chemistry by Method 353.2

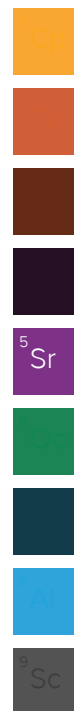
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.268		0.100	1	12/30/2020 18:57	WG1598271

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	12/30/2020 08:54	WG1598835

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	12/18/2020 20:26	WG1594329





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	19.4		2.50	1	12/19/2020 07:18	WG1594586

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.541	P1	0.250	1	12/30/2020 03:54	WG1598257

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.884		0.100	1	12/30/2020 18:58	WG1598271

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	12/30/2020 08:55	WG1598835

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	0.0940		0.0300	1	12/18/2020 20:26	WG1594329



Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	6.70		2.50	1	12/19/2020 07:18	WG1594586

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.342		0.250	1	12/30/2020 03:57	WG1598257

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.272		0.100	1	12/30/2020 19:00	WG1598271

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	12/30/2020 09:00	WG1598835

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	0.0410		0.0300	1	12/18/2020 20:26	WG1594329



Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	7.40		2.50	1	12/19/2020 07:18	WG1594586

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.377		0.250	1	12/30/2020 03:59	WG1598257

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.309		0.100	1	12/30/2020 19:05	WG1598271

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	12/30/2020 09:01	WG1598835

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	12/18/2020 20:27	WG1594329



Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	15.6		2.50	1	12/19/2020 07:18	WG1594586

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.685		0.250	1	12/30/2020 04:00	WG1598257

Wet Chemistry by Method 353.2

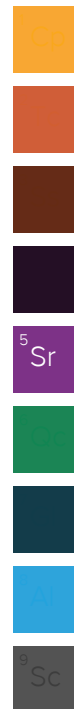
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.161		0.100	1	12/30/2020 19:07	WG1598271

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	12/30/2020 09:03	WG1598835

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	12/18/2020 20:27	WG1594329





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	25.9		2.50	1	12/19/2020 07:18	WG1594586

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	12/30/2020 04:01	WG1598257

Wet Chemistry by Method 353.2

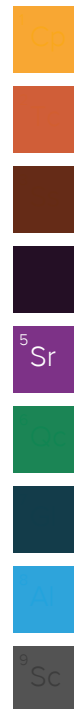
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.312		0.100	1	12/30/2020 19:10	WG1598271

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	12/30/2020 09:04	WG1598835

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	12/18/2020 20:27	WG1594329





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	17.8		2.53	1	12/19/2020 07:18	WG1594586

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	12/30/2020 04:03	WG1598257

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.823		0.100	1	12/30/2020 19:11	WG1598271

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	12/30/2020 09:05	WG1598835

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	0.0840		0.0300	1	12/18/2020 20:28	WG1594329



Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	22.6		2.50	1	12/19/2020 07:18	WG1594586

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.399	J5	0.250	1	12/30/2020 04:04	WG1598257

Wet Chemistry by Method 353.2

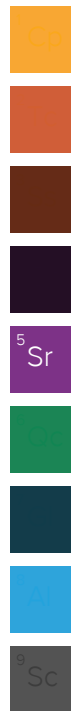
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.861		0.100	1	12/30/2020 19:12	WG1598271

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	12/30/2020 09:06	WG1598835

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	0.0970		0.0300	1	12/18/2020 20:28	WG1594329





Method Blank (MB)

(MB) R3605424-1 12/19/20 07:18

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Suspended Solids	U		0.350	2.50

L1298414-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1298414-01 12/19/20 07:18 • (DUP) R3605424-3 12/19/20 07:18

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	17.2	18.4	1	6.74	P1	5

L1298486-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1298486-01 12/19/20 07:18 • (DUP) R3605424-4 12/19/20 07:18

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	56.0	43.0	1	26.3	P1	5

Laboratory Control Sample (LCS)

(LCS) R3605424-2 12/19/20 07:18

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Suspended Solids	773	820	106	85.7-114	





Method Blank (MB)

(MB) R3608201-1 12/30/20 03:38

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1298490-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1298490-01 12/30/20 03:42 • (DUP) R3608201-4 12/30/20 03:44

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	ND	ND	1	0.000		20

L1298490-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1298490-07 12/30/20 03:54 • (DUP) R3608201-5 12/30/20 03:56

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	0.541	0.366	1	38.6	P1	20

Laboratory Control Sample (LCS)

(LCS) R3608201-3 12/30/20 03:39

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Kjeldahl Nitrogen, TKN	6.45	18.2	120	75.2-121	

L1298490-13 Original Sample (OS) • Matrix Spike (MS)

(OS) L1298490-13 12/30/20 04:04 • (MS) R3608201-6 12/30/20 04:05

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Kjeldahl Nitrogen, TKN	5.00	0.399	6.33	119	1	90.0-110	J5

L1300167-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1300167-01 12/30/20 04:14 • (MS) R3608201-7 12/30/20 04:16 • (MSD) R3608201-8 12/30/20 04:17

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Kjeldahl Nitrogen, TKN	5.00	ND	5.64	5.38	113	108	1	90.0-110	J5		4.72	20





Method Blank (MB)

(MB) R3608507-1 12/30/20 18:33

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1298490-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1298490-01 12/30/20 20:00 • (DUP) R3608507-3 12/30/20 18:48

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Nitrate-Nitrite	0.831	0.845	1	1.67		20

L1298490-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1298490-09 12/30/20 19:05 • (DUP) R3608507-6 12/30/20 19:06

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Nitrate-Nitrite	0.309	0.312	1	0.966		20

Laboratory Control Sample (LCS)

(LCS) R3608507-2 12/30/20 18:34

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Nitrate-Nitrite	2.50	2.73	109	90.0-110	

L1298490-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1298490-02 12/30/20 18:50 • (MS) R3608507-4 12/30/20 18:51 • (MSD) R3608507-5 12/30/20 18:52

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Nitrate-Nitrite	2.50	0.273	2.89	2.70	105	97.1	1	90.0-110			6.80	20

L1298490-10 Original Sample (OS) • Matrix Spike (MS)

(OS) L1298490-10 12/30/20 19:07 • (MS) R3608507-7 12/30/20 19:09

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Nitrate-Nitrite	2.50	0.161	2.72	102	1	90.0-110	





Method Blank (MB)

(MB) R3608251-1 12/30/20 08:43

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphorus,Total	U		0.0350	0.100

L1298490-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1298490-01 12/30/20 08:46 • (DUP) R3608251-3 12/30/20 08:47

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	ND	ND	1	0.000		20

L1298490-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1298490-07 12/30/20 08:55 • (DUP) R3608251-4 12/30/20 08:59

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3608251-2 12/30/20 08:45

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Phosphorus,Total	4.26	4.64	109	82.4-117	

L1300167-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1300167-01 12/30/20 10:07 • (MS) R3608251-5 12/30/20 10:08 • (MSD) R3608251-6 12/30/20 10:09

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphorus,Total	2.50	0.110	3.00	2.91	116	112	1	90.0-110	<u>J5</u>	<u>J5</u>	3.05	20





Method Blank (MB)

(MB) R3605299-1 12/18/20 20:19

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1298490-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1298490-01 12/18/20 20:22 • (DUP) R3605299-5 12/18/20 20:23

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphate,Ortho	0.0870	0.0860	1	1.16		20

L1298490-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1298490-13 12/18/20 20:28 • (DUP) R3605299-6 12/18/20 20:29

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphate,Ortho	0.0970	0.104	1	6.97		20

Laboratory Control Sample (LCS)

(LCS) R3605299-2 12/18/20 20:19

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Phosphate,Ortho	0.245	0.231	94.5	85.0-115	

L1298470-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1298470-01 12/18/20 20:20 • (MS) R3605299-3 12/18/20 20:22 • (MSD) R3605299-4 12/18/20 20:22

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphate,Ortho	0.500	0.0360	0.532	0.542	99.2	101	1	80.0-120			1.86	20





Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana ¹	LA180010	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



S&ME - Huntsville

360 D Quality Circle NW
Suite 450

Huntsville, AL 35896

Report to:
Ms. Emily Kennedy

Project Description:
Gadsden M54

Phone: 256-837-8882

Client Project #
4482-16-056

Lab Project #
QOREHAL-448216056

Collected by (print):

Collected by (signature):

Immediately
Packed on Ice N Y

Site/Facility ID #

Rush? (Lab MUST Be Notified)

Same Day Five Day
Next Day 5 Day (Rad Only)
Two Day 10 Day (Rad Only)
Three Day

Quote #

Date Results Needed

No.
of
Cttrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	
AT 5	Grab	WW	3'	12/17/20	1346	4
GD 8		WW			333	4
RC 2		WW			312	4
SS 13		WW			215	4
SS 14		WW			1226	4
GD 12		WW			1155	4
SME 6 (SME 8)		WW			0900	4
SME 2		WW			1130	4
GD 4		WW			1120	4
CO 15		WW	2'		1600	4

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - Wastewater
DW - Drinking Water
OT - Other

Remarks:

* Two Coolers

Samples returned via
UPS FedEx Courier

Tracking # 4876 1085 9059-0286

Relinquished by: (Signature)

Date: 12/17/20

Time: 1100

Received by: (Signature)

FedEx

Trip Blank Received: Yes No

NCL/Ment

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp °C 64.2-65.2

Bottles Received: 52

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Olivia Tracy

Date: 12/18/20

Time: 1115

Hold:

Condition: NCF 1.6

Analysis / Container / Preservation

Pres
Cttr

PORTHO 100ml Amb NoPres

PT 250mlHDPE-H2SO4

TKN / NO2NO3 250mlHDPE-H2SO4

TSS 1L-HDPE NoPres

Chain of Custody Page 1 of 1



22000 Levee Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5858
Fax: 615-758-5858



SDG # L1298450

Table F041

Account: QOREHAL

Template: T114559

Prelogin: P802049

PNL: 034 - Craig Cochran

PE: 10/5/20 ted

Shipped Via: FedEx Ground

Remarks: Sample # (30 only)

Sample Receipt Checklist

COC Seal Present/Intact: NP
COC signed/accurate: N
Bottles arrive intact: N
Correct bottles used: N
Sufficient volume sent: N
If Applicable
VQA Seal headspace: Y
Preservation Correct/Checked: N
RAD Return <0.5 MB/hr: N

If preservation required by Logix: Date/Time

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page:

of

1967749

Section A

Required Client Information:

Company: J5 ME
Address: 3600 Qualinc
Sut 950 Hampshire
Email To: e.kennedy@j5me.com
Phone: _____ Fax: _____
Requested Due Date/TAT: _____

Section B

Required Project Information:

Report To: _____
Copy To: _____
Purchase Order No.: _____
Project Name: Gadsden MS
Project Location: _____

Section C

Invoice Information:

Attention: _____
Company Name: _____
Address: _____
Fax/Over-Sea: _____
Pace Project Manager: _____
Pace Profile #: _____

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location

STATE

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE	MATRIX CODE (see and codes to left)	SAMPLE TYPE (D-SGAB D-COMP)	COLLECTED				SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives										Analysis Test #	Y/N	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
					COMPOSITE START		COMPOSITE END/DATE				Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃	Methanol	Other																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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ADDITIONAL COMMENTS

RELINQUISHED BY / AFFILIATION

DATE

TIME

ACCEPTED BY / AFFILIATION

DATE

TIME

SAMPLE CONDITIONS

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER:

DATE Signed (MM/DD/YY)

Temp in °C

Received on Ice (Y/N)

Coolbox Sealed Cooler (Y/N)

Sample Inads (Y/N)

NPPS 16428 ORIGINAL COOST
HAD SCREEN <0.5 mm

Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to the charges of 1.25% per month for any overdue net payments.

S&ME - Huntsville

Sample Delivery Group: L1298501
Samples Received: 12/18/2020
Project Number: 4482-16-056
Description: Gadsden MS4

Report To: Ms. Emily Kennedy
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Entire Report Reviewed By:



Craig Cothron
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com



Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	6
Sr: Sample Results	7
HB3 L1298501-01	7
SME 4 L1298501-02	8
GD 5 L1298501-03	9
GD 7 L1298501-04	10
SME10 L1298501-05	11
GD 9 L1298501-06	12
SME 1 L1298501-07	13
SS 5 L1298501-08	14
SME 5 L1298501-09	15
SME 6 L1298501-10	16
RC 14 L1298501-11	17
Qc: Quality Control Summary	18
Gravimetric Analysis by Method 2540 D-2011	18
Wet Chemistry by Method 351.2	19
Wet Chemistry by Method 353.2	20
Wet Chemistry by Method 365.4	21
Wet Chemistry by Method 4500P E-2011	22
Gl: Glossary of Terms	23
Al: Accreditations & Locations	24
Sc: Sample Chain of Custody	25





HB3 L1298501-01 WW

				Collected by	Collected date/time	Received date/time
				Grant Williams	12/17/20 10:30	12/18/20 11:15
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594582	1	12/19/20 02:51	12/19/20 06:04	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598258	1	12/28/20 18:38	12/30/20 04:45	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598272	1	12/29/20 12:09	12/29/20 12:09	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598838	1	12/28/20 18:38	12/30/20 07:31	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594332	1	12/18/20 21:43	12/18/20 21:43	KEG	Mt. Juliet, TN

SME 4 L1298501-02 WW

				Collected by	Collected date/time	Received date/time
				Grant Williams	12/17/20 10:35	12/18/20 11:15
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594582	1	12/19/20 02:51	12/19/20 06:04	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598258	1	12/28/20 18:38	12/30/20 04:47	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598272	1	12/29/20 12:12	12/29/20 12:12	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598838	1	12/28/20 18:38	12/30/20 07:32	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594332	1	12/18/20 21:44	12/18/20 21:44	KEG	Mt. Juliet, TN

GD 5 L1298501-03 WW

				Collected by	Collected date/time	Received date/time
				Grant Williams	12/17/20 10:53	12/18/20 11:15
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594582	1	12/19/20 02:51	12/19/20 06:04	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598258	1	12/28/20 18:38	12/30/20 04:48	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598272	1	12/29/20 12:19	12/29/20 12:19	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598838	1	12/28/20 18:38	12/30/20 07:33	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594332	1	12/18/20 21:45	12/18/20 21:45	KEG	Mt. Juliet, TN

GD 7 L1298501-04 WW

				Collected by	Collected date/time	Received date/time
				Grant Williams	12/17/20 11:15	12/18/20 11:15
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594582	1	12/19/20 02:51	12/19/20 06:04	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598258	1	12/28/20 18:38	12/30/20 04:49	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598272	1	12/29/20 12:21	12/29/20 12:21	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598838	1	12/28/20 18:38	12/30/20 07:35	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594332	1	12/18/20 21:46	12/18/20 21:46	KEG	Mt. Juliet, TN

SME10 L1298501-05 WW

				Collected by	Collected date/time	Received date/time
				Grant Williams	12/17/20 10:40	12/18/20 11:15
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594582	1	12/19/20 02:51	12/19/20 06:04	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598258	1	12/28/20 18:38	12/30/20 04:52	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598272	1	12/29/20 12:22	12/29/20 12:22	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598838	1	12/28/20 18:38	12/30/20 07:37	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594332	1	12/18/20 21:46	12/18/20 21:46	KEG	Mt. Juliet, TN

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



GD 9 L1298501-06 WW

Collected by
Grant Williams

Collected date/time
12/17/20 11:20

Received date/time
12/18/20 11:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594582	1	12/19/20 02:51	12/19/20 06:04	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598258	1	12/28/20 18:38	12/30/20 04:54	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598272	1	12/29/20 12:23	12/29/20 12:23	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598838	1	12/28/20 18:38	12/30/20 07:39	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594332	1	12/18/20 21:46	12/18/20 21:46	KEG	Mt. Juliet, TN

SME 1 L1298501-07 WW

Collected by
Grant Williams

Collected date/time
12/17/20 11:25

Received date/time
12/18/20 11:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594582	1	12/19/20 02:51	12/19/20 06:04	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598258	1	12/28/20 18:38	12/30/20 05:00	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598272	1	12/29/20 12:24	12/29/20 12:24	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598838	1	12/28/20 18:38	12/30/20 07:46	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594332	1	12/18/20 21:47	12/18/20 21:47	KEG	Mt. Juliet, TN

SS 5 L1298501-08 WW

Collected by
Grant Williams

Collected date/time
12/17/20 12:15

Received date/time
12/18/20 11:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594582	1	12/19/20 02:51	12/19/20 06:04	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598258	1	12/28/20 18:38	12/30/20 05:02	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598272	1	12/29/20 12:26	12/29/20 12:26	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598838	1	12/28/20 18:38	12/30/20 07:47	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594332	1	12/18/20 21:47	12/18/20 21:47	KEG	Mt. Juliet, TN

SME 5 L1298501-09 WW

Collected by
Grant Williams

Collected date/time
12/17/20 12:25

Received date/time
12/18/20 11:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594582	1	12/19/20 02:51	12/19/20 06:04	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598258	1	12/28/20 18:38	12/30/20 05:03	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598272	1	12/29/20 12:27	12/29/20 12:27	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598838	1	12/28/20 18:38	12/30/20 07:48	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594332	1	12/18/20 21:48	12/18/20 21:48	KEG	Mt. Juliet, TN

SME 6 L1298501-10 WW

Collected by
Grant Williams

Collected date/time
12/17/20 13:10

Received date/time
12/18/20 11:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594582	1	12/19/20 02:51	12/19/20 06:04	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598258	1	12/28/20 18:38	12/30/20 05:04	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598272	1	12/29/20 12:28	12/29/20 12:28	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598838	1	12/28/20 18:38	12/30/20 07:49	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594332	1	12/18/20 21:48	12/18/20 21:48	KEG	Mt. Juliet, TN

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



RC 14 L1298501-11 WW

Collected by
Grant WilliamsCollected date/time
12/17/20 13:35Received date/time
12/18/20 11:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1594582	1	12/19/20 02:51	12/19/20 06:04	MML	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1598258	1	12/28/20 18:38	12/30/20 05:07	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1598272	1	12/29/20 12:29	12/29/20 12:29	MSP	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1598838	1	12/28/20 18:38	12/30/20 07:51	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1594332	1	12/18/20 21:48	12/18/20 21:48	KEG	Mt. Juliet, TN





All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Craig Cothron
Project Manager

⁴Cn

⁹Sc



Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	20.4		3.58	1	12/19/2020 06:04	WG1594582

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.588		0.250	1	12/30/2020 04:45	WG1598258

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.195		0.100	1	12/29/2020 12:09	WG1598272

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	12/30/2020 07:31	WG1598838

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	12/18/2020 21:43	WG1594332





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Suspended Solids	17.8		4.18	1	12/19/2020 06:04	WG1594582

Wet Chemistry by Method 351.2

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Kjeldahl Nitrogen, TKN	0.263		0.250	1	12/30/2020 04:47	WG1598258

Wet Chemistry by Method 353.2

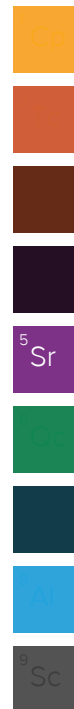
Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Nitrate-Nitrite	0.387		0.100	1	12/29/2020 12:12	WG1598272

Wet Chemistry by Method 365.4

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Phosphorus, Total	ND		0.100	1	12/30/2020 07:32	WG1598838

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Phosphate, Ortho	ND		0.0300	1	12/18/2020 21:44	WG1594332





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	19.8		5.00	1	12/19/2020 06:04	WG1594582

Wet Chemistry by Method 351.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.422		0.250	1	12/30/2020 04:48	WG1598258

Wet Chemistry by Method 353.2

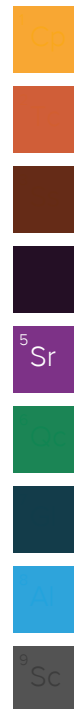
Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.122		0.100	1	12/29/2020 12:19	WG1598272

Wet Chemistry by Method 365.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphorus, Total	0.113		0.100	1	12/30/2020 07:33	WG1598838

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	12/18/2020 21:45	WG1594332





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	18.2		5.00	1	12/19/2020 06:04	WG1594582

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	12/30/2020 04:49	WG1598258

Wet Chemistry by Method 353.2

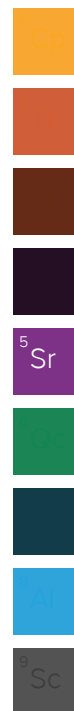
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.373		0.100	1	12/29/2020 12:21	WG1598272

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	12/30/2020 07:35	WG1598838

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	12/18/2020 21:46	WG1594332





Collected date/time: 12/17/20 10:40

L1298501

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	17.0		5.00	1	12/19/2020 06:04	WG1594582

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.505		0.250	1	12/30/2020 04:52	WG1598258

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.188		0.100	1	12/29/2020 12:22	WG1598272

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	12/30/2020 07:37	WG1598838

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	12/18/2020 21:46	WG1594332



Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Suspended Solids	13.1		2.50	1	12/19/2020 06:04	WG1594582

Wet Chemistry by Method 351.2

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.261	J5	0.250	1	12/30/2020 04:54	WG1598258

Wet Chemistry by Method 353.2

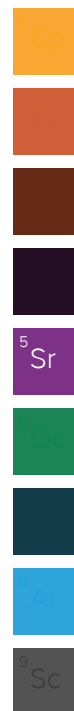
Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.336		0.100	1	12/29/2020 12:23	WG1598272

Wet Chemistry by Method 365.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	12/30/2020 07:39	WG1598838

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	12/18/2020 21:46	WG1594332





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	20.9		2.50	1	12/19/2020 06:04	WG1594582

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.300		0.250	1	12/30/2020 05:00	WG1598258

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.577		0.100	1	12/29/2020 12:24	WG1598272

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	12/30/2020 07:46	WG1598838

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	0.0720		0.0300	1	12/18/2020 21:47	WG1594332





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Suspended Solids	10.1		2.50	1	12/19/2020 06:04	WG1594582

Wet Chemistry by Method 351.2

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Kjeldahl Nitrogen, TKN	0.428		0.250	1	12/30/2020 05:02	WG1598258

Wet Chemistry by Method 353.2

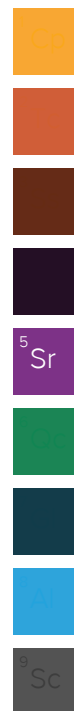
Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Nitrate-Nitrite	0.200		0.100	1	12/29/2020 12:26	WG1598272

Wet Chemistry by Method 365.4

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Phosphorus, Total	ND		0.100	1	12/30/2020 07:47	WG1598838

Wet Chemistry by Method 4500P E-2011

Analyte	Result mg/l	<u>Qualifier</u>	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Phosphate, Ortho	ND		0.0300	1	12/18/2020 21:47	WG1594332





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	17.7		3.58	1	12/19/2020 06:04	WG1594582

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.258		0.250	1	12/30/2020 05:03	WG1598258

Wet Chemistry by Method 353.2

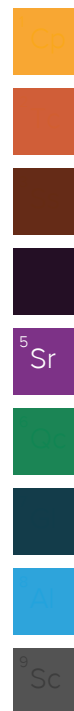
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.371		0.100	1	12/29/2020 12:27	WG1598272

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	12/30/2020 07:48	WG1598838

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	12/18/2020 21:48	WG1594332





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	16.7		2.50	1	12/19/2020 06:04	WG1594582

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND	J5	0.250	1	12/30/2020 05:04	WG1598258

Wet Chemistry by Method 353.2

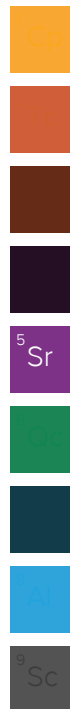
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.368		0.100	1	12/29/2020 12:28	WG1598272

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	12/30/2020 07:49	WG1598838

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	12/18/2020 21:48	WG1594332





Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	14.4		2.50	1	12/19/2020 06:04	WG1594582

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.497		0.250	1	12/30/2020 05:07	WG1598258

Wet Chemistry by Method 353.2

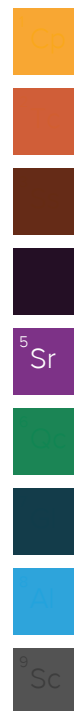
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.261		0.100	1	12/29/2020 12:29	WG1598272

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	12/30/2020 07:51	WG1598838

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	12/18/2020 21:48	WG1594332



Method Blank (MB)

(MB) R3605431-1 12/19/20 06:04				
	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Suspended Solids	U		0.350	2.50

L1298468-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1298468-01 12/19/20 06:04 • (DUP) R3605431-3 12/19/20 06:04						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	46.8	47.2	1	0.851		5

L1298501-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1298501-05 12/19/20 06:04 • (DUP) R3605431-4 12/19/20 06:04						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	17.0	17.4	1	2.33		5

Laboratory Control Sample (LCS)

(LCS) R3605431-2 12/19/20 06:04					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Suspended Solids	773	808	105	85.7-114	



Method Blank (MB)

(MB) R3608204-1 12/30/20 04:43				
	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1298501-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1298501-04 12/30/20 04:49 • (DUP) R3608204-3 12/30/20 04:51						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	ND	ND	1	0.000		20

L1298826-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1298826-02 12/30/20 05:23 • (DUP) R3608204-7 12/30/20 05:24						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	0.843	0.899	1	6.43		20

Laboratory Control Sample (LCS)

(LCS) R3608204-2 12/30/20 04:44					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Kjeldahl Nitrogen, TKN	15.2	18.3	120	75.2-121	

L1298501-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1298501-06 12/30/20 04:54 • (MS) R3608204-4 12/30/20 04:55 • (MSD) R3608204-5 12/30/20 04:59												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Kjeldahl Nitrogen, TKN	5.00	0.261	5.74	5.79	110	111	1	90.0-110		J5	0.867	20

L1298501-10 Original Sample (OS) • Matrix Spike (MS)

(OS) L1298501-10 12/30/20 05:04 • (MS) R3608204-6 12/30/20 05:06							
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>
Analyte	mg/l	mg/l	mg/l	%		%	
Kjeldahl Nitrogen, TKN	5.00	ND	6.05	116	1	90.0-110	<u>J5</u>





Method Blank (MB)

(MB) R3607990-1 12/29/20 12:04

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1298501-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1298501-01 12/29/20 12:09 • (DUP) R3607990-3 12/29/20 12:10

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Nitrate-Nitrite	0.195	0.192	1	1.55		20

L1298501-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1298501-11 12/29/20 12:29 • (DUP) R3607990-6 12/29/20 12:31

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Nitrate-Nitrite	0.261	0.260	1	0.384		20

Laboratory Control Sample (LCS)

(LCS) R3607990-2 12/29/20 12:05

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Nitrate-Nitrite	5.00	2.61	104	90.0-110	

L1298501-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1298501-02 12/29/20 12:12 • (MS) R3607990-4 12/29/20 12:13 • (MSD) R3607990-5 12/29/20 12:14

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Nitrate-Nitrite	2.50	0.387	2.87	2.77	99.3	95.3	1	90.0-110			3.55	20

L1298836-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1298836-01 12/29/20 12:36 • (MS) R3607990-7 12/29/20 12:37

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Nitrate-Nitrite	2.50	0.131	2.57	97.6	1	90.0-110	





Method Blank (MB)

(MB) R3608224-1 12/30/20 07:28

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphorus,Total	U		0.0350	0.100

L1298501-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1298501-04 12/30/20 07:35 • (DUP) R3608224-3 12/30/20 07:36

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	ND	ND	1	0.000		20

L1298826-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1298826-02 12/30/20 08:03 • (DUP) R3608224-6 12/30/20 08:05

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3608224-2 12/30/20 07:30

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Phosphorus,Total	4.26	4.51	106	82.4-117	

L1298501-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1298501-06 12/30/20 07:39 • (MS) R3608224-4 12/30/20 07:40 • (MSD) R3608224-5 12/30/20 07:44

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphorus,Total	2.50	ND	2.68	2.63	107	105	1	90.0-110			1.88	20





Method Blank (MB)

(MB) R3605307-1 12/18/20 21:43

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1298501-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1298501-02 12/18/20 21:44 • (DUP) R3605307-5 12/18/20 21:45

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphate,Ortho	ND	ND	1	0.000		20

L1298501-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1298501-11 12/18/20 21:48 • (DUP) R3605307-6 12/18/20 21:49

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphate,Ortho	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3605307-2 12/18/20 21:43

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Phosphate,Ortho	0.245	0.231	94.5	85.0-115	

L1298501-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1298501-01 12/18/20 21:43 • (MS) R3605307-3 12/18/20 21:44 • (MSD) R3605307-4 12/18/20 21:44

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphate,Ortho	0.500	ND	0.515	0.514	103	103	1	80.0-120			0.194	20





Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana ¹	LA180010	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



S&ME - Huntsville

360 D Quality Circle NW
Suite 450

Huntsville, AL 35896

Report to:
Ms. Emily Kennedy

Project Description:
Gadsden M54

City/State
Collected:

Please Circle:
PT MT CT ET

Phone: 256-837-8882

Client Project #
4482-16-056

Lab Project #
QOREHAL-448216056

Collected by (print):
Grant Williams

Site/Facility ID #

P.O. #

Collected by (signature):
[Signature]

Rush? (Lab MUST Be Notified)

Same Day Five Day
Next Day 5 Day (Rad Only)
Two Day 10 Day (Rad Only)
Three Day

Quote #

Date Results Needed

Immediately
Packed on Ice ☒ Y ☐ N

No.
of
Ents

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Ents
HB3	Grab	WW	Sft	12/17/20	10:30	4
SME 4		WW			10:35	4
GD 5		WW			10:53	4
GD 7		WW			11:15	4
~~SME 10~~ (SME 11)		WW			11:40	4
GD 9		WW			11:20	4
SME 1		WW			11:25	4
SS 5		WW			12:15	4
SME 5		WW			12:25	4
SME 6		WW			1:10	4

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - Wastewater
DW - Drinking Water
OT - Other

Remarks:

pH Temp
Flow Other

Samples returned via:
UPS FedEx Courier

Tracking #

Relinquished by: (Signature)
[Signature]

Date: 12/17/20 Time: 3:00

Received by: (Signature)

Trip Blank Received: Yes / No
HCL / Mask
TBR

Relinquished by: (Signature)

Date: Time:

Received by: (Signature)

Temp: 14.5 °C Bottles Received: 6+2=8 40

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date: Time:

Received for lab by: (Signature)

Date: 12/17/20 Time: 11:15

Hold: Condition: NCF / OK

Billing information:

Accounts Payable
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Pres
Click

Analysis / Container / Preservative

Chain of Custody Page ___ of ___



12045 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-750-5458
Phone: 800-767-5859
Fax: 615-750-5458

D231
L1298501

Account: QOREHAL

Template: T114559

Prelogin: P802049

PM 034, Craig Cothron

PS 10/5/20 + 10

Shipped Via FedEx Ground

Remarks Sample # (Sub only)

Sample Receipt Checklist
COC Seal Present/Intact: ☒ Y ☐ N
COC Signed/Annotated: ☒ Y ☐ N
Bottle arrive intact: ☒ Y ☐ N
Correct bottle used: ☒ Y ☐ N
Sufficient volume sent: ☒ Y ☐ N
If Applicable
VIA Zero Headspace: ☒ Y ☐ N
Preservation Correct/Checked: ☒ Y ☐ N
RAD Screen <0.1 mR/hr: ☒ Y ☐ N

Condition:
NCE / OK

Shipped Via: **FedEX Ground**

Marquette	Marquette & Chatham

Seattle Receipt Checklist

CCC Seal Present/Incident: ☒ Y

DOC Signed/Approved: _____

Bottles arrive intact! 

Correct bottles used: 4

Sufficient volume sent: _____
If Applicable

NAME: Fern Headache:	Y

Preservation Correct/Checked: ☒

RAD Screen 40.2 mB/hr!

100

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

If preservation required by Login: Date/Time

Hold	Control
100	100

NC / UK



Monitoring Report First Quarter 2021
Gadsden Alabama Urbanized Area
Phase II Small MS4
NPDES General Permit ALR040000
Gadsden, Etowah County, Alabama
S&ME Project No. 4482-20-044

PREPARED FOR:

Gadsden-Etowah MS4 Steering Committee

PREPARED BY:

S&ME, Inc.

**360D Quality Circle NW, Ste 450
Huntsville, AL 35806**

May 27, 2021



Table of Contents

1.0	Introduction	1
1.1	NPDES Permit.....	1
1.2	Water Quality Concerns	2
1.3	Monitoring Program	2
2.0	Rainfall Data	2
3.0	Monitoring Event	3
3.1	Monitoring Locations.....	3
3.2	Sampling Procedures	4
3.3	Field Documentation.....	4
3.4	Quality Assurance / Quality Control	5
3.4.1	<i>Sample Containers and Preservation</i>	<i>5</i>
3.4.2	<i>Quality Assurance</i>	<i>5</i>
3.4.3	<i>Sample Shipment.....</i>	<i>6</i>
4.0	Analytical Results	6
5.0	Recordkeeping.....	6
6.0	Certification of the Monitoring Report	6
7.0	Acknowledgement.....	7
8.0	Closing	7

List of Tables

Table 1-1 Responsible Official and Authorization Dates	1
Table 1-2: Permit Numbers for MS4 Entities.....	1
Table 2-1 Quarterly Rainfall Data	3
Table 3-1 Monitoring Point Coordinates	3
Table 3-2 Sample Containers and Preservation	5
Table 5-0 Storm Water Steering Committee	6



Appendices

Appendix I

Figure 1 – Gadsden, Alabama Urbanized Area

Figure 2 – MS4 Monitoring Locations Map

Appendix II

Table B.1 – Field Observations

Table B.2 – Analytical Data

Tables B.3 to B.26 – Historical Analytical Data

Appendix III

Laboratory Report No. L1298490, dated December 31, 2020

Laboratory Report No. L1298501, dated December 30, 2020



1.0 Introduction

S&ME, Inc. has prepared this Monitoring Report for the Gadsden, Alabama Urbanized Area Phase II small MS4 in accordance with S&ME Proposal No. 44-2000256, dated September 18, 2020. Authorization date and responsible official for each entity are provided in Table 1.1.

Table 1-1 Responsible Official and Authorization Dates

Entity	Name	Date
City of Attalla	Larry Means, Mayor	October 20, 2020
City of Gadsden	Sherman Guyton, Mayor	October 22, 2020
City of Glencoe	Chris Hare, Mayor	October 19, 2020
City of Hokes Bluff	Scott Reeves, Mayor	November 10, 2020
City of Rainbow City	Joe Taylor, Mayor	October 20, 2020
City of Southside	Dana Snyder, Mayor	October 26, 2020
Etowah County	Tim Graves, Engineer	April 6, 2020

1.1 NPDES Permit

The Storm Water Phase II Final Rule issued by the United States Environmental Protection Agency (USEPA) in 1999 requires nationwide coverage of all operators of small MS4s located within the boundaries of an “urbanized area” as defined by the latest decennial Census. Based on the results of the 2010 census, the Bureau of the Census designated The City of Gadsden, Rainbow City, City of Southside, City of Glencoe, City of Hokes Bluff, City of Attalla, and portions of unincorporated Etowah County as the *Gadsden, Alabama Urbanized Area*. A map outlining the approximate boundary of the *Gadsden, Alabama Urbanized Area* is included as **Figure 1** in **Appendix I**. The regulated small municipal separate storm sewer system (MS4) for the urbanized area is collectively referred to as the Gadsden-Etowah MS4.

In 2016, the Alabama Department of Environmental Management (ADEM) issued National Pollutant Discharge Elimination System (NPDES) General Permit ALR040000 for discharges from regulated small municipal separate storm sewer systems to the Gadsden-Etowah MS4 with an effective date of October 1, 2016. Permit numbers for each entity are provided in Table. 1.2.

Table 1-2: Permit Numbers for MS4 Entities

Entity	ADEM Permit Number
City of Attalla	ALR0400052
City of Gadsden	ALR0400053
City of Glencoe	ALR0400054
City of Hokes Bluff	ALR0400055
City of Rainbow City	ALR0400056



Entity	ADEM Permit Number
City of Southside	ALR0400057
Etowah County	ALR0400009

1.2 Water Quality Concerns

Section 303(d) of the Clean Water Act (CWA), as amended by the Water Quality Act of 1987, and EPA's Water Quality Planning and Management Regulations (40CFR130) require states to identify waterbodies not in compliance with the water quality standards applicable to their designated use classifications. Section 303(d) then requires that total maximum daily loads (TMDLs) be determined for all pollutants causing violation of applicable water quality standards in each identified segment.

Neely Henry Lake is the primary receiving water for the Gadsden-Etowah MS4. In 1996, the ADEM identified five of the six reservoirs on the Coosa River within the State of Alabama's borders as being impaired, including Neely Henry Lake. In 2008 the EPA approved TMDLs for Neely Henry Lake related to Nutrients (Total Phosphorous), pH, and Dissolved Oxygen. The Gadsden-Etowah MS4 is required to achieve a 30% reduction in Total Phosphorus loading.

1.3 Monitoring Program

Part III.B of the NPDES General Permit requires that the Permittee develop and implement a Storm Water Management Program Plan (SWMPP). Part IV.D of the NPDES General Permit requires that the SWMPP include monitoring provisions to document that the waste load allocations prescribed in the TMDL are being achieved.

Section 2 of the SWMPP, dated January 1, 2017, provides the specific details of the monitoring program. The intent of the monitoring program is to document that discharges from the MS4 meet the permit requirements. Where deviations are documented and/or expected, the collected monitoring data will be used to determine the extent and cause of the pollutant of concern.

2.0 Rainfall Data

The Gadsden-Etowah MS4 is required to achieve a 30% reduction in Total Phosphorus discharge loading. The largest loading of phosphorous to the Coosa River from the Gadsden-Etowah MS4 is expected to occur during runoff events; therefore, the SWMPP requires that monitoring be conducted within 72 hours of a qualifying rain event of 0.75 inch.

On March 16 and 17, 2020, a rain event was observed at four weather stations located in the vicinity of the urbanized area. The locations of the weather stations are identified on **Figure 2** in **Appendix I**.



Table 2-1 Quarterly Rainfall Data

Gauge Name	Location	Lat.	Long.	Precip 3/16/20	Precip 3/17/20
KGAD	Gadsden Municipal Airport	33.973°	-86.088°	1.09 in.	0.26 in.
KALHOKES2	Hokes Bluff Hokes Bluff, AL	33.993°	-85.806°	0.58 in.	1.38 in.
KALGADSD3	Noccalula Falls Gadsden, AL	34.056°	-85.994°	0.36 in.	0.71 in.
KALRAINB19	Rainbow City, AL	33.942°	-86.030°	0.52 in.	1.20 in.

3.0 Monitoring Event

On March 18, 2021, S&ME personnel mobilized to conduct storm water monitoring at the land and boat access monitoring points for the first quarter of 2021.

Land and boat access monitoring was successfully sampled on March 18, 2021. The quarterly monitoring events are carried out in accordance with Section 2 of the Gadsden-Etowah MS4 Storm Water Management Program (SWMPP), dated January 1, 2017.

3.1 Monitoring Locations

The primary monitoring locations selected for determining compliance of the Gadsden-Etowah MS4 with the 2008 phosphorous TMDL are identified on **Figure 2** in **Appendix I**. Coordinates for each point are listed in Table 3-1.

Table 3-1 Monitoring Point Coordinates

Outfall ID	Latitude	Longitude	Access	Waterbody Evaluated
AT 5	34.006446°	-86.069061°	LAND	Big Wills Creek / Little Wills Creek
GD 8	33.999535°	-86.024463°	LAND	Black Creek
RC 2	33.967683°	-86.039476°	LAND	Horton Creek
SS 13	33.891352°	-86.049229°	LAND	Neely Henry Lake
SS 14	33.885921°	-86.030683°	LAND	U.T. to Neely Henry Lake
GD 12	33.952567°	-86.003495°	LAND	U.T. to Neely Henry Lake
SME 2	34.002461°	-86.001571°	LAND	U.T. to Coosa River
GD 6	34.015350°	-85.995617°	LAND	Town Creek
CO 15	33.972280°	-85.965354°	LAND	U.T. to Neely Henry Lake



Outfall ID	Latitude	Longitude	Access	Waterbody Evaluated
SME 7	34.006225°	-86.111277°	LAND	Big Wills Creek
SME 8	34.004730°	-85.873852°	LAND	U.T. to Coosa River
HB 3	34.002129°	-85.882808°	BOAT	U.T. to Neely Henry Lake
SME 4	34.001667°	-85.883342°	BOAT	Northern end of the Coosa River Channel
GD 5	34.014324°	-85.924013°	BOAT	Big Cove Creek / Little Cove Creek
GD 7	34.008361°	-85.999777°	BOAT	Storm sewer outfall to Coosa River
GD 9	33.989718°	-85.998472°	BOAT	U.T. to Coosa River (East Gadsden)
SME 1	33.990184°	-86.004048°	BOAT	Big Wills Creek / Black Creek
SS 5	33.941329°	-86.021569°	BOAT	U.T. to Coosa River
SME 5	33.940514°	-86.029885°	BOAT	Central portion of the Coosa River Channel
SME 6	33.852125°	-86.049695°	BOAT	Confluence of Greens Creek and Coosa River Channel
RC 14	33.905786°	-86.111656°	BOAT	Rook Creek / Dry Creek

Following evaluation of the monitoring program for the Annual Report in May of 2020, monitoring points CO14, SME 3, and GD3 were removed from the monitoring program and monitoring points SME 4, SME 5, SME 6, SME 7, and SME 8 were added. The changes to the monitoring program were implemented beginning with the 2020 fourth quarter sampling event.

3.2 Sampling Procedures

Samples accessible by land were obtained using a stainless steel bucket. Samples accessible by boat were obtained using a horizontal Van Dorn sampler. The bucket and Van Dorn sampler were decontaminated prior to use and in between samples.

3.3 Field Documentation

The following observations were documented in the field at each monitoring location:

- Monitoring point ID
- Date and time
- Person conducting the sampling
- Equipment used
- Depth of sample collection
- Weather conditions
- Waterbody conditions

The following parameters were measured in the field at the time of sample collection:

- Turbidity
- pH



- Dissolved Oxygen (DO)
- Temperature

Field parameters were measured using a combination of the following instruments:

- YSI Pro DSS Multi-Probe Meter

The recorded field observations are included on **Table B.1** in **Appendix II**. The recorded field parameters are included on **Table B.2** in **Appendix II**.

3.4 Quality Assurance / Quality Control

The following handling procedures were employed in general accordance with EPA and ADEM guidance to safeguard the quality of the collected samples.

3.4.1 Sample Containers and Preservation

All samples were collected in new laboratory-provided containers containing analyte-appropriate preservatives as listed below:

Table 3-2 Sample Containers and Preservation

Parameter	Container	Preservative	Hold Time
Total Suspended Solids (TSS)	HDPE - 1 L	NONE	7 days
Total Phosphorous	HDPE - 250 mL	H ₂ SO ₄	48 hours
Orthophosphate	HDPE - 250 mL	NONE	48 hours
Nitrate-Nitrite	HDPE - 250 mL	H ₂ SO ₄	28 days
Total Kjeldahl Nitrogen (TKN)	HDPE - 250 mL	H ₂ SO ₄	28 days

Prior to filling, sample containers were labeled with the following information in waterproof ink:

- Project number
- Sample location
- Collection date and time
- Preservative
- Analysis to be performed

3.4.2 Quality Assurance

Three duplicate samples were submitted to the laboratory. One duplicate sample of monitoring point AT 5 was collected by the land team during the sampling event and labeled as SME 9. One duplicate sample of monitoring point SME 8 was collected by the land team during the sampling event and labeled as SME 10. One duplicate sample of monitoring point HB 3 was collected by the boat team during the sampling event and labeled as SME 11.



3.4.3 Sample Shipment

After filling, the sample containers were sealed and immediately placed on ice in a protective container for shipment to the analytical laboratory. A Chain of Custody form was completed and accompanied the samples from the field to the laboratory. A copy of the Chain of Custody is included in **Appendix III**.

4.0 Analytical Results

The laboratory analytical results for the March 18, 2021 quarterly monitoring event are included on **Table B.2** in **Appendix II**. Historical monitoring data is included in Appendix II as **Tables B.3 to B.21**. The laboratory reports and Chain of Custody are included in **Appendix III**.

5.0 Recordkeeping

Each quarterly monitoring report will be incorporated into the Annual Update of the Storm Water Management Plan. Monitoring reports will be retained by each municipality for a minimum of 3 years.

The Storm Water Steering Committee is responsible for the coordination and implementation of the Storm Water Management Plan. Current membership of the Storm Water Steering Committee is as follows:

Table 5-0 Storm Water Steering Committee

Entity	Contact	Phone No.	Email
City of Gadsden	Jeremy Ward	256-549-4527	jward@cityofgadsden.com
City of Gadsden	Heath Williamson	256-549-4520	hwilliamson@cityofgadsden.com
City of Attalla	Jason Nicholson	256-441-9200	jason.attalla@gmail.com
City of Rainbow City	Joel Garmon	256-413-1240	jgarmon@rbcalabama.com
City of Southside	Judd Rich	256-442-9775	juddrich@cityofsouthside.com
City of Glencoe	Todd Means	256-492-1424	toddmeans@cityofglencoe.net
City of Hokes Bluff	Lisa Johnson	256-492-2414	hbcity@cityofhokesbluff.net
Etowah County	Tim Graves	256-549-5358	tgraves@etowahcounty.org
Etowah County	Robert Nail	256-549-5358	rnail@etowahcounty.org

One copy of this Monitoring Report has been provided to each member of the Storm Water Steering Committee.

6.0 Certification of the Monitoring Report

I certify under penalty of law that this document and all attachments were prepared under my directions or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my



knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine or imprisonment for knowing violations.

Signature of Responsible Official

Date

Print Name and Title

MS4 Entity

7.0 Acknowledgement

S&ME certifies that the information provided in this monitoring report reflects the conditions reported, encountered, and discovered at the time of report preparation. When performing this scope of services, S&ME observed the degree of care and skill generally exercised by other consultants undertaking similar studies at the same time, under similar circumstances and conditions, and in the same geographic area.

8.0 Closing

S&ME sincerely appreciates the opportunity to provide watershed monitoring services for the Gadsden-Etowah MS4. Should questions remain or if additional information is required, please do not hesitate to contact the undersigned.

S&ME, Inc.

A handwritten signature in blue ink that reads 'Grant Williams'.

Grant Williams, E.I
Project Professional

A handwritten signature in blue ink that reads 'Deborah J. Jones'.

Deborah J. Jones, P.E.
Senior Engineer

Appendices

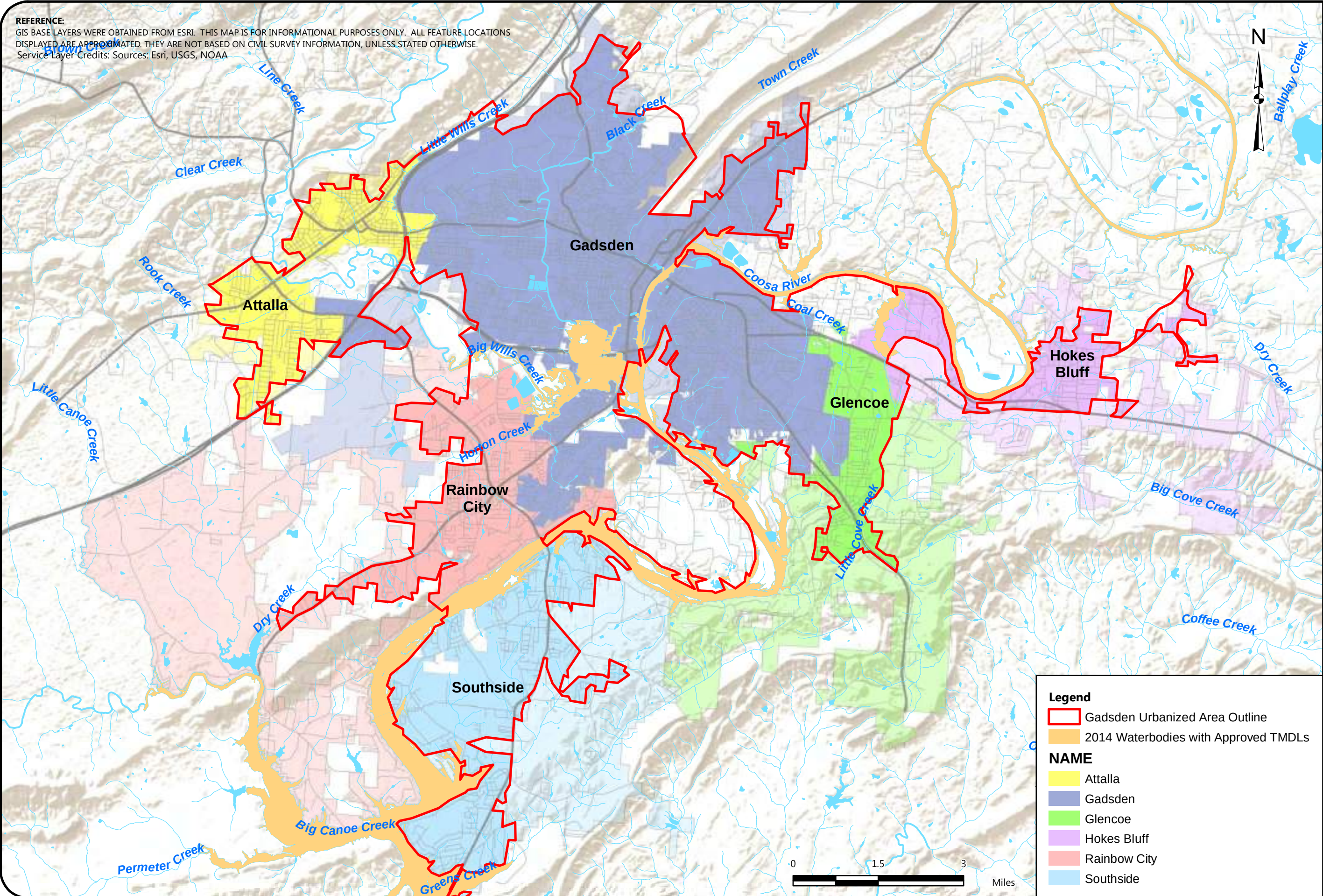
Appendix I

Figure 1 – Gadsden, Alabama Urbanized Area

Figure 2 – MS4 Monitoring Locations Map

Drawing Path: Q:\GIS Files\Gadsden MS4 Figures\Fig_1_TMDL and UA.mxd plotted by ekennedy 09-15-2017

REFERENCE:
GIS BASE LAYERS WERE OBTAINED FROM ESRI. THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS
DISPLAYED ARE APPROXIMATED. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.
Service Layer Credits: Sources: Esri, USGS, NOAA



Legend

- Gadsden Urbanized Area Outline
- 2014 Waterbodies with Approved TMDLs

NAME

- Attalla
- Gadsden
- Glencoe
- Hokes Bluff
- Rainbow City
- Southside

GADSDEN-ETOWAH MS4 BOUNDARIES

GADSDEN ALABAMA URBANIZED AREA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040009

SCALE:
1:100,000

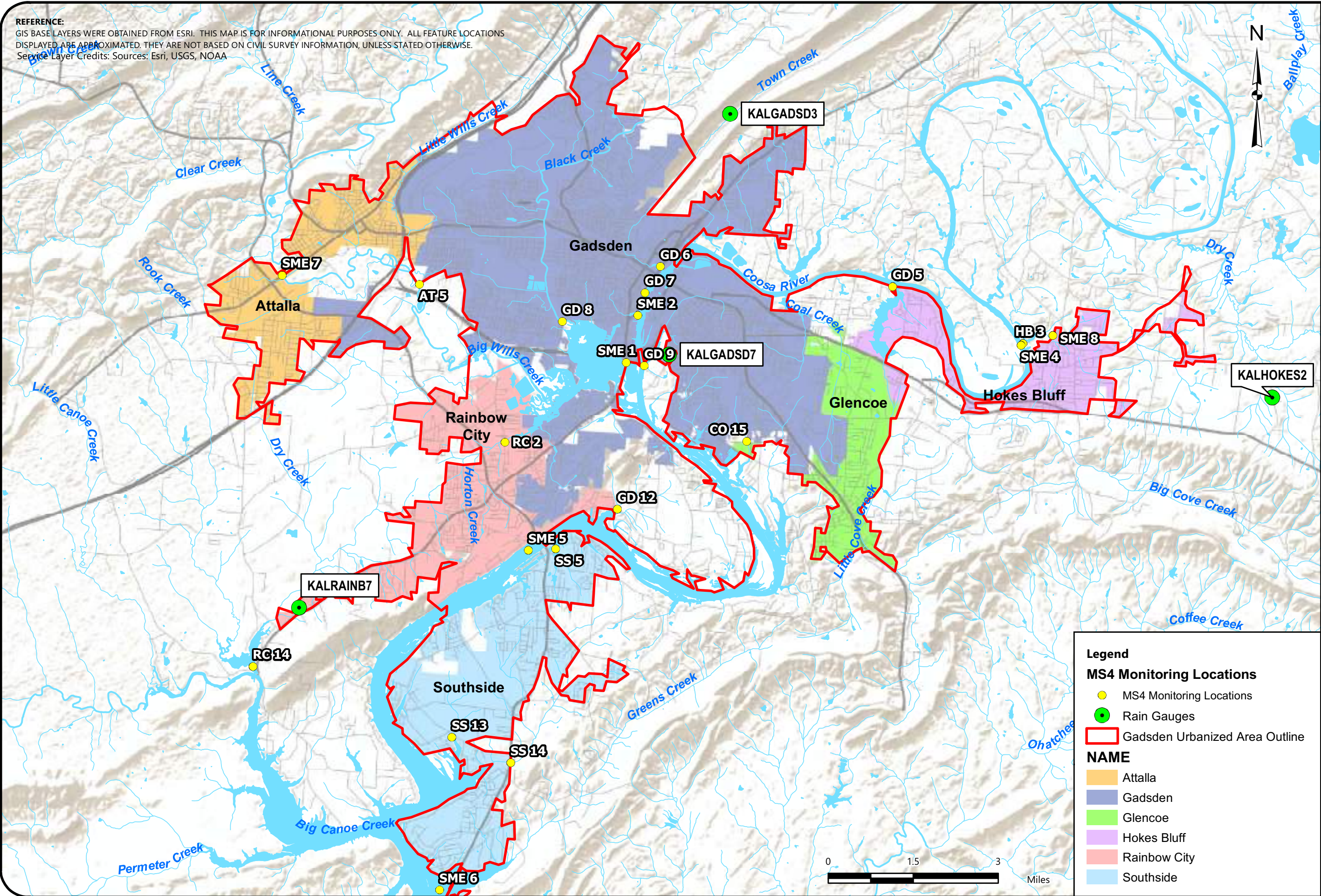
DATE:
09-15-17

PROJECT NUMBER
4482-16-056

FIGURE NO.

Drawing Path: R:\CADDData\Huntsville\GIS Files\Gadsden MS4 Figures\Fig 2. Monitoring Locations.mxd plotted by ekennedy 05-13-2021

REFERENCE:
GIS BASE LAYERS WERE OBTAINED FROM ESRI. THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS
DISPLAYED ARE APPROXIMATED. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.
Service Layer Credits: Sources: Esri, USGS, NOAA



MS4 MONITORING LOCATIONS

GADSDEN ALABAMA URBANIZED AREA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040009

SCALE:
1:100,000

DATE:
05-13-21

PROJECT NUMBER
4482-20-044

FIGURE NO.

Appendix II

Table B.1 – Field Observations

Table B.2 – Analytical Data

Tables B.3 to B.26 – Historical Analytical Data

TABLE B.1 - FIELD OBSERVATIONS**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	TIME	DEPTH (FT)	PERSONNEL	WEATHER CONDITIONS	WATERBODY CONDITIONS
AT 5	3/18/2021	1425	-3'	EAB/DJJ	Partly Cloudy	Fast, rough
GD 8	3/18/2021	1300	-3'	EAB/DJJ	Partly Cloudy	Fast, smooth
RC 2	3/18/2021	1315	-3'	EAB/DJJ	Partly Cloudy	Slow, smooth
SS 13	3/18/2021	1350	-3'	EAB/DJJ	Partly Cloudy	Fast, smooth
SS 14	3/18/2021	1400	-3'	EAB/DJJ	Partly Cloudy	Fast, smooth
GD 12	3/18/2021	1330	-3'	EAB/DJJ	Partly Cloudy	Fast, smooth
CO 14	Removed monitoring point from Stormwater Monitoring Program in September 2020					
SME 2	3/18/2021	1230	-3'	EAB/DJJ	Partly Cloudy	Fast, smooth
GD 6	3/18/2021	1245	-3'	EAB/DJJ	Partly Cloudy	Slow, smooth
CO 15	3/18/2021	1214	-2'	EAB/DJJ	Partly Cloudy	Slow, smooth
SME 7	3/18/2021	1130	Surface	EAB/DJJ	Partly Cloudy	Slow, smooth
SME 8	3/18/2021	1047	-3'	EAB/DJJ	Partly Cloudy	Fast, rough
HB 3	3/18/2021	1040	-5'	GPW	Partly cloudy	Fast, Smooth
SME 4	3/18/2021	1050	-5'	GPW	Partly cloudy	Fast, Smooth
GD 5	3/18/2021	1105	-5'	GPW	Partly cloudy	Fast, Smooth
GD 7	3/18/2021	1125	-5'	GPW	Partly cloudy	Fast, Smooth
GD 9	3/18/2021	1135	-5'	GPW	Partly cloudy	Fast, rough
SME 1	3/18/2021	1150	-5'	GPW	Partly cloudy	Fast, rough
GD 3	Removed monitoring point from Stormwater Monitoring Program in September 2020					
SME 3	Removed monitoring point from Stormwater Monitoring Program in September 2020					
SS 5	3/18/2021	1255	-5'	GPW	Cloudy	Fast, rough
SME 5	3/18/2021	1245	-5'	GPW	Cloudy	Fast, rough
SME 6	3/18/2021	1320	-5'	GPW	Cloudy	Fast, rough
RC 14	3/18/2021	1335	-5'	GPW	Cloudy	Fast, rough

TABLE B.2 - ANALYTICAL DATA

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
AT 5	3/18/2021	119.0	7.82	10.68	17.2	0.310	0.050	<0.100	<0.250	55.6
GD 8	3/18/2021	117.0	8.15	11.53	16.5	0.178	<0.03	<0.100	0.312	102.0
RC 2	3/18/2021	67.5	7.90	8.68	16.7	0.145	<0.03	<0.100	0.611	26.8
SS 13	3/18/2021	26.8	7.61	9.23	16.9	0.163	<0.03	<0.100	0.926	16.5
SS 14	3/18/2021	31.4	7.73	9.77	16.8	0.189	0.048	<0.100	0.670	19.8
GD 12	3/18/2021	36.2	7.92	10.04	17.1	0.163	<0.03	<0.100	0.621	17.6
CO 14	Removed monitoring point from Stormwater Monitoring Program in September 2020									
SME 2	3/18/2021	27.3	8.20	12.80	18.4	0.193	0.033	<0.100	0.528	13.8
GD 6	3/18/2021	75.6	7.97	9.21	17.0	0.241	<0.03	0.183	0.364	31.6
CO 15	3/18/2021	63.1	8.46	15.75	19.8	0.193	<0.03	<0.100	0.554	26.0
SME 7	3/18/2021	48.8	8.17	9.47	18.0	0.183	<0.03	<0.100	0.460	17.7
SME 8	3/18/2021	111.0	8.93	10.25	18.3	0.429	0.093	0.270	0.407	78.2
SME 9	3/18/2021	DUPLICATE OF AT 5				0.297	0.056	<0.100	0.356	77.4
SME 10	3/18/2021	DUPLICATE OF SME 8				0.439	0.091	0.322	0.608	76.8
HB 3	3/18/2021	1.8	7.47	9.62	16.0	0.369	<0.030	<0.100	0.252	23.0
SME 4	3/18/2021	2.2	7.25	9.20	17.6	0.319	<0.030	<0.100	0.331	21.6
GD 5	3/18/2021	3.4	7.15	8.98	16.9	0.127	<0.030	<0.100	0.600	30.6
GD 7	3/18/2021	1.2	7.37	9.75	15.4	0.312	<0.030	<0.100	0.387	23.0
GD 9	3/18/2021	1.7	7.24	8.83	15.5	0.189	<0.030	<0.100	0.576	18.6
SME 1	3/18/2021	14.1	7.24	9.54	15.7	0.263	0.112	<0.100	0.580	90.4
GD 3	Removed monitoring point from Stormwater Monitoring Program in September 2020									
SME 3	Removed monitoring point from Stormwater Monitoring Program in September 2020									
SS 5	3/18/2021	0.60	7.36	9.03	15.7	0.191	<0.030	<0.100	0.570	14.6
SME 5	3/18/2021	1.7	7.83	9.59	15.9	0.316	<0.030	<0.100	0.317	23.0
SME 6	3/18/2021	3.3	7.65	9.84	15.5	0.358	<0.030	<0.100	0.618	47.2
RC 14	3/18/2021	10.1	7.43	8.88	15.6	<0.100	<0.030	<0.100	0.779	51.6
SME 11	3/18/2021	DUPLICATE OF HB 3				0.362	<0.030	<0.100	0.380	24.0

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled (Dry)

Bold - maximum reading for constituent

NA - not available at this time

* - unknown reading due to equipment malfunction

TABLE B.3 - ANALYTICAL DATA - AT 5**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
AT 5	3/12/2013	15	7.80	11.04	12.55	0.61	0.150	0.14	0.37	20.0
AT 5	5/8/2013	25	5.08	2.59	14.69	0.31	0.099	0.11	0.56	19.0
AT 5	9/23/2013	21	5.96	3.95	22.88	1.30	0.400	0.35	0.37	22.0
AT 5	12/10/2013	68	5.32	11.43	8.21	0.79	0.290	0.34	0.97	64.0
AT 5	2/6/2014	40	4.06	15.29	7.28	0.80	0.130	0.13	0.35	32.0
AT 5	6/26/2014	70	7.85	7.61	23.89	0.77	0.340	0.28	0.38	19.0
AT 5	9/30/2014	15	5.78	6.63	21.03	0.94	0.490	0.54	<0.25	14.0
AT 5	11/19/2014	47	5.08	10.23	6.91	1.30	0.410	0.39	0.50	27.0
AT 5	3/23/2015	17	8.69	9.39	14.5	0.71	0.130	0.14	0.27	15.0
AT5	4/22/2015	53	6.93	11.13	18.4	0.69	0.110	0.13	<0.25	76.0
AT5	9/30/2015	15	6.37	9.45	21.63	1.82	0.664	0.86	<0.25	16.4
AT5	11/19/2015	934	7.38	19.33	14.98	0.67	0.261	0.31	1.47	74.6
AT 5	3/15/2016	30	7.93	20.43	16.86	0.58	0.068	<0.10	0.77	26.7
AT 5	6/29/2016	18	7.99	6.57	25.4	0.80	0.598	0.71	<0.25	14.5
AT 5	8/9/2016	17	7.89	6.47	25.8	0.98	0.482	0.50	0.27	18.3
AT5	12/7/2016	26.5	7.08	10.19	11.3	0.66	0.450	0.47	<0.25	16.9
AT5	3/2/2017	51	8.14	8.86	13.4	1.08	0.267	0.37	0.53	44.6
AT 5	6/21/2017	11.7	7.98	6.74	23.3	0.62	0.226	0.37	0.54	70.0
AT 5	8/17/2017	9.5	8.09	6.77	26.0	0.89	0.258	0.28	0.69	12.0
AT 5	10/26/2017	9.8	7.95	8.25	15.7	0.94	0.226	0.25	<0.25	9.4
AT 5	3/27/2018	14.5	7.79	9.03	12.9	0.849	0.162	0.148	<0.25	15.9
AT 5	6/26/2018	16.4	8.06	6.89	25.5	0.849	0.230	0.246	0.411	25.2
AT 5	8/1/2018	77.9	7.33	7.16	22.3	0.510	0.285	0.401	0.680	107.0
AT 5	12/11/2018	29.2	7.59	10.73	9.4	1.090	0.066	0.204	0.579	46.2
AT 5	4/17/2019	12.2	7.63	8.99	17.9	0.638	0.061	<0.10	<0.250	14.4
AT 5	6/11/2019	24.6	7.18	3.48	22.2	0.822	0.206	0.290	0.486	15.9
AT 5	8/28/2019	20.7	7.84	7.42	27.1	0.534	0.404	0.485	1.070	23.5
AT 5	10/28/2019	22.5	7.84	8.45	15.1	0.665	0.523	0.499	<0.250	17.0
AT 5	3/31/2020	23.1	8.09	9.07	16.6	0.657	0.0320	0.102	<0.250	27.1
AT 5	6/10/2020	19.4	7.56	7.35	23.2	0.825	0.248	0.243	<0.250	22.8
AT 5	9/21/2020	NS	8.08	8.21	20.6	0.603	0.491	0.399	<0.250	11.3
AT 5	12/17/2020	28.7	7.91	11.21	9.6	0.831	0.087	<0.10	<0.250	18.6
AT 5	3/18/2021	119.0	7.82	10.68	17.2	0.310	0.050	<0.100	<0.250	55.6

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

TABLE B.4 - ANALYTICAL DATA - GD 8**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 8	3/12/2013	7	7.65	11.73	9.85	0.13	<0.025	<0.10	0.25	4.5
GD 8	5/8/2013	19	6.71	1.72	14.47	0.11	<0.025	<0.10	0.38	19.0
GD 8	9/23/2013	18	6.22	3.98	22.74	<0.10	<0.025	<0.10	0.41	9.6
GD 8	12/10/2013	31	6.04	13.33	8.10	0.28	0.040	<0.10	0.35	32.0
GD 8	2/6/2014	16	3.87	16.32	6.48	0.25	<0.025	<0.10	0.13	13.0
GD 8	6/26/2014	31	8.19	6.64	26.15	0.25	<0.025	<0.10	0.48	7.3
GD 8	9/30/2014	12	7.32	5.06	23.19	0.14	<0.025	<0.10	0.42	6.0
GD 8	11/19/2014	25	5.16	9.01	5.87	0.23	<0.025	<0.01	0.32	13.0
GD 8	3/23/2015	11	8.67	9.76	14.8	0.22	<0.025	<0.10	<0.25	4.8
GD 8	4/22/2015	20	7.40	11.71	17.70	0.16	<0.025	<0.10	<0.25	15.0
GD 8	9/30/2015	9	7.79	9.48	24.33	0.18	<0.025	<0.10	0.48	6.8
GD 8	11/19/2015	212	6.94	23.30	15.13	0.23	<0.025	0.10	0.85	79.6
GD 8	3/15/2016	11	7.88	16.81	16.98	0.13	<0.025	<0.10	0.47	8.3
GD 8	6/29/2016	33	8.50	6.60	29.3	<0.10	<0.025	<0.10	0.45	39.8
GD 8	8/9/2016	13	8.90	5.87	28.9	0.22	<0.025	<0.10	0.67	6.3
GD 8	12/7/2016	10.1	7.75	8.84	12.1	0.31	<0.025	<0.10	0.41	7.0
GD 8	3/2/2017	20	8.14	9.76	12.2	0.28	<0.025	<0.10	0.34	3.6
GD 8	6/21/2017	7.9	8.73	6.50	25.0	<0.10	<0.025	<0.10	0.64	7.0
GD 8	8/17/2017	6.8	8.55	6.30	28.7	0.13	<0.025	<0.10	0.54	8.9
GD 8	10/26/2017	6.1	8.17	8.25	16.3	<0.10	<0.025	<0.10	0.35	4.0
GD 8	3/27/2018	8.9	8.09	9.52	12.1	0.215	<0.025	<0.10	<0.25	6.5
GD 8	6/26/2018	5.8	8.50	5.74	29.7	0.150	<0.025	<0.10	0.670	5.8
GD 8	8/1/2018	45.8	6.89	7.39	22.9	0.556	0.072	0.11	0.641	53.2
GD 8	12/11/2018	16.0	7.87	11.71	9.2	0.326	<0.025	<0.10	0.406	24.4
GD 8	4/17/2019	6.7	8.05	9.30	17.6	0.115	<0.025	<0.10	0.437	<5.00
GD 8	6/11/2019	9.4	7.19	2.94	25.8	0.181	<0.025	<0.10	0.948	4.1
GD 8	8/28/2019	14.2	8.26	6.07	30.2	0.212	<0.025	<0.10	0.992	11.8
GD 8	10/28/2019	29.6	7.83	8.22	16.2	0.435	<0.025	0.109	0.255	12.9
GD 8	3/31/2020	19.3	7.97	9.30	16.6	0.133	<0.025	0.132	0.348	18.0
GD 8	6/10/2020	10.8	7.97	7.13	24.9	0.211	<0.03	<0.100	<0.25	8.0
GD 8	9/21/2020	NS	8.19	6.36	22.8	0.171	<0.03	<0.100	0.290	7.4
GD 8	12/17/2020	17.5	8.30	11.68	9.4	0.273	<0.03	<0.100	<0.25	11.5
GD 8	3/18/2021	117.0	8.15	11.53	16.5	0.178	<0.03	<0.100	0.312	102.0

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

TABLE B.5 - ANALYTICAL DATA - RC 2**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 2	3/12/2013	29	7.73	9.83	10.53	0.12	0.088	<0.10	0.75	14.0
RC 2	5/8/2013	19	6.16	3.06	16.36	0.19	<0.025	<0.10	0.55	12.0
RC 2	9/23/2013	11	6.24	3.00	23.61	<0.10	<0.025	<0.10	0.43	6.3
RC 2	12/10/2013	34	6.07	11.71	8.38	0.11	0.062	<0.10	0.54	10.0
RC 2	2/6/2014	30	3.89	17.28	5.62	0.26	<0.025	<0.10	0.43	9.6
RC 2	6/26/2014	18	7.90	6.81	24.81	0.15	<0.025	<0.10	0.44	7.2
RC 2	9/30/2014	3	7.27	5.55	22.25	<0.10	<0.025	<0.10	0.40	2.5
RC 2	11/19/2014	27	5.65	7.14	5.72	0.17	<0.025	<0.10	0.43	11.0
RC 2	3/23/2015	45	8.23	9.07	16.00	0.15	0.044	<0.10	0.81	18.0
RC 2	4/22/2015	14	7.64	11.42	18.40	0.26	<0.025	<0.10	<0.25	4.8
RC 2	9/30/2015	7	5.93	9.28	23.33	<0.10	<0.025	<0.10	<0.25	4.6
RC 2	11/19/2015	114	7.36	21.94	15.29	0.27	<0.025	0.13	0.75	14.4
RC 2	3/15/2016	15	7.62	16.67	14.61	0.18	<0.025	<0.10	0.43	6.0
RC 2	6/29/2016	12	7.78	4.31	28.30	<0.10	0.077	<0.10	0.35	10.9
RC 2	8/9/2016	25	8.12	5.05	26.50	0.14	<0.025	<0.10	0.45	9.9
RC 2	12/7/2016	17.2	7.86	7.47	12.0	0.20	<0.025	<0.10	0.53	11.9
RC 2	3/2/2017	25	7.71	7.74	13.10	0.17	<0.025	<0.10	0.45	8.0
RC 2	6/21/2017	14.2	7.91	5.61	23.7	<0.10	<0.025	<0.10	0.51	12.3
RC 2	8/17/2017	18.2	8.08	4.94	27.90	<0.10	<0.025	0.13	0.72	72.2
RC 2	10/26/2017	18.1	7.57	7.05	15.2	<0.10	<0.025	<0.10	0.27	17.5
RC 2	3/27/2018	18.2	7.91	8.43	12.4	0.146	<0.025	<0.10	<0.25	12.5
RC 2	6/26/2018	18.8	7.94	6.19	26.5	0.101	<0.025	<0.10	0.802	13.0
RC 2	8/1/2018	56.8	7.40	7.10	22.4	<0.10	<0.025	<0.10	0.506	84.4
RC 2	12/11/2018	16.0	7.54	11.41	7.7	0.316	<0.025	<0.10	0.479	3.1
RC 2	4/17/2019	7.0	7.77	8.67	18.9	0.165	<0.025	<0.10	0.288	<5.00
RC 2	6/11/2019	14.3	6.83	3.78	23.0	<0.10	<0.025	<0.10	0.520	5.2
RC 2	8/28/2019	14.4	8.01	7.30	28.0	<0.10	<0.025	<0.10	0.748	4.8
RC 2	10/28/2019	11.4	7.55	9.42	14.9	0.132	<0.025	0.20	<0.250	3.4
RC 2	3/31/2020	84.5	7.90	9.10	15.7	0.190	0.0290	0.118	0.574	90.0
RC 2	6/10/2020	20.5	7.87	6.37	25.6	0.210	<0.03	<0.100	0.330	10.8
RC 2	9/21/2020	NS	7.24	7.03	19.6	<0.100	<0.03	<0.100	<0.250	5.2
RC 2	12/17/2020	28.1	7.91	11.23	8.9	0.218	<0.03	<0.100	0.396	5.4
RC 2	3/18/2021	67.5	7.90	8.68	16.7	0.145	<0.03	<0.100	0.611	26.8

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

TABLE B.6 - ANALYTICAL DATA - SS 13

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 13	3/12/2013	8	7.04	9.85	11.45	0.34	0.032	<0.10	0.78	4.7
SS 13	5/8/2013	10	6.68	2.94	18.75	0.36	<0.050	<0.10	0.72	5.7
SS 13	9/23/2013	12	7.04	3.38	25.31	<0.10	0.028	<0.10	0.84	9.6
SS 13	12/10/2013	12	6.14	10.93	8.99	0.33	0.077	0.12	0.67	5.6
SS 13	2/6/2014	7	4.26	17.50	5.14	0.42	<0.025	<0.10	0.44	4.1
SS 13	6/26/2014	23	8.33	8.09	28.44	<0.10	<0.025	0.12	0.52	5.4
SS 13	9/30/2014	12	7.41	4.26	24.77	<0.10	<0.025	<0.10	0.44	12.0
SS 13	11/19/2014	13	6.31	6.08	6.44	0.22	0.044	<0.10	0.40	4.8
SS 13	3/23/2015	16	7.33	8.57	15.4	0.22	0.029	<0.10	0.71	7.6
SS 13	4/22/2015	15	6.60	8.93	20.8	0.32	<0.025	<0.10	0.67	10.0
SS 13	9/30/2015	9	7.33	11.54	25.95	<0.10	<0.025	<0.10	0.52	9.0
SS 13	11/19/2015	36	7.07	18.48	15.31	0.24	<0.025	0.18	0.97	4.8
SS 13	3/15/2016	9	6.61	12.42	17.37	0.32	<0.025	<0.10	<0.25	4.7
SS 13	6/29/2016	10	7.86	6.15	30.6	<0.10	<0.025	<0.10	0.53	9.8
SS 13	8/9/2016	20	7.77	5.92	29.1	<0.10	<0.025	<0.10	0.73	24.0
SS 13	12/7/2016	4.8	7.39	6.97	12.5	0.11	<0.025	<0.10	0.45	3.6
SS 13	3/2/2017	12	6.64	7.19	13.4	0.25	<0.025	<0.10	0.75	4.6
SS 13	6/21/2017	8.7	7.54	5.82	26.1	<0.10	<0.025	<0.10	0.82	12.8
SS 13	8/17/2017	9.3	7.93	6.54	30.9	<0.10	<0.025	<0.10	0.81	18.6
SS 13	10/26/2017	5.2	6.70	7.41	15.4	0.12	<0.025	<0.10	0.60	7.2
SS 13	3/27/2018	6.4	8.19	8.23	12.4	0.495	<0.025	<0.10	<0.25	16.2
SS 13	6/26/2018	6.8	7.36	5.67	29.5	<0.10	<0.025	0.140	0.998	10.2
SS 13	8/1/2018	24.2	6.75	6.86	21.9	0.226	0.206	0.308	1.180	20.2
SS 13	12/11/2018	8.2	7.37	10.79	7.4	0.451	<0.025	<0.10	0.655	8.6
SS 13	4/17/2019	6.4	7.42	9.23	19.1	<0.10	<0.025	<0.10	0.624	6.8
SS 13	6/11/2019	8.9	6.59	3.12	23.4	<0.10	<0.025	<0.10	0.929	<6.25
SS 13	8/28/2019	6.7	7.93	7.33	29.7	<0.10	<0.025	<0.10	1.170	24.4
SS 13	10/28/2019	12.3	6.25	3.61	16.0	0.211	0.031	<0.10	0.739	3.7
SS 13	3/31/2020	60.4	6.95	8.64	14.9	0.233	0.0580	0.147	0.928	92.0
SS 13	6/10/2020	10.1	7.27	7.08	28.2	<0.100	<0.03	<0.100	0.492	21.2
SS 13	9/21/2020	NS	7.36	6.58	21.9	<0.100	<0.03	0.200	<0.250	7.8
SS 13	12/17/2020	12.3	8.04	10.83	8.3	0.405	<0.03	<0.100	0.432	5.3
SS 13	3/18/2021	26.8	7.61	9.23	16.9	0.163	<0.03	<0.100	0.926	16.5

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

TABLE B.7 - ANALYTICAL DATA - SS 14

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 14	3/12/2013	10	7.40	11.23	10.93	0.40	0.087	0.11	0.77	4.7
SS 14	5/8/2013	10	6.47	2.75	16.42	0.45	0.041	<0.10	0.53	5.0
SS 14	9/23/2013	3	6.76	6.49	21.77	0.38	0.036	<0.10	0.45	<2.5
SS 14	12/10/2013	18	5.63	11.33	8.56	0.28	0.160	0.19	0.66	9.2
SS 14	2/6/2014	12	4.19	17.56	5.16	0.62	0.074	<0.10	0.50	14.0
SS 14	6/26/2014	8	8.18	7.58	24.14	0.67	0.080	0.16	0.89	<2.5
SS 14	9/30/2014	8	7.42	3.67	22.35	<0.10	0.031	<0.10	0.52	6.1
SS 14	11/19/2014	16	6.27	7.50	5.48	0.75	0.075	0.22	0.46	9.2
SS 14	3/23/2015	21	7.75	9.53	16.5	0.27	0.110	0.14	1.10	11.0
SS 14	4/22/2015	12	7.43	12.29	17.5	0.62	<0.025	<0.10	0.58	6.3
SS 14	9/30/2015	7	7.16	12.79	24.02	<0.10	0.088	0.18	0.51	6.6
SS 14	11/19/2015	27	6.49	20.71	15.16	0.44	0.131	0.18	1.00	23.3
SS 14	3/15/2016	11	7.18	12.11	16.01	0.50	0.056	<0.10	0.83	8.1
SS 14	6/29/2016	6	7.62	3.61	27.2	<0.10	0.103	0.16	0.65	6.0
SS 14	8/9/2016	22	7.71	5.99	26.9	0.16	0.062	0.12	0.87	12.7
SS 14	12/7/2016	7.6	7.27	7.72	11.9	0.89	0.078	0.15	0.71	<2.5
SS 14	3/2/2017	13	7.60	8.76	12.2	0.48	0.092	0.15	0.84	9.2
SS 14	6/21/2017	21.5	7.74	6.24	23.7	0.25	0.030	0.11	0.73	63.7
SS 14	8/17/2017	6.0	8.12	7.11	31.4	0.12	0.070	<0.10	0.83	24.8
SS 14	10/26/2017	4.3	7.39	7.66	13.9	0.70	0.054	<0.10	0.58	3.6
SS 14	3/27/2018	8.8	7.34	8.96	11.9	0.673	0.044	0.148	<0.25	8.2
SS 14	6/26/2018	7.7	8.47	10.65	29.3	0.206	0.044	0.148	1.01	18.7
SS 14	8/1/2018	42.9	6.35	7.04	22.5	0.109	0.233	0.276	0.89	60.0
SS 14	12/11/2018	8.4	6.95	11.53	7.4	0.812	0.057	0.117	0.635	4.3
SS 14	4/17/2019	6.6	7.60	8.28	22.1	0.598	0.042	<0.10	0.414	6.7
SS 14	6/11/2019	12.6	6.78	3.47	23.8	0.444	0.077	<0.10	0.928	5.9
SS 14	8/28/2019	8.1	7.96	8.18	27.9	<0.10	<0.025	0.174	1.050	8.5
SS 14	10/28/2019	10.9	6.97	7.83	15.1	0.458	0.048	0.167	0.381	2.7
SS 14	3/31/2020	62.4	6.67	9.31	15.2	0.190	0.235	0.348	0.934	145
SS 14	6/10/2020	17.0	7.32	7.20	29.1	0.246	0.078	0.128	0.897	40.4
SS 14	9/21/2020	NS	7.62	7.59	20.7	0.345	0.075	<0.100	0.281	8.4
SS 14	12/17/2020	11.4	7.94	11.72	8.6	0.546	0.050	<0.100	0.540	5.4
SS 14	3/18/2021	31.4	7.73	9.77	16.8	0.189	0.048	<0.100	0.670	19.8

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

TABLE B.8 - ANALYTICAL DATA - GD 12**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 12	3/12/2013	9	7.41	10.93	13.43	0.25	0.030	<0.10	0.54	3.9
GD 12	5/8/2013	15	6.73	2.35	16.53	0.21	0.030	<0.10	0.40	7.5
GD 12	9/23/2013	10	6.76	3.94	26.07	<0.10	0.026	<0.10	0.48	9.0
GD 12	12/10/2013	19	6.15	10.09	10.18	0.22	0.079	0.11	0.45	5.9
GD 12	2/6/2014	12	4.17	16.99	5.76	0.31	<0.025	<0.10	0.28	3.9
GD 12	6/26/2014	29	8.38	9.40	26.72	0.11	0.035	0.12	0.62	32.0
GD 12	9/30/2014	11	7.68	5.77	24.68	<0.10	<0.025	<0.10	0.39	11.0
GD 12	11/19/2014	15	6.95	5.93	5.85	0.28	<0.025	0.13	0.39	6.6
GD 12	3/23/2015	18	7.80	9.56	16.80	0.24	<0.025	<0.10	0.59	8.1
GD 12	4/22/2015	17	7.45	11.04	19.80	0.25	<0.025	<0.10	0.43	14.0
GD 12	9/30/2015	7	7.30	11.07	24.67	<0.10	<0.025	<0.10	0.70	8.5
GD 12	11/19/2015	23	7.07	19.14	14.68	0.28	0.100	0.15	0.77	12.0
GD 12	3/15/2016	10	7.43	13.14	16.05	0.25	0.032	<0.10	0.43	4.6
GD 12	6/29/2016	13	8.22	7.68	31.20	<0.10	0.036	<0.10	0.38	12.0
GD 12	8/9/2016	22	7.57	4.39	27.60	<0.10	<0.025	<0.10	0.63	13.3
GD 12	12/7/2016	10.3	7.18	6.65	11.4	0.14	<0.025	<0.10	0.60	4.0
GD 12	3/2/2017	15	7.79	10.12	11.70	0.22	<0.025	0.12	0.58	6.1
GD 12	6/21/2017	16.1	7.43	5.12	24.3	<0.10	<0.025	<0.10	0.77	16.8
GD 12	8/17/2017	6.3	8.13	5.80	29.90	<0.10	<0.025	<0.10	0.58	13.3
GD 12	10/26/2017	9.8	6.74	7.53	13.2	0.2	<0.025	<0.10	0.31	7.8
GD 12	3/27/2018	6.3	7.71	9.24	11.5	0.356	<0.025	<0.10	<0.25	4.2
GD 12	6/26/2018	9.9	7.44	4.35	26.1	0.102	<0.025	<0.10	0.528	13.2
GD 12	8/1/2018	42.3	7.05	7.33	22.7	0.108	0.159	0.286	1.23	43.8
GD 12	12/11/2018	9.5	6.68	11.46	7.8	0.313	<0.025	<0.10	0.574	4.3
GD 12	4/17/2019	9.1	7.45	9.20	17.5	0.257	<0.025	<0.10	0.272	4.0
GD 12	6/11/2019	19.0	7.20	3.25	22.0	0.223	0.066	0.121	0.820	8.2
GD 12	8/28/2019	11.0	7.83	7.61	28.2	<0.10	<0.025	0.103	0.764	9.4
GD 12	10/28/2019	18.9	5.34	6.65	14.7	0.197	0.044	<0.10	0.387	12.3
GD 12	3/31/2020	76.3	6.71	9.44	14.5	0.177	0.0650	0.167	1.00	143
GD 12	6/10/2020	12.3	6.46	6.44	25.8	<0.100	<0.03	<0.100	0.438	11.4
GD 12	9/21/2020	NS	7.18	7.15	19.9	0.103	<0.03	<0.100	<0.250	7.6
GD 12	12/17/2020	13.1	8.03	11.10	8.5	0.268	<0.03	<0.100	<0.250	3.7
GD 12	3/18/2021	36.2	7.92	10.04	17.1	0.163	<0.03	<0.100	0.621	17.6

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

TABLE B.9 - ANALYTICAL DATA - CO 14

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 14	3/12/2013	8	6.88	9.65	12.92	0.32	<0.025	<0.10	0.42	3.5
CO 14	5/8/2013	13	6.61	3.02	16.37	0.34	<0.12	<0.10	0.74	6.7
CO 14	9/23/2013	15	6.70	3.78	22.58	<0.10	0.036	<0.10	0.30	9.6
CO 14	12/10/2013	14	5.82	11.15	9.37	0.11	0.027	<0.10	0.55	9.7
CO 14	2/6/2014	14	4.02	16.69	5.08	0.58	<0.025	<0.10	0.41	9.1
CO 14	6/26/2014	20	8.25	8.19	22.33	0.34	<0.025	<0.10	0.86	9.0
CO 14	9/30/2014	*	*	*	*	*	*	*	*	*
CO 14	11/19/2014	9.84	6.70	3.86	7.90	<0.10	<0.025	<0.10	0.26	2.8
CO 14	3/23/2015	19	6.85	8.78	17.20	0.25	<0.025	<0.10	0.67	10.0
CO 14	4/22/2015	14	6.23	11.19	18.00	0.49	<0.025	<0.10	0.60	8.6
CO 14	9/30/2015	*	*	*	*	*	*	*	*	*
CO 14	11/19/2015	24	6.64	16.06	15.25	<0.10	<0.025	<0.10	1.27	5.9
CO 14	3/15/2016	16	6.33	13.05	16.42	0.47	<0.025	<0.10	0.71	9.7
CO 14	6/29/2016	*	*	*	*	*	*	*	*	*
CO 14	8/9/2016	*	*	*	*	*	*	*	*	*
CO 14	12/7/2016	*	*	*	*	*	*	*	*	*
CO 14	3/2/2017	19	6.34	8.58	13.60	0.11	<0.025	<0.10	0.60	5.2
CO 14	6/21/2017	9.0	6.57	6.49	22.9	<0.10	<0.025	<0.10	0.76	19.0
CO 14	8/17/2017	13.8	7.83	6.22	28.0	<0.10	<0.025	<0.10	0.85	50.6
CO 14	10/26/2017	8.1	6.43	8.40	14.2	<0.10	<0.025	<0.10	0.44	4.7
CO 14	3/27/2018	8.2	7.63	9.45	11.4	0.601	<0.025	<0.10	<0.25	9.5
CO 14	6/26/2018	NS	NS	NS	NS	NS	NS	NS	NS	NS
CO 14	8/1/2018	40.2	6.99	7.42	22.1	<0.10	<0.025	<0.10	0.76	28.3
CO 14	12/11/2018	7.6	7.38	10.74	7.7	0.184	<0.025	<0.10	0.567	4.9
CO 14	4/17/2019	9.3	7.91	8.99	19.0	0.460	<0.025	<0.10	2.96	9.4
CO 14	6/11/2019	17.5	7.07	3.56	22.4	<0.10	<0.025	0.14	0.773	5.6
CO 14	8/28/2019	*	*	*	*	*	*	*	*	*
CO 14	10/28/2019	*	*	*	*	*	*	*	*	*
CO 14	3/31/2020	77.6	7.84	9.07	15.0	0.402	<0.025	<0.10	0.532	106
CO 14	6/10/2020	13.8	7.64	7.20	24.4	0.244	<0.03	<0.100	0.482	5.6
CO 14	9/21/2020	*	*	*	*	*	*	*	*	*
CO 14	removed Monitoring Point from Stormwater Monitoring Program in September 2020									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled

* - outfall was dry

TABLE B.10 - ANALYTICAL DATA - SME 2**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 2	3/12/2013	6	7.12	9.28	14.17	0.28	0.032	<0.10	0.47	8.1
SME 2	5/8/2013	26	7.67	6.46	21.40	0.24	0.042	<0.10	0.92	21.0
SME 2	9/23/2013	7	6.92	5.51	26.24	<0.10	0.039	<0.10	0.34	7.1
SME 2	12/10/2013	12	5.71	11.05	11.01	0.31	0.100	0.15	0.42	7.0
SME 2	2/6/2014	20	4.21	14.38	6.13	0.39	0.053	<0.10	0.59	14.0
SME 2	6/26/2014	15	8.16	7.22	26.98	0.11	<0.025	<0.10	0.38	8.7
SME 2	9/30/2014	6	7.97	5.33	26.53	<0.10	<0.025	<0.10	0.52	7.4
SME 2	11/19/2014	10	7.06	3.53	10.20	0.14	0.039	0.16	<0.25	6.8
SME 2	3/23/2015	11	7.96	9.34	17.60	0.24	<0.025	<0.10	0.45	10.0
SME 2	4/22/2015	9	7.93	11.46	24.50	0.13	<0.025	<0.10	0.48	9.1
SME 2	9/30/2015	7	7.62	12.67	25.91	0.10	<0.025	0.10	0.50	8.7
SME 2	11/19/2015	22	6.55	14.30	19.12	0.22	0.062	0.22	1.21	82.3
SME 2	3/15/2016	8	7.86	13.43	20.73	<0.10	<0.025	<0.10	0.49	6.3
SME 2	6/29/2016	8	8.23	7.24	30.4	0.19	<0.025	<0.10	0.29	8.0
SME 2	8/9/2016	10	8.01	6.58	30.6	<0.10	<0.025	<0.10	0.59	8.2
SME 2	12/7/2016	6.0	7.52	6.86	12.7	<0.10	<0.025	0.10	0.47	5.8
SME 2	3/2/2017	12	8.03	8.55	15.2	0.27	<0.025	<0.10	0.72	11.4
SME 2	6/21/2017	5.2	7.18	4.64	26.6	<0.10	<0.025	<0.10	0.89	11.4
SME 2	8/17/2017	6.5	7.76	6.43	30.6	<0.10	<0.025	<0.10	0.73	15.3
SME 2	10/26/2017	5.2	7.03	6.87	17.6	<0.10	<0.025	<0.10	0.38	8.5
SME 2	3/27/2018	11.1	7.44	8.64	12.9	0.161	<0.025	<0.10	<0.25	17.5
SME 2	6/26/2018	10.8	7.97	6.43	29.6	0.111	<0.025	<0.10	0.731	9.9
SME 2	8/1/2018	29.6	7.39	6.46	23.4	0.371	0.099	0.13	0.423	24.8
SME 2	12/11/2018	9.7	7.82	9.99	7.9	0.212	<0.025	0.166	0.368	5.1
SME 2	4/17/2019	5.0	7.82	7.80	20.5	0.105	<0.025	<0.10	0.783	6.0
SME 2	6/11/2019	12.3	6.68	3.43	24.4	<0.10	<0.025	<0.10	0.676	9.2
SME 2	8/28/2019	6.6	7.83	6.26	29.2	<0.10	<0.025	<0.10	0.452	5.9
SME 2	10/28/2019	24.9	7.64	7.42	16.8	<0.10	<0.025	0.107	0.341	18.2
SME 2	3/31/2020	9.5	7.02	7.31	18.2	<0.10	<0.025	<0.10	0.521	10.2
SME 2	6/10/2020	10.4	7.81	6.40	27.0	0.117	<0.03	<0.100	0.367	8.0
SME 2	9/21/2020	NS	7.84	8.02	23.6	<0.100	<0.03	<0.100	<0.250	11.0
SME 2	12/17/2020	13.3	8.04	9.04	9.2	0.272	0.041	<0.100	0.342	6.7
SME 2	3/18/2021	27.3	8.20	12.80	18.4	0.193	0.033	<0.100	0.528	13.8

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

TABLE B.11 - ANALYTICAL DATA - GD 6

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 6	3/12/2013	10	8.03	9.65	11.90	0.21	0.036	<0.10	0.29	5.8
GD 6	5/8/2013	19	6.81	2.35	19.02	0.23	0.033	<0.10	0.40	8.3
GD 6	9/23/2013	6	7.28	5.17	26.93	<0.10	<0.025	<0.10	0.36	5.8
GD 6	12/10/2013	26	5.98	11.41	10.64	0.37	0.041	<0.10	0.17	8.6
GD 6	2/6/2014	16	4.34	15.80	6.85	0.26	0.057	<0.10	0.16	5.5
GD 6	6/26/2014	14	8.31	8.95	27.29	<0.10	<0.025	<0.10	0.42	7.0
GD 6	9/30/2014	7	8.35	6.53	26.78	<0.10	<0.025	<0.10	0.55	7.0
GD 6	11/19/2014	13	7.17	3.36	9.67	0.22	<0.025	0.28	0.38	9.8
GD 6	3/23/2015	17	7.95	8.95	18.40	0.22	<0.025	<0.10	0.26	8.2
GD 6	4/22/2015	15	7.59	10.82	19.80	0.22	<0.025	<0.10	0.28	8.0
GD 6	9/30/2015	14	8.19	12.31	25.47	<0.10	<0.025	0.10	0.97	12.4
GD 6	11/19/2015	43	6.97	15.87	17.75	0.47	0.037	0.13	0.77	16.0
GD 6	3/15/2016	16	7.68	11.58	19.98	0.12	0.043	<0.10	0.50	7.9
GD 6	6/29/2016	10	8.86	9.64	31.50	<0.10	<0.025	<0.10	0.40	11.2
GD 6	8/9/2016	10	8.26	6.98	30.70	<0.10	<0.025	<0.10	0.62	10.3
GD 6	12/7/2016	11.5	7.43	8.13	14.3	0.37	<0.025	<0.10	0.49	7.5
GD 6	3/2/2017	14	8.05	8.02	14.70	0.25	<0.025	<0.10	0.51	9.0
GD 6	6/21/2017	7.7	7.67	4.99	26.8	<0.10	<0.025	0.11	0.93	21.0
GD 6	8/17/2017	7.0	8.02	7.72	31.2	<0.10	<0.025	<0.10	0.68	13.2
GD 6	10/26/2017	8.3	6.25	7.84	15.8	0.13	<0.025	<0.10	0.39	12.0
GD 6	3/27/2018	10.1	7.97	9.00	12.1	0.233	<0.025	1.76	<0.25	10.9
GD 6	6/26/2018	8.0	8.02	6.78	29.6	0.108	<0.025	<0.10	0.782	9.6
GD 6	8/1/2018	25.4	7.66	7.52	22.7	0.335	0.090	0.1	0.636	21.9
GD 6	12/11/2018	13.8	7.97	10.92	8.2	0.397	<0.025	<0.10	0.362	5.8
GD 6	4/17/2019	9.0	7.10	8.00	20.5	0.198	<0.025	<0.10	0.624	9.6
GD 6	6/11/2019	17.9	7.07	3.68	23.8	<0.10	<0.025	<0.10	0.728	12.4
GD 6	8/28/2019	9.1	7.94	6.32	28.5	<0.10	<0.025	<0.10	0.607	6.5
GD 6	10/28/2019	18.4	7.48	6.63	16.4	0.198	<0.025	<0.10	0.467	9.9
GD 6	3/31/2020	16.0	6.06	8.86	16.1	0.212	<0.025	0.127	<0.250	8.40
GD 6	6/10/2020	7.4	7.04	6.36	26.5	0.127	<0.03	<0.100	0.832	10.40
GD 6	9/21/2020	NS	7.96	8.48	21.4	<0.100	<0.03	<0.100	<0.250	8.60
GD 6	12/17/2020	0.5	7.96	10.08	9.0	0.309	<0.03	<0.100	0.377	7.40
GD 6	3/18/2021	75.6	7.97	9.21	17.0	0.241	<0.03	0.183	0.364	31.6

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

TABLE B.12 - ANALYTICAL DATA - CO 15

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
CO 15	3/12/2013	32	7.41	8.91	14.40	<0.10	0.097	<0.10	0.53	9.0
CO 15	5/8/2013	27	7.51	8.04	18.10	0.10	<0.12	<0.10	0.59	11.0
CO 15	9/23/2013	13	7.09	4.01	27.18	<0.10	0.027	<0.10	0.34	11.0
CO 15	12/10/2013	42	6.09	11.25	9.83	0.18	0.068	<0.10	0.56	13.0
CO 15	2/6/2014	32	4.22	16.10	6.28	0.21	<0.025	<0.10	0.46	12.0
CO 15	6/26/2014	105	8.16	7.00	25.55	<0.10	0.140	<0.10	0.59	46.0
CO 15	9/30/2014	8	7.88	6.67	23.28	<0.10	<0.025	<0.10	<0.25	8.6
CO 15	11/19/2014	44	7.38	3.68	9.43	0.20	0.030	<0.10	0.32	12.0
CO 15	3/23/2015	56	7.85	9.53	18.50	0.14	0.067	<0.10	0.61	19.0
CO 15	4/22/2015	26	7.62	10.14	21.90	0.14	<0.025	<0.10	0.40	11.0
CO 15	9/30/2015	15	7.68	12.73	22.88	<0.10	<0.025	<0.10	0.75	11.8
CO 15	11/19/2015	50	7.30	19.45	16.98	0.24	0.042	0.18	0.42	17.5
CO 15	3/15/2016	29	7.66	12.39	19.83	<0.10	<0.025	<0.10	0.78	12.4
CO 15	6/29/2016	*	*	*	*	*	*	*	*	*
CO 15	8/9/2016	38	8.03	6.78	29.6	<0.10	<0.025	<0.10	<0.25	22.0
CO 15	12/7/2016	13.6	7.50	9.78	12.1	<0.10	<0.025	<0.10	0.67	14.8
CO 15	3/2/2017	38.2	7.77	8.32	16.0	0.15	<0.025	<0.10	0.52	17.4
CO 15	6/21/2017	6.4	7.56	5.12	26.7	<0.10	<0.025	<0.10	0.97	18.3
CO 15	8/17/2017	21.7	8.29	6.47	30.1	<0.10	<0.025	<0.10	0.69	12.4
CO 15	10/26/2017	10.8	4.43	8.24	13.6	<0.10	<0.025	<0.10	0.39	6.4
CO 15	3/27/2018	14.5	7.87	9.33	12.1	<0.10	<0.025	<0.10	<0.25	8.0
CO 15	6/26/2018	13.8	7.87	7.33	26.5	<0.10	<0.025	0.270	0.573	12.4
CO 15	8/1/2018	58.8	7.25	7.12	23.0	<0.10	0.040	0.122	0.852	71.5
CO 15	12/11/2018	111.3	8.73	11.94	7.0	0.168	<0.025	0.107	1.160	10.1
CO 15	4/17/2019	17.0	7.80	9.17	19.1	0.144	<0.025	<0.10	0.574	11.5
CO 15	6/11/2019	21.9	6.56	3.10	22.8	<0.10	<0.025	<0.10	1.00	9.8
CO 15	8/28/2019	70.8	8.07	7.52	25.7	0.166	0.026	0.130	1.54	20.4
CO 15	10/28/2019	30.7	7.31	9.63	15.0	0.120	<0.025	<0.10	0.61	10.2
CO 15	3/31/2020	61.8	6.46	9.25	15.7	0.102	0.0320	0.158	0.625	72.4
CO 15	6/10/2020	18.7	6.24	6.22	25.0	0.148	<0.03	<0.100	0.456	10.4
CO 15	9/21/2020	NS	7.31	8.18	17.9	<0.100	<0.03	<0.100	<0.250	5.6
CO 15	12/17/2020	2.8	8.98	10.87	10.0	0.161	<0.03	<0.100	0.685	15.6
CO 15	3/18/2021	63.1	8.46	15.75	19.8	0.193	<0.03	<0.100	0.554	26.0

NTU - Nephelometric Turbidity Units

* - outfall was dry

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

TABLE B.14 - ANALYTICAL DATA - SME 7

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

[illegible]

NTU - Nephelometric Turbidity Units
mg/L - milligrams per liter
NS - Not Sampled/Meter Not Working

TABLE B.13 - ANALYTICAL DATA - SME 8

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

[illegible]

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

TABLE B.23 - ANALYTICAL DATA - HB 3

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
HB 3	3/12/2013	33	7.54	9.48	13.90	0.19	0.081	<0.10	0.83	49.0
HB 3	5/20/2013	15	8.21	6.82	27.80	0.17	<0.025	<0.10	0.60	17.0
HB 3	9/23/2013	21	8.02	4.89	25.70	<0.10	0.037	<0.10	0.60	19.0
HB 3	12/10/2013	48	7.90	8.65	10.10	<0.10	0.140	0.15	0.62	20.0
HB 3	2/6/2014	32	7.22	12.24	5.90	0.48	0.030	<0.10	0.37	13.0
HB 3	6/26/2014	12	8.20	7.12	NS	<0.10	<0.025	<0.10	0.37	12.0
HB 3	9/30/2014	30	8.05	6.01	24.78	<0.10	<0.025	<0.10	0.48	30.0
HB 3	11/19/2014	56	7.85	8.83	8.80	0.11	0.098	0.12	0.44	51.0
HB 3	3/23/2015	27	8.21	8.40	24.20	0.26	<0.025	<0.10	0.46	35.0
HB 3	4/22/2015	25	7.91	8.36	21.90	0.20	<0.025	<0.10	0.66	22.0
HB 3	9/30/2015	22	7.89	5.05	25.70	<0.10	<0.025	<0.10	0.91	23.0
HB 3	11/19/2015	32	7.83	7.37	17.40	0.38	0.045	<0.10	<0.25	30.2
HB 3	3/15/2016	29	8.52	7.97	19.10	0.30	0.087	<0.10	<0.25	23.8
HB 3	6/29/2016	17	8.02	2.77	30.61	<0.10	<0.025	<0.10	0.51	20.9
HB 3	8/9/2016	11	7.91	4.31	30.19	<0.10	<0.025	<0.10	0.70	14.3
HB 3	12/7/2016	16	7.93	8.44	12.81	0.11	<0.025	0.13	0.73	17.0
HB 3	3/2/2017	50.0	7.75	3.90	14.33	0.33	<0.025	0.12	0.97	57.1
HB 3	7/5/2017	23	7.29	5.36	27.00	<0.10	<0.025	<0.10	0.81	28.5
HB 3	8/16/2017	13.7	7.35	5.04	27.00	<0.10	<0.025	<0.10	0.76	12.7
HB 3	10/25/2017	11.7	6.64	9.93	18.5	<0.10	<0.025	<0.10	0.32	20.4
HB 3	3/28/2018	13.2	7.99	9.47	17.6	0.359	<0.025	<0.10	<0.25	20.2
HB 3	6/29/2018	14.6	7.67	5.55	26.0	<0.10	<0.025	<0.10	0.464	18.2
HB 3	8/2/2018	28.3	7.40	5.64	25.1	<0.10	<0.025	<0.10	0.952	35.3
HB 3	12/10/2018	24.8	7.55	10.98	7.9	0.363	<0.025	0.141	0.426	27.6
HB 3	4/15/2019	22.4	7.73	8.27	19.6	0.233	<0.025	<0.10	<0.250	35.5
HB 3	6/12/2019	12.4	8.13	6.77	26.6	0.129	<0.025	<0.10	<0.250	52.3
HB 3	8/27/2019	78.1	8.21	8.75	29.1	<0.10	<0.025	0.179	0.634	7.3
HB 3	10/29/2019	28.2	7.82	9.88	18.3	<0.10	<0.025	0.166	0.517	17.6
HB 3	3/30/2020	8.9	7.79	8.91	18.5	0.234	<0.025	<0.10	1.20	18.4
HB 3	6/16/2020	20.4	7.33	7.01	26.3	<0.100	<0.030	<0.100	0.30	14.6
HB 3	9/21/2020	12.1	7.80	7.69	23.5	<0.100	<0.030	<0.100	0.28	8.3
HB 3	12/17/2020	31.16	8.07	9.94	9.1	0.195	<0.030	<0.100	0.588	20.4
HB 3	3/18/2021	1.8	7.47	9.62	16.0	0.369	<0.030	<0.100	0.252	23.0

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

TABLE B.24 - ANALYTICAL DATA - SME 4

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

[illegible]

NTU - Nephelometric Turbidity Unit

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

TABLE B.20 - ANALYTICAL DATA - GD 5

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 5	3/13/2013	12	8.33	9.29	10.20	0.26	<0.025	<0.10	0.34	9.6
GD 5	5/20/2013	14	8.28	7.76	22.60	<0.10	<0.025	<0.10	0.62	9.0
GD 5	9/23/2013	12	7.67	6.78	27.10	<0.10	0.027	<0.10	0.45	8.0
GD 5	12/10/2013	58	7.97	9.10	9.10	0.10	0.088	0.10	0.47	18.0
GD 5	2/6/2014	46	7.14	9.88	7.20	0.17	0.038	<0.10	0.37	17.0
GD 5	6/26/2014	17	7.90	6.54	NS	<0.10	<0.025	<0.10	0.34	12.0
GD 5	9/30/2014	23	8.28	7.53	25.22	<0.10	<0.025	<0.10	<0.25	18.0
GD 5	11/19/2014	43	8.15	9.30	9.40	0.11	0.051	<0.10	0.43	26.0
GD 5	3/23/2015	24	8.14	8.58	15.90	0.12	<0.025	<0.10	0.34	15.0
GD 5	4/22/2015	25	7.81	7.78	21.70	0.14	<0.025	<0.10	0.65	13.0
GD 5	9/30/2015	18	8.03	6.27	26.30	<0.10	<0.025	0.12	0.56	17.3
GD 5	11/19/2015	90	7.63	7.34	16.60	0.17	0.042	<0.10	<0.25	42.8
GD 5	3/15/2016	24	8.80	7.47	19.40	<0.10	<0.025	<0.10	0.44	13.2
GD 5	6/29/2016	21	8.02	2.27	30.37	<0.10	0.074	<0.10	0.49	15.0
GD 5	8/9/2016	12	8.25	5.55	30.20	<0.10	<0.025	<0.10	0.41	11.0
GD 5	12/7/2016	10	7.73	10.61	11.96	<0.10	<0.025	<0.10	0.34	6.8
GD 5	3/2/2017	12	7.81	4.49	14.26	0.12	<0.025	<0.10	0.49	13.0
GD 5	7/5/2017	15.0	7.32	5.83	26.9	<0.10	<0.025	<0.10	0.73	22.7
GD 5	8/16/2017	8.0	7.89	6.22	28.0	<0.10	<0.025	<0.10	0.40	9.0
GD 5	10/25/2017	9.2	7.36	7.35	18.7	<0.10	<0.025	<0.10	0.35	14.6
GD 5	3/28/2018	6.1	8.18	9.47	18.5	0.127	<0.025	<0.10	<0.25	6.06
GD 5	6/29/2018	16.3	7.76	5.66	27.5	<0.10	<0.025	<0.10	0.689	19.60
GD 5	8/2/2018	18.4	7.59	6.02	25.7	<0.10	<0.025	<0.10	0.332	26.40
GD 5	12/10/2018	37.7	7.87	11.30	7.3	<0.10	<0.025	0.190	0.523	22.3
GD 5	4/15/2019	29.7	7.69	8.02	19.3	0.128	<0.025	1.20	0.411	29.0
GD 5	6/12/2019	6.0	8.02	7.64	27.2	<0.10	<0.025	<0.10	<0.250	9.3
GD 5	8/27/2019	75.2	7.15	7.98	28.7	<0.10	<0.025	0.17	0.506	10.9
GD 5	10/29/2019	29.0	7.85	9.42	17.8	<0.10	<0.025	<0.10	0.477	21.0
GD 5	3/30/2020	14.5	7.65	8.86	19.1	0.130	<0.025	<0.10	0.320	12.1
GD 5	6/16/2020	16.4	7.69	7.75	27.2	<0.100	<0.030	<0.100	0.561	7.4
GD 5	9/21/2020	10.8	7.65	6.33	23.2	<0.100	<0.030	<0.100	<0.250	7.9
GD 5	12/17/2020	28.7	7.62	9.96	9.7	0.122	<0.030	0.113	0.422	19.8
GD 5	3/18/2021	3.40	7.15	8.98	16.9	0.127	<0.030	<0.100	0.600	30.6

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

TABLE B.19 - ANALYTICAL DATA - GD 7

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 7	3/12/2013	10	7.98	11.63	15.27	0.39	0.037	<0.10	0.31	8.8
GD 7	5/8/2013	26	7.72	7.46	18.40	0.24	0.063	<0.10	<0.56	20.0
GD 7	9/23/2013	11	7.05	6.31	26.50	<0.10	0.026	<0.10	0.54	9.6
GD 7	12/10/2013	42	8.02	9.68	7.50	0.34	0.084	0.11	0.32	40.0
GD 7	2/6/2014	28	7.27	13.32	4.40	0.52	0.034	<0.10	0.61	13.0
GD 7	6/26/2014	6	8.45	7.04	NS	<0.10	<0.025	<0.10	0.52	8.7
GD 7	9/30/2014	12	7.87	6.32	24.39	<0.10	<0.025	<0.10	0.41	13.0
GD 7	11/19/2014	20	8.53	10.10	9.60	0.14	<0.025	0.13	0.46	15.0
GD 7	3/23/2015	13	8.28	8.87	15.40	0.27	<0.025	<0.10	0.35	10.0
GD 7	4/22/2015	28	7.99	6.40	20.20	0.24	<0.025	<0.10	0.47	24.0
GD 7	9/30/2015	8	7.89	5.18	24.90	<0.10	<0.025	<0.10	0.59	9.1
GD 7	11/19/2015	45	7.78	8.23	15.60	0.34	0.051	<0.10	<0.25	34.3
GD 7	3/15/2016	17	8.46	8.51	17.80	0.26	<0.025	<0.10	0.40	13.9
GD 7	6/29/2016	11	7.90	2.22	30.32	<0.10	0.048	<0.10	0.49	8.6
GD 7	8/9/2016	7	7.97	4.08	29.31	<0.10	<0.025	<0.10	0.47	5.7
GD 7	12/7/2016	9.5	7.88	10.14	12.39	<0.10	<0.025	<0.10	0.36	7.8
GD 7	3/2/2017	11	7.80	4.57	13.35	0.36	<0.025	<0.10	0.51	14.4
GD 7	6/29/2017	9.4	8.18	6.59	26.4	<0.10	<0.025	<0.10	0.44	13.4
GD 7	8/16/2017	8.5	7.84	5.66	29.0	<0.10	<0.025	<0.10	0.36	15.3
GD 7	10/25/2017	9.9	7.73	6.93	19.8	<0.10	<0.025	<0.10	0.42	18.4
GD 7	3/28/2018	7.6	8.16	9.33	14.9	0.350	<0.025	<0.10	<0.25	9.19
GD 7	6/29/2018	14.2	7.79	5.56	27.5	<0.10	<0.025	<0.10	0.625	14.60
GD 7	8/2/2018	18.5	7.62	5.51	27.0	<0.10	0.027	<0.10	0.450	32.10
GD 7	12/10/2018	40.8	7.06	11.05	8.0	0.378	<0.025	0.149	0.390	48.7
GD 7	4/15/2019	30.1	7.83	7.85	19.2	0.230	<0.025	<0.10	<0.250	12.0
GD 7	6/12/2019	7.4	7.24	6.68	27.2	0.132	<0.025	<0.10	<0.250	9.3
GD 7	8/27/2019	45.3	7.35	9.35	29.1	<0.10	<0.025	0.156	0.604	6.3
GD 7	10/29/2019	17.6	7.77	8.14	17.2	<0.10	<0.025	<0.10	0.414	17.0
GD 7	3/30/2020	7.8	7.77	10.38	21.1	<0.10	<0.025	<0.10	0.343	12.8
GD 7	6/16/2020	9.1	8.12	8.25	27.3	<0.100	<0.030	<0.100	0.322	8.3
GD 7	9/21/2020	13.6	7.42	12.45	23.7	<0.100	<0.030	<0.100	<0.250	9.60
GD 7	12/17/2020	14.4	7.75	10.21	9.5	0.373	<0.030	<0.100	<0.250	18.20
GD 7	3/18/2021	1.20	7.37	9.75	15.4	0.312	<0.030	<0.100	0.387	23.0

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

TABLE B.18 - ANALYTICAL DATA - GD 9

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 9	2/6/2014	34	7.20	11.27	5.50	0.40	0.063	0.12	0.60	14.0
GD 9	6/26/2014	45	8.22	6.08	NS	<0.10	0.029	0.12	0.41	34.0
GD 9	9/30/2014	12	8.30	6.93	24.61	<0.10	<0.025	<0.10	0.30	15.0
GD 9	11/19/2014	23	8.13	9.38	9.30	0.16	0.082	0.25	0.74	15.0
GD 9	3/23/2015	25	8.16	7.58	15.80	0.15	<0.025	<0.10	0.64	18.0
GD 9	4/22/2015	18	7.58	5.58	20.70	0.15	<0.025	<0.10	0.65	14.0
GD 9	9/30/2015	10	7.93	5.37	25.70	<0.10	<0.025	<0.10	0.64	10.8
GD 9	11/19/2015	40	7.67	NS	16.50	0.25	0.096	0.12	<0.25	16.7
GD 9	3/15/2016	15	8.49	7.66	17.30	0.33	0.044	<0.10	<0.25	12.1
GD 9	6/29/2016	44	8.20	1.76	29.77	<0.10	<0.025	<0.10	0.65	67.2
GD 9	8/9/2016	11	8.07	4.14	29.00	<0.10	<0.025	<0.10	0.47	9.4
GD 9	12/7/2016	26	7.99	8.01	11.99	<0.10	<0.025	0.13	0.38	38.3
GD 9	3/2/2017	10.7	7.70	4.26	13.60	0.27	<0.025	<0.10	0.67	11.2
GD 9	6/29/2017	15.8	8.37	5.85	26.4	<0.10	<0.025	<0.10	0.72	15.7
GD 9	8/16/2017	11.3	7.82	5.52	29.60	<0.10	<0.025	<0.10	0.38	18.2
GD 9	10/25/2017	18.9	7.50	6.68	18.9	<0.10	0.025	<0.10	0.38	29.7
GD 9	3/28/2018	10.2	8.21	9.75	15.8	0.230	<0.025	<0.10	<0.25	12.4
GD 9	6/29/2018	11.0	7.73	5.45	27.6	<0.10	<0.025	<0.10	0.507	13.9
GD 9	8/2/2018	13.0	7.55	5.17	26.0	0.110	0.067	<0.10	0.600	20.8
GD 9	12/10/2018	26.4	7.90	11.05	7.9	0.292	0.047	0.244	0.442	22.8
GD 9	4/15/2019	221.5	7.51	8.09	20.0	0.194	0.034	<0.10	<0.250	178
GD 9	6/12/2019	7.3	7.21	8.61	27.0	0.116	<0.025	<0.10	<0.250	29.0
GD 9	8/27/2019	76.5	7.81	8.22	28.8	<0.10	<0.025	0.146	0.385	9.3
GD 9	10/29/2019	22.3	7.35	8.91	17.9	<0.10	<0.025	<0.10	0.491	15.0
GD 9	3/30/2020	18.3	7.56	8.54	18.4	0.243	<0.025	0.121	<0.250	16.4
GD 9	6/16/2020	11.4	8.15	7.94	27.1	<0.100	<0.030	<0.100	0.352	11.5
GD 9	9/21/2020	11.6	7.38	6.41	23.3	<0.100	<0.030	<0.100	<0.250	9.0
GD 9	12/17/2020	12.33	7.71	10.62	9.7	0.336	<0.030	<0.100	0.261	13.1
GD 9	3/18/2021	1.70	7.24	8.83	15.5	0.189	<0.030	<0.100	0.576	18.6

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

TABLE B.17 - ANALYTICAL DATA - SME 1**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 1	3/12/2013	13	8.19	8.26	13.10	0.54	0.110	0.11	0.34	16.0
SME 1	5/8/2013	24	7.64	8.96	16.00	0.15	0.063	<0.10	0.42	14.0
SME 1	9/23/2013	14	8.26	7.87	27.70	<0.10	0.053	<0.10	0.80	15.0
SME 1	12/10/2013	46	8.05	9.15	7.60	0.55	0.210	0.26	0.47	21.0
SME 1	2/6/2014	61	7.22	11.34	5.90	0.55	0.110	0.13	0.50	23.0
SME 1	6/26/2014	14	8.49	7.05	NS	<0.10	<0.025	<0.10	0.31	13.0
SME 1	9/30/2014	28	8.25	7.46	24.67	<0.10	0.044	0.11	0.61	34.0
SME 1	11/19/2014	40	8.31	10.86	7.80	0.74	0.270	0.29	0.55	19.0
SME 1	3/23/2015	21	8.26	8.52	17.30	0.51	0.073	0.10	<0.25	14.0
SME 1	4/22/2015	29	7.14	7.97	18.50	0.40	0.039	<0.10	0.38	18.0
SME 1	9/30/2015	15	8.34	7.03	26.40	<0.10	0.052	0.14	0.81	15.3
SME 1	11/19/2015	50	7.92	7.04	15.90	0.40	0.084	0.13	<0.25	23.2
SME 1	3/15/2016	26	8.44	7.21	18.30	0.45	0.047	<0.10	<0.25	17.7
SME 1	6/29/2016	21	8.80	3.29	30.67	<0.10	0.180	0.25	0.62	20.3
SME 1	8/9/2016	15	8.55	4.98	28.87	<0.10	0.089	0.15	0.55	12.6
SME 1	12/7/2016	31	7.96	10.20	11.98	0.41	0.209	0.27	0.38	17.7
SME 1	3/2/2017	14	7.75	4.31	12.34	0.67	0.127	0.21	0.35	15.0
SME 1	6/29/2017	19.2	9.11	9.21	25.80	<0.10	0.028	<0.10	0.53	18.3
SME 1	8/16/2017	10.6	8.12	6.58	29.70	<0.10	<0.025	0.11	0.52	12.7
SME 1	10/25/2017	5.4	8.02	8.32	17.3	0.4	0.121	0.15	0.29	16.9
SME 1	3/28/2018	19.3	8.10	9.18	17.6	0.633	0.106	<0.10	<0.25	19.8
SME 1	6/29/2018	20.7	7.84	6.37	26.2	0.312	0.121	0.24	0.670	23.3
SME 1	8/2/2018	28.5	7.48	5.82	23.9	0.296	0.145	0.14	0.495	29.5
SME 1	12/10/2018	32.0	7.45	11.48	8.0	0.259	<0.025	<0.10	0.336	31.0
SME 1	4/15/2019	42.2	7.89	7.89	19.7	0.390	0.063	<0.10	0.360	35.0
SME 1	6/12/2019	12.2	7.34	8.73	27.2	<0.10	<0.025	<0.10	<0.250	9.7
SME 1	8/27/2019	135.2	7.45	8.51	28.8	<0.10	<0.025	0.161	0.356	7.1
SME 1	10/29/2019	14.5	7.95	9.21	17.6	0.129	0.049	0.134	0.272	11.0
SME 1	3/30/2020	13.3	7.35	8.61	19.3	0.462	<0.025	<0.10	<0.250	13.3
SME 1	6/16/2020	11.6	8.58	10.36	27.0	<0.100	0.031	0.129	0.485	11.4
SME 1	9/21/2020	13.8	7.71	6.92	22.2	<0.100	<0.030	<0.100	<0.250	9.0
SME 1	12/17/2020	23.19	7.66	10.68	9.2	0.577	0.072	<0.100	0.300	20.9
SME 1	3/18/2021	14.1	7.24	9.54	15.7	0.263	0.112	<0.100	0.580	90.4

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

TABLE B.21 - ANALYTICAL DATA - GD 3

**GADSDEN-ETOWAH MS4 MONITORING
NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
GD 3	3/13/2013	12	8.00	9.28	10.70	0.29	0.028	<0.10	0.44	11.0
GD 3	5/20/2013	12	8.09	7.01	23.40	0.15	0.026	<0.10	0.63	13.0
GD 3	9/23/2013	12	7.80	6.50	26.40	<0.10	0.025	<0.10	0.58	10.0
GD 3	12/10/2013	46	7.85	9.23	9.30	0.21	0.085	0.14	0.64	23.0
GD 3	2/6/2014	90	7.13	10.58	6.10	0.21	<0.025	0.12	0.68	27.0
GD 3	6/26/2014	15	8.13	8.00	NS	0.12	<0.025	<0.10	0.40	14.0
GD 3	9/30/2014	20	8.11	6.69	25.06	<0.10	<0.025	<0.10	0.32	19.0
GD 3	11/19/2014	18	8.36	10.88	9.3	<0.10	<0.025	<0.10	0.26	15.0
GD 3	3/23/2015	13	8.32	7.84	16.5	0.22	<0.025	<0.10	0.34	10.0
GD 3	4/22/2015	26	7.86	6.74	20.6	0.18	0.079	<0.10	0.36	21.0
GD 3	9/30/2015	10	7.94	4.91	24.9	0.10	<0.025	0.13	0.74	11.5
GD 3	11/19/2015	40	7.61	7.74	16.0	0.25	<0.025	0.10	<0.25	22.0
GD 3	3/15/2016	26	8.04	8.62	18.7	0.42	0.071	<0.10	<0.25	11.7
GD 3	6/29/2016	6	7.84	2.78	29.94	<0.10	0.088	<0.10	<0.25	10.7
GD 3	8/9/2016	8	7.98	5.09	30.01	<0.10	<0.025	<0.10	0.39	10.0
GD 3	12/7/2016	5.9	7.91	10.55	12.0	<0.10	<0.025	<0.10	0.36	8.1
GD 3	3/2/2017	14	8.21	5.01	14.35	0.24	<0.025	0.14	0.65	15.6
GD 3	7/5/2017	11.2	7.48	6.23	27.3	<0.10	<0.025	<0.10	0.56	14.4
GD 3	8/16/2017	7.4	8.01	6.24	28.8	<0.10	<0.025	<0.10	0.39	8.5
GD 3	10/25/2017	8.9	7.54	7.25	19.1	<0.10	<0.025	<0.10	0.39	13.6
GD 3	3/28/2018	9.1	8.06	9.34	16.6	0.241	<0.025	<0.10	<0.25	10.8
GD 3	6/29/2018	12.9	7.68	5.63	27.3	<0.10	<0.025	<0.10	0.511	12.7
GD 3	8/2/2018	13.4	7.69	5.72	26.6	<0.10	<0.025	<0.10	0.569	20.8
GD 3	12/10/2018	41.4	7.40	11.09	6.8	<0.10	<0.025	0.128	0.519	31.3
GD 3	4/15/2019	15.3	7.71	8.02	19.9	0.233	<0.025	<0.10	<0.250	14.7
GD 3	6/12/2019	9.6	7.24	8.31	27.3	<0.10	<0.025	<0.10	<0.250	13.0
GD 3	8/27/2019	202.8	7.18	8.33	28.8	<0.10	<0.025	0.159	0.434	6.5
GD 3	10/29/2019	26.2	7.84	9.63	17.2	<0.10	<0.025	<0.10	0.453	13.0
GD 3	3/30/2020	17.4	7.58	8.83	18.8	0.216	<0.025	<0.10	0.281	18.0
GD 3	6/16/2020	11.6	8.03	8.20	27.5	<0.100	<0.030	<0.100	0.363	9.5
GD 3	9/21/2020	13.5	7.51	6.73	23.4	<0.100	<0.030	0.106	<0.250	9.8
GD3	removed Monitoring Point from Stormwater Monitoring Program in September 2020									

NTU - Nephelometric Turbidity Units
mg/L - milligrams per liter
NS - Not Sampled/Meter Not Working

TABLE B.22 - ANALYTICAL DATA - SME 3

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE-NITRITE (mg/L)	ORTHO-PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SME 3	3/13/2013	17	7.84	7.44	11.30	0.20	0.038	<0.10	0.69	15.0
SME 3	5/20/2013	19	8.11	6.09	23.60	0.17	0.028	<0.10	0.69	19.0
SME 3	9/23/2013	15		5.32	26.50	<0.10	0.029	<0.10	0.53	13.0
SME 3	12/10/2013	48	7.69	8.85	9.60	<0.10	0.086	<0.10	0.62	20.0
SME 3	2/6/2014	83	7.09	10.62	6.30	0.25	<0.025	<0.10	0.69	33.0
SME 3	6/26/2014	50	8.04	7.03	NS	<0.10	0.047	<0.10	0.53	30.0
SME 3	9/30/2014	17	8.08	5.98	25.33	<0.10	<0.025	<0.10	0.66	18.0
SME 3	11/19/2014	22	8.30	10.40	9.30	0.12	0.035	<0.10	<0.25	19.0
SME 3	3/23/2015	25	8.13	7.72	21.20	0.24	0.026	<0.10	0.46	16.0
SME 3	4/22/2015	12	7.76	6.70	21.80	0.15	<0.025	<0.10	0.45	14.0
SME 3	9/30/2015	18	7.96	6.19	25.60	0.13	<0.025	0.13	0.42	24.4
SME 3	11/19/2015	65	7.56	7.44	15.80	0.25	0.032	<0.10	<0.25	37.8
SME 3	3/15/2016	68	8.35	7.51	19.20	0.30	<0.025	<0.10	<0.25	78.8
SME 3	6/29/2016	18	7.80	2.56	30.16	<0.10	0.062	<0.10	0.37	15.3
SME 3	8/9/2016	15	7.52	3.43	29.53	<0.10	<0.025	<0.10	0.56	10.8
SME 3	12/7/2016	8.5	7.90	10.91	11.85	<0.10	<0.025	0.15	1.78	9.4
SME 3	3/2/2017	14.6	7.95	4.60	13.64	0.27	<0.025	<0.10	0.73	17.0
SME 3	7/5/2017	12.5	7.54	5.88	27.3	<0.10	0.039	<0.10	0.63	16.3
SME 3	8/16/2017	11.5	7.86	5.00	28.1	<0.10	0.07	<0.10	0.45	18.5
SME 3	10/25/2017	15.3	7.42	8.23	19.4	<0.10	0.053	0.11	0.38	49.7
SME 3	3/28/2018	8.9	7.98	9.44	17.4	0.220	<0.025	<0.10	<0.25	11.2
SME 3	6/29/2018	15.8	7.53	5.39	26.9	<0.10	<0.025	<0.10	0.800	115.0
SME 3	8/2/2018	30.0	7.59	5.66	26.4	<0.10	<0.025	0.11	0.981	56.0
SME 3	12/10/2018	33.1	7.21	10.68	7.0	<0.10	<0.025	0.127	0.433	27.1
SME 3	4/15/2019	552.6	7.78	7.65	19.7	0.234	<0.025	0.285	0.271	371
SME 3	6/12/2019	7.8	7.48	6.87	27.1	<0.10	<0.025	<0.10	<0.250	10.7
SME 3	8/27/2019	55.3	7.91	8.41	29.2	<0.10	<0.025	0.149	0.389	7.0
SME 3	10/29/2019	22.4	7.77	8.44	17.2	<0.10	<0.025	<0.10	0.390	15.4
SME 3	3/30/2020	14.4	7.51	8.91	18.8	0.239	<0.025	<0.10	0.657	18.2
SME 3	6/16/2020	9.2	8.06	7.95	27.1	<0.100	<0.030	0.102	0.466	10.1
SME 3	9/21/2020	15.3	7.67	6.50	23.0	<0.100	<0.030	<0.100	0.660	10.7
SME 3	removed Monitoring Point from Stormwater Monitoring Program in September 2020									

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

TABLE B.16 - ANALYTICAL DATA - SS 5

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
SS 5	3/12/2013	6	8.38	9.87	10.80	0.30	0.031	<0.10	0.39	7.2
SS 5	5/8/2013	24	7.38	7.19	16.80	0.16	<0.12	<0.10	0.62	21.0
SS 5	9/23/2013	14	8.00	5.44	25.80	<0.10	0.029	<0.10	1.30	15.0
SS 5	12/10/2013	23	8.25	9.10	7.70	0.24	0.043	0.11	0.67	13.0
SS 5	2/6/2014	28	7.20	12.09	5.40	0.39	<0.025	<0.10	0.86	12.0
SS 5	6/26/2014	11	8.53	7.01	NS	<0.10	<0.025	<0.10	0.40	11.0
SS 5	9/30/2014	11	7.64	6.82	24.44	<0.10	<0.025	<0.10	0.45	11.0
SS 5	11/19/2014	14	8.96	13.13	8.50	<0.10	<0.025	<0.10	0.35	9.6
SS 5	3/23/2015	18	8.50	8.99	17.70	0.26	<0.025	<0.10	0.46	11.0
SS 5	4/22/2015	19	7.76	6.71	20.20	0.15	<0.025	<0.10	0.47	13.0
SS 5	9/30/2015	11	8.26	6.61	25.30	<0.10	<0.025	<0.10	0.61	9.9
SS 5	11/19/2015	19	7.86	8.47	15.90	0.24	<0.025	<0.10	<0.25	11.0
SS 5	3/15/2016	20	8.37	8.47	17.20	0.26	<0.025	0.23	0.28	9.5
SS 5	6/29/2016	15	8.01	3.81	29.77	<0.10	0.066	<0.10	0.48	13.2
SS 5	8/9/2016	12	7.86	3.16	29.40	<0.10	<0.025	<0.10	0.46	12.6
SS 5	12/7/2016	6.6	7.94	6.70	12.30	<0.10	<0.025	0.12	0.42	8.0
SS 5	3/2/2017	14.0	7.78	3.92	12.77	0.33	<0.025	<0.10	0.77	16.0
SS 5	7/5/2017	8.4	7.77	7.19	28.90	<0.10	<0.025	<0.10	0.47	12.0
SS 5	8/16/2017	10.2	8.10	4.83	29.90	<0.10	<0.025	<0.10	0.49	15.1
SS 5	10/25/2017	7.5	8.24	8.36	19.2	<0.10	<0.025	<0.10	0.53	11.8
SS 5	3/28/2018	7.0	8.53	10.23	18.5	0.248	<0.025	<0.10	<0.25	8.33
SS 5	6/29/2018	10.4	7.93	5.50	27.5	<0.10	<0.025	<0.10	0.605	13.3
SS 5	8/2/2018	13.5	7.58	6.04	25.8	<0.10	<0.025	<0.10	0.554	12.8
SS 5	12/10/2018	21.9	7.01	11.15	7.3	0.146	<0.025	<0.10	0.522	16.7
SS 5	4/15/2019	15.5	7.35	7.77	19.4	0.168	<0.025	<0.10	0.374	11.7
SS 5	6/12/2019	10.0	8.44	8.78	26.6	<0.10	<0.025	<0.10	<0.250	11.0
SS 5	8/27/2019	24.5	8.66	9.02	28.9	<0.10	<0.025	0.17	0.508	7.1
SS 5	10/29/2019	18.7	8.20	9.33	18.1	0.105	<0.025	0.20	0.631	10.4
SS 5	3/30/2020	9.2	8.35	11.07	20.8	0.127	<0.025	<0.10	0.399	10.6
SS 5	6/16/2020	10.5	8.41	7.99	27.9	<0.100	<0.030	<0.10	0.534	9.7
SS 5	9/21/2020	16.5	7.36	11.45	22.6	<0.100	<0.030	<0.100	0.512	11.0
SS 5	12/17/2020	8.64	8.02	11.24	9.6	0.200	<0.030	<0.100	0.428	10.1
SS 5	3/18/2021	0.60	7.36	9.03	15.7	0.191	<0.030	<0.100	0.570	14.6

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

TABLE B.25 - ANALYTICAL DATA - SME 5

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

[illegible]

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

TABLE B.26 - ANALYTICAL DATA - SME 6

GADSDEN-ETOWAH MS4 MONITORING

NPDES PERMIT NO. ALR040009

[illegible]

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

TABLE B.15 - ANALYTICAL DATA - RC 14**GADSDEN-ETOWAH MS4 MONITORING****NPDES PERMIT NO. ALR040009**

MONITORING POINT ID	DATE	FIELD PARAMETERS				LABORATORY ANALYSIS				
		TURBIDITY (NTU)	pH	DO (mg/L)	TEMP (°C)	NITRATE- NITRITE (mg/L)	ORTHO- PHOSPHATE (mg/L)	TOTAL P (mg/L)	TKN (mg/L)	TSS (mg/L)
RC 14	3/12/2013	28	8.23	7.53	10.30	<0.10	0.088	<0.10	0.61	21.0
RC 14	5/8/2013	30	6.72	1.78	21.40	0.14	<0.12	<0.10	0.63	16.0
RC 14	9/23/2013	18	7.86	6.68	24.70	<0.10	<0.025	<0.10	0.58	13.0
RC 14	12/10/2013	40	8.45	9.50	8.20	<0.10	0.100	0.11	0.69	16.0
RC 14	2/6/2014	67	7.15	10.94	4.90	0.16	0.036	0.11	0.70	18.0
RC 14	6/26/2014	6	8.21	6.30	NS	<0.10	<0.025	<0.10	0.39	5.9
RC 14	9/30/2014	12	7.20	6.20	23.50	<0.10	<0.025	<0.10	0.40	12.0
RC 14	9/19/2014	50	8.20	10.10	7.50	<0.10	0.085	0.13	0.52	28.0
RC 14	3/23/2015	70	8.03	7.80	18.20	0.26	0.070	<0.10	1.10	34.0
RC 14	4/22/2015	30	7.77	7.25	18.10	0.20	<0.025	<0.10	0.40	15.0
RC 14	9/30/2015	17	8.28	5.63	24.40	<0.10	<0.025	<0.10	0.45	12.6
RC 14	11/19/2015	95	7.32	6.07	17.71	0.14	<0.025	0.14	0.63	36.0
RC 14	3/15/2016	85	8.13	7.73	18.50	0.11	<0.025	0.30	0.43	69.6
RC 14	6/29/2016	17	7.58	2.17	28.53	<0.10	0.037	<0.10	0.46	17.5
RC 14	8/9/2016	10	7.05	2.35	28.53	<0.10	<0.025	<0.10	0.55	8.5
RC 14	12/7/2016	7.9	7.21	6.47	11.62	<0.10	<0.025	<0.10	0.25	8.6
RC 14	3/2/2017	18.0	7.32	3.55	12.69	0.12	<0.025	<0.10	0.61	14.6
RC 14	7/5/2017	17.7	7.55	6.56	25.7	0.28	0.041	<0.10	0.36	35.0
RC 14	8/16/2017	9.8	7.72	5.54	26.70	0.21	0.042	<0.10	0.40	12.4
RC 14	10/25/2017	18.7	7.64	7.26	17.1	0.24	0.088	0.15	0.47	27.2
RC 14	3/28/2018	9.9	8.03	9.00	18.3	0.148	<0.025	<0.10	<0.25	10.9
RC 14	6/29/2018	12.9	7.64	5.89	27.1	<0.10	<0.025	<0.10	0.722	13.8
RC 14	8/2/2018	21.7	7.30	5.56	23.7	<0.10	0.055	<0.10	0.848	17.3
RC 14	12/10/2018	35.1	7.13	10.63	7.3	<0.10	0.038	0.169	1.400	16.9
RC 14	4/15/2019	45.8	7.68	7.67	19.5	0.108	<0.025	<0.10	0.403	36.0
RC 14	6/12/2019	11.0	8.03	7.39	25.3	0.120	<0.025	<0.10	0.250	12.3
RC 14	8/27/2019	76.4	8.36	8.78	28.4	<0.10	<0.025	0.141	0.391	8.8
RC 14	10/29/2019	17.4	7.90	9.83	17.7	<0.10	<0.025	<0.10	0.478	10.6
RC 14	3/30/2020	12.9	8.10	10.01	21.9	<0.10	<0.025	<0.10	0.451	15.7
RC 14	6/16/2020	11.5	6.79	8.01	26.9	0.141	<0.030	<0.10	0.560	11.4
RC 14	9/21/2020	13.7	7.49	9.65	21.9	<0.100	<0.030	0.202	0.307	8.2
RC 14	12/17/2020	25.8	7.72	10.40	9.3	0.261	<0.030	<0.10	0.497	14.4
RC 14	3/18/2021	10.1	7.43	8.88	15.6	<0.100	<0.030	<0.100	0.779	51.6

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

NS - Not Sampled/Meter Not Working

Appendix III

Laboratory Report No. L1329097, dated March 30, 2021

Laboratory Report No. L1329105, dated March 30, 2021



ANALYTICAL REPORT

March 30, 2021

¹ Cp

S&ME - Huntsville

Sample Delivery Group: L1329097
Samples Received: 03/20/2021
Project Number: 4482-16-056
Description: Gadsden MS4

Report To: Ms. Emily Kennedy
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Entire Report Reviewed By:

Jason Romer
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	6
Sr: Sample Results	7
RC 14 L1329097-01	7
SS 5 L1329097-02	8
SME 1 L1329097-03	9
GD 9 L1329097-04	10
GD 7 L1329097-05	11
GD 5 L1329097-06	12
SME 5 L1329097-07	13
SME 6 L1329097-08	14
HB 3 L1329097-09	15
SME 4 L1329097-10	16
SME 11 L1329097-11	17
Qc: Quality Control Summary	18
Gravimetric Analysis by Method 2540 D-2011	18
Wet Chemistry by Method 351.2	20
Wet Chemistry by Method 353.2	24
Wet Chemistry by Method 365.4	26
Wet Chemistry by Method 4500P E-2011	28
Gl: Glossary of Terms	29
Al: Accreditations & Locations	30
Sc: Sample Chain of Custody	31



SAMPLE SUMMARY

RC 14 L1329097-01 WW

Collected by
Grant Williams

Collected date/time
03/18/21 13:35

Received date/time
03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640172	1	03/25/21 04:23	03/25/21 06:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1639790	1	03/24/21 20:28	03/25/21 18:30	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639863	1	03/24/21 17:16	03/24/21 17:16	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640693	1	03/24/21 20:28	03/26/21 03:17	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637886	1	03/20/21 12:22	03/20/21 12:22	BJD	Mt. Juliet, TN

SS 5 L1329097-02 WW

Collected by
Grant Williams

Collected date/time
03/18/21 12:55

Received date/time
03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640172	1	03/25/21 04:23	03/25/21 06:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1639790	1	03/24/21 20:28	03/25/21 18:32	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639863	1	03/24/21 17:18	03/24/21 17:18	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640693	1	03/24/21 20:28	03/26/21 02:57	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637886	1	03/20/21 12:23	03/20/21 12:23	BJD	Mt. Juliet, TN

SME 1 L1329097-03 WW

Collected by
Grant Williams

Collected date/time
03/18/21 11:50

Received date/time
03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640172	1	03/25/21 04:23	03/25/21 06:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1639790	1	03/24/21 20:28	03/25/21 18:37	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639863	1	03/24/21 17:19	03/24/21 17:19	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640693	1	03/24/21 20:28	03/26/21 03:00	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637886	1	03/20/21 12:23	03/20/21 12:23	BJD	Mt. Juliet, TN

GD 9 L1329097-04 WW

Collected by
Grant Williams

Collected date/time
03/18/21 11:35

Received date/time
03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640172	1	03/25/21 04:23	03/25/21 06:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1639790	1	03/24/21 20:28	03/25/21 18:41	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639863	1	03/24/21 17:23	03/24/21 17:23	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640693	1	03/24/21 20:28	03/26/21 03:21	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637886	1	03/20/21 12:23	03/20/21 12:23	BJD	Mt. Juliet, TN

GD 7 L1329097-05 WW

Collected by
Grant Williams

Collected date/time
03/18/21 11:25

Received date/time
03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640172	1	03/25/21 04:23	03/25/21 06:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1639790	1	03/24/21 20:28	03/25/21 18:44	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639987	1	03/25/21 19:01	03/25/21 19:01	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640693	1	03/24/21 20:28	03/26/21 03:24	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637886	1	03/20/21 12:24	03/20/21 12:24	BJD	Mt. Juliet, TN

SAMPLE SUMMARY

GD 5 L1329097-06 WW

Collected by Grant Williams
Collected date/time 03/18/21 11:05
Received date/time 03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640172	1	03/25/21 04:23	03/25/21 06:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1639794	1	03/24/21 20:29	03/26/21 05:39	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639987	1	03/25/21 19:02	03/25/21 19:02	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640857	1	03/24/21 20:29	03/26/21 04:01	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637886	1	03/20/21 12:24	03/20/21 12:24	BJD	Mt. Juliet, TN

SME 5 L1329097-07 WW

Collected by Grant Williams
Collected date/time 03/18/21 12:45
Received date/time 03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640172	1	03/25/21 04:23	03/25/21 06:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1639794	1	03/24/21 20:29	03/26/21 05:42	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639987	1	03/25/21 19:04	03/25/21 19:04	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640857	1	03/24/21 20:29	03/26/21 04:03	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637886	1	03/20/21 12:25	03/20/21 12:25	BJD	Mt. Juliet, TN

SME 6 L1329097-08 WW

Collected by Grant Williams
Collected date/time 03/18/21 13:20
Received date/time 03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640172	1	03/25/21 04:23	03/25/21 06:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1641425	1	03/26/21 14:28	03/28/21 00:22	JER	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639987	1	03/25/21 19:05	03/25/21 19:05	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640857	1	03/24/21 20:29	03/26/21 04:07	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637886	1	03/20/21 12:25	03/20/21 12:25	BJD	Mt. Juliet, TN

HB 3 L1329097-09 WW

Collected by Grant Williams
Collected date/time 03/18/21 10:40
Received date/time 03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640172	1	03/25/21 04:23	03/25/21 06:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1641424	1	03/26/21 20:00	03/28/21 01:29	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639987	1	03/25/21 19:08	03/25/21 19:08	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640857	1	03/24/21 20:29	03/26/21 04:09	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637886	1	03/20/21 12:25	03/20/21 12:25	BJD	Mt. Juliet, TN

SME 4 L1329097-10 WW

Collected by Grant Williams
Collected date/time 03/18/21 10:50
Received date/time 03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640172	1	03/25/21 04:23	03/25/21 06:19	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1639794	1	03/24/21 20:29	03/26/21 05:49	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639987	1	03/25/21 19:14	03/25/21 19:14	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640857	1	03/24/21 20:29	03/26/21 04:10	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637886	1	03/20/21 12:25	03/20/21 12:25	BJD	Mt. Juliet, TN

SAMPLE SUMMARY

SME 11 L1329097-11 WW

Collected by
Grant Williams

Collected date/time
03/18/21 10:45

Received date/time
03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640164	1	03/25/21 02:40	03/25/21 04:13	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1641424	1	03/26/21 20:00	03/28/21 01:31	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639987	1	03/25/21 19:15	03/25/21 19:15	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640857	1	03/24/21 20:29	03/26/21 04:15	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637886	1	03/20/21 12:26	03/20/21 12:26	BJD	Mt. Juliet, TN



CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Jason Romer
Project Manager

Sample Delivery Group (SDG) Narrative

The following analysis were performed from an unpreserved, insufficiently or inadequately preserved sample.

<u>Lab Sample ID</u>	<u>Project Sample ID</u>	<u>Method</u>
L1329097-08	SME 6	353.2, 351.2
L1329097-09	HB 3	353.2, 351.2
L1329097-11	SME 11	353.2, 351.2

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	51.6	J3	10.0	1	03/25/2021 06:19	WG1640172

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.779		0.250	1	03/25/2021 18:30	WG1639790

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND		0.100	1	03/24/2021 17:16	WG1639863

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	03/26/2021 03:17	WG1640693

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	03/20/2021 12:22	WG1637886

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	14.6		5.00	1	03/25/2021 06:19	WG1640172

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.570		0.250	1	03/25/2021 18:32	WG1639790

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.191		0.100	1	03/24/2021 17:18	WG1639863

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	03/26/2021 02:57	WG1640693

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	03/20/2021 12:23	WG1637886

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	90.4		10.0	1	03/25/2021 06:19	WG1640172

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.580	J5	0.250	1	03/25/2021 18:37	WG1639790

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.263	J6	0.100	1	03/24/2021 17:19	WG1639863

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	03/26/2021 03:00	WG1640693

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	0.112	T8	0.0300	1	03/20/2021 12:23	WG1637886

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	18.6		5.00	1	03/25/2021 06:19	WG1640172

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.576		0.250	1	03/25/2021 18:41	WG1639790

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.189		0.100	1	03/24/2021 17:23	WG1639863

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	03/26/2021 03:21	WG1640693

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND	T8	0.0300	1	03/20/2021 12:23	WG1637886

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	23.0		4.18	1	03/25/2021 06:19	WG1640172

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.387	J5	0.250	1	03/25/2021 18:44	WG1639790

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.312		0.100	1	03/25/2021 19:01	WG1639987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	03/26/2021 03:24	WG1640693

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND	T8	0.0300	1	03/20/2021 12:24	WG1637886

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	30.6		5.00	1	03/25/2021 06:19	WG1640172

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.600		0.250	1	03/26/2021 05:39	WG1639794

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.127		0.100	1	03/25/2021 19:02	WG1639987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	03/26/2021 04:01	WG1640857

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND	T8	0.0300	1	03/20/2021 12:24	WG1637886

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	23.0		5.00	1	03/25/2021 06:19	WG1640172

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.317		0.250	1	03/26/2021 05:42	WG1639794

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.316		0.100	1	03/25/2021 19:04	WG1639987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	03/26/2021 04:03	WG1640857

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	03/20/2021 12:25	WG1637886

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	47.2		10.0	1	03/25/2021 06:19	WG1640172

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.618		0.250	1	03/28/2021 00:22	WG1641425

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.358		0.100	1	03/25/2021 19:05	WG1639987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	03/26/2021 04:07	WG1640857

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	03/20/2021 12:25	WG1637886

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	23.0		5.00	1	03/25/2021 06:19	WG1640172

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.252		0.250	1	03/28/2021 01:29	WG1641424

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.369		0.100	1	03/25/2021 19:08	WG1639987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	03/26/2021 04:09	WG1640857

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND	T8	0.0300	1	03/20/2021 12:25	WG1637886

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	21.6		5.00	1	03/25/2021 06:19	WG1640172

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.331		0.250	1	03/26/2021 05:49	WG1639794

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.319		0.100	1	03/25/2021 19:14	WG1639987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	03/26/2021 04:10	WG1640857

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND	T8	0.0300	1	03/20/2021 12:25	WG1637886

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	24.0		3.33	1	03/25/2021 04:13	WG1640164

Sample Narrative:

L1329097-11 WG1640164: Used all contents of sample.

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.380		0.250	1	03/28/2021 01:31	WG1641424

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.362		0.100	1	03/25/2021 19:15	WG1639987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	03/26/2021 04:15	WG1640857

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND	T8	0.0300	1	03/20/2021 12:26	WG1637886

Method Blank (MB)

(MB) R3635886-1 03/25/21 04:13

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Suspended Solids	U		2.50	2.50

L1329102-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1329102-02 03/25/21 04:13 • (DUP) R3635886-3 03/25/21 04:13

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	217	224	1	3.17		5

L1329105-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1329105-01 03/25/21 04:13 • (DUP) R3635886-4 03/25/21 04:13

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	55.6	62.0	1	10.9	J3	5

Laboratory Control Sample (LCS)

(LCS) R3635886-2 03/25/21 04:13

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Suspended Solids	773	816	106	85.7-114	



Method Blank (MB)

(MB) R3635889-1 03/25/21 06:19

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Suspended Solids	U		2.50	2.50

L1329097-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1329097-01 03/25/21 06:19 • (DUP) R3635889-3 03/25/21 06:19

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	51.6	55.6	1	7.46	<u>J3</u>	5

L1329102-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1329102-04 03/25/21 06:19 • (DUP) R3635889-4 03/25/21 06:19

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	34.0	34.4	1	1.17		5

Laboratory Control Sample (LCS)

(LCS) R3635889-2 03/25/21 06:19

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Suspended Solids	773	844	109	85.7-114	



Method Blank (MB)

(MB) R3634931-1 03/25/21 18:21

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1329097-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1329097-02 03/25/21 18:32 • (DUP) R3634931-3 03/25/21 18:33

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	0.570	0.531	1	7.08		20

L1329097-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1329097-04 03/25/21 18:41 • (DUP) R3634931-6 03/25/21 18:43

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	0.576	0.641	1	10.7		20

Laboratory Control Sample (LCS)

(LCS) R3634931-2 03/25/21 18:22

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Kjeldahl Nitrogen, TKN	15.2	8.90	121	75.2-121	

L1329097-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1329097-03 03/25/21 18:37 • (MS) R3634931-4 03/25/21 18:38 • (MSD) R3634931-5 03/25/21 18:40

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Kjeldahl Nitrogen, TKN	5.00	0.580	6.23	6.24	113	113	1	90.0-110	J5	J5	0.160	20

L1329097-05 Original Sample (OS) • Matrix Spike (MS)

(OS) L1329097-05 03/25/21 18:44 • (MS) R3634931-7 03/25/21 18:45

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Kjeldahl Nitrogen, TKN	5.00	0.387	6.06	113	1	90.0-110	J5

Method Blank (MB)

(MB) R3635003-7 03/26/21 06:24

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1329097-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1329097-06 03/26/21 05:39 • (DUP) R3635003-3 03/26/21 05:41

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	0.600	0.652	1	8.31		20

L1329097-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1329097-10 03/26/21 05:49 • (DUP) R3635003-6 03/26/21 05:53

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	0.331	0.334	1	0.902		20

Laboratory Control Sample (LCS)

(LCS) R3635003-2 03/26/21 05:38

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Kjeldahl Nitrogen, TKN	15.2	8.10	110	75.2-121	

L1329097-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1329097-07 03/26/21 05:42 • (MS) R3635003-4 03/26/21 05:43 • (MSD) R3635003-5 03/26/21 05:45

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Kjeldahl Nitrogen, TKN	5.00	0.317	5.52	5.64	104	106	1	90.0-110			2.15	20

Method Blank (MB)

(MB) R3635502-1 03/28/21 01:26

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1330665-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1330665-01 03/28/21 02:10 • (DUP) R3635502-6 03/28/21 02:11

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	78.0	79.6	10	2.03		20

L1330665-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1330665-02 03/28/21 02:24 • (DUP) R3635502-7 03/28/21 02:26

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	30.4	30.6	2	0.656		20

Laboratory Control Sample (LCS)

(LCS) R3635502-2 03/28/21 01:28

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Kjeldahl Nitrogen, TKN	15.2	8.11	110	75.2-121	

L1330665-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1330665-01 03/28/21 01:54 • (MS) R3635502-3 03/28/21 01:59 • (MSD) R3635502-4 03/28/21 02:01

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Kjeldahl Nitrogen, TKN	5.00	34.5	35.5	34.5	20.0	0.000	1	90.0-110	E V	E V	2.86	20

L1330665-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1330665-02 03/28/21 02:02 • (MS) R3635502-5 03/28/21 02:05

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Kjeldahl Nitrogen, TKN	5.00	24.6	25.6	20.0	1	90.0-110	E V



Method Blank (MB)

(MB) R3636176-13 03/28/21 01:12

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1330214-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1330214-02 03/28/21 00:28 • (DUP) R3636176-8 03/28/21 00:29

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	0.653	0.773	1	16.8		20

L1330314-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1330314-01 03/28/21 00:59 • (DUP) R3636176-12 03/28/21 01:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	58.5	55.5	5	5.26		20

Laboratory Control Sample (LCS)

(LCS) R3636176-7 03/28/21 00:21

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Kjeldahl Nitrogen, TKN	15.2	8.34	113	75.2-121	

L1330310-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1330310-02 03/28/21 00:58 • (MS) R3636176-9 03/28/21 00:41 • (MSD) R3636176-10 03/28/21 00:43

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Kjeldahl Nitrogen, TKN	5.00	6.26	11.7	1.68	109	0.000	1	90.0-110		J3 J6	150	20

L1330383-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1330383-01 03/28/21 00:49 • (MS) R3636176-11 03/28/21 00:51

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Kjeldahl Nitrogen, TKN	5.00	1.17	6.26	102	1	90.0-110	

Method Blank (MB)

(MB) R3634441-2 03/24/21 16:42

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1326929-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1326929-02 03/24/21 16:52 • (DUP) R3634441-5 03/24/21 16:57

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Nitrate-Nitrite	0.797	0.803	1	0.750		20

L1329097-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1329097-04 03/24/21 17:23 • (DUP) R3634441-8 03/24/21 17:24

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Nitrate-Nitrite	0.189	0.189	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3634441-3 03/24/21 16:43

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Nitrate-Nitrite	2.50	2.35	94.0	90.0-110	

L1326929-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1326929-01 03/24/21 16:50 • (MS) R3634441-4 03/24/21 16:51

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Nitrate-Nitrite	2.50	0.982	3.26	91.1	1	90.0-110	

L1329097-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1329097-03 03/24/21 17:19 • (MS) R3634441-6 03/24/21 17:20 • (MSD) R3634441-7 03/24/21 17:22

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Nitrate-Nitrite	2.50	0.263	2.45	2.60	87.5	93.5	1	90.0-110	J6		5.94	20



Method Blank (MB)

(MB) R3634928-1 03/25/21 18:59

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1329097-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1329097-09 03/25/21 19:08 • (DUP) R3634928-4 03/25/21 19:09

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Nitrate-Nitrite	0.369	0.371	1	0.541		20

L1329105-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1329105-12 03/25/21 19:34 • (DUP) R3634928-5 03/25/21 19:36

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Nitrate-Nitrite	0.297	0.302	1	1.67		20

Laboratory Control Sample (LCS)

(LCS) R3634928-2 03/25/21 19:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Nitrate-Nitrite	2.50	2.35	94.0	90.0-110	

L1329097-08 Original Sample (OS) • Matrix Spike (MS)

(OS) L1329097-08 03/25/21 19:05 • (MS) R3634928-3 03/25/21 19:06

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>
Analyte	mg/l	mg/l	mg/l	%		%	
Nitrate-Nitrite	2.50	0.358	2.80	97.7	1	90.0-110	

L1329105-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1329105-13 03/25/21 19:37 • (MS) R3634928-6 03/25/21 19:38 • (MSD) R3634928-7 03/25/21 19:39

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Nitrate-Nitrite	2.50	0.439	2.89	2.94	98.0	100	1	90.0-110			1.72	20

Method Blank (MB)

(MB) R3634990-1 03/26/21 02:51

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphorus,Total	U		0.0350	0.100

L1329097-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1329097-02 03/26/21 02:57 • (DUP) R3634990-3 03/26/21 02:58

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	ND	ND	1	0.000		20

L1329097-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1329097-04 03/26/21 03:21 • (DUP) R3634990-6 03/26/21 03:23

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3634990-2 03/26/21 02:52

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Phosphorus,Total	4.26	1.24	99.2	81.2-118	

L1329097-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1329097-03 03/26/21 03:00 • (MS) R3634990-4 03/26/21 03:01 • (MSD) R3634990-5 03/26/21 03:02

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphorus,Total	2.50	ND	2.47	2.66	95.5	103	1	90.0-110			7.41	20

Method Blank (MB)

(MB) R3634994-1 03/26/21 03:58

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphorus,Total	U		0.0350	0.100

L1329097-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1329097-06 03/26/21 04:01 • (DUP) R3634994-3 03/26/21 04:02

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	ND	ND	1	0.000		20

L1329097-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1329097-10 03/26/21 04:10 • (DUP) R3634994-6 03/26/21 04:14

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3634994-2 03/26/21 04:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Phosphorus,Total	4.26	1.28	102	81.2-118	

L1329097-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1329097-07 03/26/21 04:03 • (MS) R3634994-4 03/26/21 04:05 • (MSD) R3634994-5 03/26/21 04:06

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphorus,Total	2.50	ND	2.40	2.35	96.0	94.0	1	90.0-110			2.11	20

Method Blank (MB)

(MB) R3632936-1 03/20/21 12:20

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1329097-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1329097-01 03/20/21 12:22 • (DUP) R3632936-3 03/20/21 12:22

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphate,Ortho	ND	ND	1	0.000		20

L1329097-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1329097-11 03/20/21 12:26 • (DUP) R3632936-4 03/20/21 12:26

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphate,Ortho	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3632936-2 03/20/21 12:20

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Phosphate,Ortho	0.245	0.238	97.3	85.0-115	

L1329105-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1329105-09 03/20/21 12:29 • (MS) R3632936-5 03/20/21 12:29 • (MSD) R3632936-6 03/20/21 12:30

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphate,Ortho	0.500	ND	0.534	0.529	104	103	1	80.0-120			0.941	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

S&ME - Huntsville

360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Report to:
Ms. Emily Kennedy

Project Description:
Gadsden M34

City/State
Collected:

Please Circle:
PT NT CF ET

Phone: **256-837-8882**

Client Project #
4482-16-056

Lab Project #
QOREHAL-448216056

Collected by (print):

Site/Facility ID #

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)

Quote #

Same Day Five Day
Next Day 3 Day (Rad Only)
Two Day 10 Day (Rad Only)
Three Day

Date Results Needed

No.
of
Cntrs

Sample ID

Comp/Grub

Matrix *

Depth

Date

Time

No.
of
Cntrs

AC 14

Grub

WW

5ft

3/18/21

1335

4

SS 5

WW

1

12:55

4

SME 1

WW

1

11:50

4

GD 9

WW

1

11:35

4

GD 7

WW

1

11:25

4

GD 5

WW

1

11:05

4

SME 5

WW

1

12:45

4

SME 6

WW

1

13:20

4

GD 3

WW

1

10:40

4

SME 4

WW

1

10:50

4

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other

Remarks:

pH Temp

Flow Other

Samples returned via:
UPS FedEx Courier

Tracking #

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Trip Blank Received: Yes/No

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Trip Blank Received: Yes/No

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: Time:

Hold:

Condition:

Analysis / Container / Preservation

Chain of Custody Page 1 of 1



12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-718-5858
Phone: 800-747-5858
Fax: 615-758-0859



SNR # **L13 29097**
C055

Account: **QOREHAL**

Template: **T114559**

Project: **P819620**

PSI: 034 - Craig Cochran

PS: **12/28/20 KB**

Shipped Via: **FedEx Ground**

Remarks Sample # Lab only

Sample Receipt Checklist

CO2 Seal Present/Intact: ☒ Y ☐ N
COC Signed/Accurate: ☒ Y ☐ N
Bottles Active/Intact: ☒ Y ☐ N
Current bottles used: ☒ Y ☐ N
Sufficient volume sent: ☒ Y ☐ N
If Applicable
VCA Test Headspace: ☒ Y ☐ N
Preservation Correct/Checked: ☒ Y ☐ N
RAD Screen <0.3 mR/hr: ☒ Y ☐ N

If preservation required by Log: Date/Time

Condition:

NCF / OK



ANALYTICAL REPORT

April 01, 2021



S&ME - Huntsville

Sample Delivery Group: L1329105
Samples Received: 03/20/2021
Project Number: 4482-16-056
Description: Gadsden MS4

Report To: Ms. Emily Kennedy
360 D Quality Circle NW
Suite 450
Huntsville, AL 35806

Entire Report Reviewed By:

Jason Romer
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	6
Sr: Sample Results	7
AT 5 L1329105-01	7
GD 8 L1329105-02	8
RC 2 L1329105-03	9
SS 13 L1329105-04	10
SS 14 L1329105-05	11
GD 12 L1329105-06	12
SME2 L1329105-07	13
GD 6 L1329105-08	14
CO 15 L1329105-09	15
SME 7 L1329105-10	16
SME 8 L1329105-11	17
SME 9 L1329105-12	18
SME 10 L1329105-13	19
Qc: Quality Control Summary	20
Gravimetric Analysis by Method 2540 D-2011	20
Wet Chemistry by Method 351.2	21
Wet Chemistry by Method 353.2	24
Wet Chemistry by Method 365.4	25
Wet Chemistry by Method 4500P E-2011	26
Gl: Glossary of Terms	28
Al: Accreditations & Locations	29
Sc: Sample Chain of Custody	30



SAMPLE SUMMARY

AT 5 L1329105-01 WW

Collected by
Elizabeth Bavis

Collected date/time
03/18/21 14:25

Received date/time
03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640164	1	03/25/21 02:40	03/25/21 04:13	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1639794	1	03/24/21 20:29	03/26/21 05:55	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639987	1	03/25/21 19:16	03/25/21 19:16	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640857	1	03/24/21 20:29	03/26/21 04:16	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637886	1	03/20/21 12:26	03/20/21 12:26	BJD	Mt. Juliet, TN

GD 8 L1329105-02 WW

Collected by
Elizabeth Bavis

Collected date/time
03/18/21 13:00

Received date/time
03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640164	1	03/25/21 02:40	03/25/21 04:13	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1641424	1	03/26/21 20:00	03/28/21 01:32	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639987	1	03/25/21 19:18	03/25/21 19:18	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640857	1	03/24/21 20:29	03/26/21 04:18	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637886	1	03/20/21 12:27	03/20/21 12:27	BJD	Mt. Juliet, TN

RC 2 L1329105-03 WW

Collected by
Elizabeth Bavis

Collected date/time
03/18/21 13:15

Received date/time
03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640164	1	03/25/21 02:40	03/25/21 04:13	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1639794	1	03/24/21 20:29	03/26/21 06:00	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639987	1	03/25/21 19:19	03/25/21 19:19	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640857	1	03/24/21 20:29	03/26/21 04:19	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637886	1	03/20/21 12:28	03/20/21 12:28	BJD	Mt. Juliet, TN

SS 13 L1329105-04 WW

Collected by
Elizabeth Bavis

Collected date/time
03/18/21 13:50

Received date/time
03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640164	1	03/25/21 02:40	03/25/21 04:13	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1639794	1	03/24/21 20:29	03/26/21 06:01	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639987	1	03/25/21 19:20	03/25/21 19:20	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640857	1	03/24/21 20:29	03/26/21 04:20	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637886	1	03/20/21 12:28	03/20/21 12:28	BJD	Mt. Juliet, TN

SS 14 L1329105-05 WW

Collected by
Elizabeth Bavis

Collected date/time
03/18/21 14:00

Received date/time
03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640164	1	03/25/21 02:40	03/25/21 04:13	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1639794	1	03/24/21 20:29	03/26/21 06:02	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639987	1	03/25/21 19:22	03/25/21 19:22	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640857	1	03/24/21 20:29	03/26/21 04:21	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637886	1	03/20/21 12:28	03/20/21 12:28	BJD	Mt. Juliet, TN

SAMPLE SUMMARY

GD 12 L1329105-06 WW

Collected by
Elizabeth Bavis

Collected date/time
03/18/21 13:30

Received date/time
03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640164	1	03/25/21 02:40	03/25/21 04:13	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1639794	1	03/24/21 20:29	03/26/21 06:04	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639987	1	03/25/21 19:23	03/25/21 19:23	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640857	1	03/24/21 20:29	03/26/21 04:23	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637886	1	03/20/21 12:29	03/20/21 12:29	BJD	Mt. Juliet, TN

SME2 L1329105-07 WW

Collected by
Elizabeth Bavis

Collected date/time
03/18/21 12:30

Received date/time
03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640164	1	03/25/21 02:40	03/25/21 04:13	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1639794	1	03/24/21 20:29	03/26/21 06:05	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639987	1	03/25/21 19:24	03/25/21 19:24	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640857	1	03/24/21 20:29	03/26/21 04:24	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637886	1	03/20/21 12:29	03/20/21 12:29	BJD	Mt. Juliet, TN

GD 6 L1329105-08 WW

Collected by
Elizabeth Bavis

Collected date/time
03/18/21 12:45

Received date/time
03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640164	1	03/25/21 02:40	03/25/21 04:13	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1639794	1	03/24/21 20:29	03/26/21 06:09	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639987	1	03/25/21 19:25	03/25/21 19:25	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640857	1	03/24/21 20:29	03/26/21 04:28	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637886	1	03/20/21 12:29	03/20/21 12:29	BJD	Mt. Juliet, TN

CO 15 L1329105-09 WW

Collected by
Elizabeth Bavis

Collected date/time
03/18/21 12:14

Received date/time
03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640164	1	03/25/21 02:40	03/25/21 04:13	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1639794	1	03/24/21 20:29	03/26/21 06:10	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639987	1	03/25/21 19:31	03/25/21 19:31	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640857	1	03/24/21 20:29	03/26/21 04:29	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637886	1	03/20/21 12:29	03/20/21 12:29	BJD	Mt. Juliet, TN

SME 7 L1329105-10 WW

Collected by
Elizabeth Bavis

Collected date/time
03/18/21 11:30

Received date/time
03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640164	1	03/25/21 02:40	03/25/21 04:13	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1643359	1	03/31/21 12:00	04/01/21 02:25	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639987	1	03/25/21 19:32	03/25/21 19:32	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640857	1	03/24/21 20:29	03/26/21 04:30	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637889	1	03/20/21 12:53	03/20/21 12:53	BJD	Mt. Juliet, TN

SAMPLE SUMMARY

SME 8 L1329105-11 WW

Collected by
Elizabeth Bavis

Collected date/time
03/18/21 10:47

Received date/time
03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640164	1	03/25/21 02:40	03/25/21 04:13	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1641424	1	03/26/21 20:00	03/28/21 01:33	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639987	1	03/25/21 19:33	03/25/21 19:33	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640857	1	03/24/21 20:29	03/26/21 04:32	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637889	1	03/20/21 12:54	03/20/21 12:54	BJD	Mt. Juliet, TN

SME 9 L1329105-12 WW

Collected by
Elizabeth Bavis

Collected date/time
03/18/21 14:00

Received date/time
03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640164	1	03/25/21 02:40	03/25/21 04:13	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1639794	1	03/24/21 20:29	03/26/21 06:15	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639987	1	03/25/21 19:34	03/25/21 19:34	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640857	1	03/24/21 20:29	03/26/21 04:33	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637889	1	03/20/21 12:54	03/20/21 12:54	BJD	Mt. Juliet, TN

SME 10 L1329105-13 WW

Collected by
Elizabeth Bavis

Collected date/time
03/18/21 10:47

Received date/time
03/20/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 D-2011	WG1640164	1	03/25/21 02:40	03/25/21 04:13	MMF	Mt. Juliet, TN
Wet Chemistry by Method 351.2	WG1641424	1	03/26/21 20:00	03/28/21 01:35	SDL	Mt. Juliet, TN
Wet Chemistry by Method 353.2	WG1639987	1	03/25/21 19:37	03/25/21 19:37	KEG	Mt. Juliet, TN
Wet Chemistry by Method 365.4	WG1640857	1	03/24/21 20:29	03/26/21 04:34	SDL	Mt. Juliet, TN
Wet Chemistry by Method 4500P E-2011	WG1637889	1	03/20/21 12:54	03/20/21 12:54	BJD	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Jason Romer
Project Manager

Sample Delivery Group (SDG) Narrative

The following analysis were performed from an unpreserved, insufficiently or inadequately preserved sample.

<u>Lab Sample ID</u>	<u>Project Sample ID</u>	<u>Method</u>
L1329105-02	GD 8	351.2
L1329105-10	SME 7	353.2, 351.2
L1329105-11	SME 8	353.2, 351.2
L1329105-13	SME 10	353.2, 351.2

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	55.6	J3	10.0	1	03/25/2021 04:13	WG1640164

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	ND		0.250	1	03/26/2021 05:55	WG1639794

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.310		0.100	1	03/25/2021 19:16	WG1639987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	03/26/2021 04:16	WG1640857

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	0.0500		0.0300	1	03/20/2021 12:26	WG1637886

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	102		5.00	1	03/25/2021 04:13	WG1640164

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.312		0.250	1	03/28/2021 01:32	WG1641424

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.178		0.100	1	03/25/2021 19:18	WG1639987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	03/26/2021 04:18	WG1640857

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	03/20/2021 12:27	WG1637886

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	26.8		5.00	1	03/25/2021 04:13	WG1640164

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.611		0.250	1	03/26/2021 06:00	WG1639794

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.145		0.100	1	03/25/2021 19:19	WG1639987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	03/26/2021 04:19	WG1640857

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	03/20/2021 12:28	WG1637886

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	16.5		3.33	1	03/25/2021 04:13	WG1640164

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.926		0.250	1	03/26/2021 06:01	WG1639794

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.163		0.100	1	03/25/2021 19:20	WG1639987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	03/26/2021 04:20	WG1640857

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	03/20/2021 12:28	WG1637886

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	19.8		5.00	1	03/25/2021 04:13	WG1640164

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.670		0.250	1	03/26/2021 06:02	WG1639794

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.189		0.100	1	03/25/2021 19:22	WG1639987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	03/26/2021 04:21	WG1640857

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	0.0480		0.0300	1	03/20/2021 12:28	WG1637886

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	17.6		5.00	1	03/25/2021 04:13	WG1640164

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.621		0.250	1	03/26/2021 06:04	WG1639794

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.163		0.100	1	03/25/2021 19:23	WG1639987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	03/26/2021 04:23	WG1640857

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	03/20/2021 12:29	WG1637886

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	13.8		2.65	1	03/25/2021 04:13	WG1640164

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.528		0.250	1	03/26/2021 06:05	WG1639794

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.193		0.100	1	03/25/2021 19:24	WG1639987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	03/26/2021 04:24	WG1640857

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	0.0330		0.0300	1	03/20/2021 12:29	WG1637886

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	31.6		5.00	1	03/25/2021 04:13	WG1640164

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.364		0.250	1	03/26/2021 06:09	WG1639794

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.241		0.100	1	03/25/2021 19:25	WG1639987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	0.183		0.100	1	03/26/2021 04:28	WG1640857

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND		0.0300	1	03/20/2021 12:29	WG1637886

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	26.0		5.00	1	03/25/2021 04:13	WG1640164

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.554		0.250	1	03/26/2021 06:10	WG1639794

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.193		0.100	1	03/25/2021 19:31	WG1639987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	03/26/2021 04:29	WG1640857

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND	T8	0.0300	1	03/20/2021 12:29	WG1637886

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	17.7		2.78	1	03/25/2021 04:13	WG1640164

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.460		0.250	1	04/01/2021 02:25	WG1643359

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.183		0.100	1	03/25/2021 19:32	WG1639987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	03/26/2021 04:30	WG1640857

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	ND	T8	0.0300	1	03/20/2021 12:53	WG1637889

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	78.2		5.00	1	03/25/2021 04:13	WG1640164

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.407		0.250	1	03/28/2021 01:33	WG1641424

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.429		0.100	1	03/25/2021 19:33	WG1639987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	0.270		0.100	1	03/26/2021 04:32	WG1640857

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	0.0930	T8	0.0300	1	03/20/2021 12:54	WG1637889

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	77.4		5.00	1	03/25/2021 04:13	WG1640164

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.356		0.250	1	03/26/2021 06:15	WG1639794

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.297		0.100	1	03/25/2021 19:34	WG1639987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	ND		0.100	1	03/26/2021 04:33	WG1640857

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	0.0560		0.0300	1	03/20/2021 12:54	WG1637889

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	76.8		10.0	1	03/25/2021 04:13	WG1640164

Wet Chemistry by Method 351.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	0.608		0.250	1	03/28/2021 01:35	WG1641424

Wet Chemistry by Method 353.2

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	0.439		0.100	1	03/25/2021 19:37	WG1639987

Wet Chemistry by Method 365.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphorus, Total	0.322		0.100	1	03/26/2021 04:34	WG1640857

Wet Chemistry by Method 4500P E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Phosphate, Ortho	0.0910	T8	0.0300	1	03/20/2021 12:54	WG1637889

Method Blank (MB)

(MB) R3635886-1 03/25/21 04:13

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Suspended Solids	U		2.50	2.50

L1329102-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1329102-02 03/25/21 04:13 • (DUP) R3635886-3 03/25/21 04:13

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	217	224	1	3.17		5

L1329105-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1329105-01 03/25/21 04:13 • (DUP) R3635886-4 03/25/21 04:13

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Suspended Solids	55.6	62.0	1	10.9	<u>J3</u>	5

Laboratory Control Sample (LCS)

(LCS) R3635886-2 03/25/21 04:13

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Suspended Solids	773	816	106	85.7-114	



Method Blank (MB)

(MB) R3635003-7 03/26/21 06:24

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1329097-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1329097-06 03/26/21 05:39 • (DUP) R3635003-3 03/26/21 05:41

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	0.600	0.652	1	8.31		20

L1329097-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1329097-10 03/26/21 05:49 • (DUP) R3635003-6 03/26/21 05:53

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	0.331	0.334	1	0.902		20

Laboratory Control Sample (LCS)

(LCS) R3635003-2 03/26/21 05:38

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Kjeldahl Nitrogen, TKN	15.2	8.10	110	75.2-121	

L1329097-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1329097-07 03/26/21 05:42 • (MS) R3635003-4 03/26/21 05:43 • (MSD) R3635003-5 03/26/21 05:45

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Kjeldahl Nitrogen, TKN	5.00	0.317	5.52	5.64	104	106	1	90.0-110			2.15	20



Method Blank (MB)

(MB) R3635502-1 03/28/21 01:26

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1330665-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1330665-01 03/28/21 02:10 • (DUP) R3635502-6 03/28/21 02:11

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	78.0	79.6	10	2.03		20

L1330665-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1330665-02 03/28/21 02:24 • (DUP) R3635502-7 03/28/21 02:26

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	30.4	30.6	2	0.656		20

Laboratory Control Sample (LCS)

(LCS) R3635502-2 03/28/21 01:28

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Kjeldahl Nitrogen, TKN	15.2	8.11	110	75.2-121	

L1330665-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1330665-01 03/28/21 01:54 • (MS) R3635502-3 03/28/21 01:59 • (MSD) R3635502-4 03/28/21 02:01

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Kjeldahl Nitrogen, TKN	5.00	34.5	35.5	34.5	20.0	0.000	1	90.0-110	E V	E V	2.86	20

L1330665-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1330665-02 03/28/21 02:02 • (MS) R3635502-5 03/28/21 02:05

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Kjeldahl Nitrogen, TKN	5.00	24.6	25.6	20.0	1	90.0-110	E V

Method Blank (MB)

(MB) R3636887-1 04/01/21 02:22

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Kjeldahl Nitrogen, TKN	U		0.140	0.250

L1331702-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1331702-01 04/01/21 02:27 • (DUP) R3636887-3 04/01/21 02:29

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	1.31	1.23	1	6.30		20

L1331702-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1331702-02 04/01/21 02:30 • (DUP) R3636887-4 04/01/21 02:31

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Kjeldahl Nitrogen, TKN	1.23	1.31	1	6.30		20

Laboratory Control Sample (LCS)

(LCS) R3636887-2 04/01/21 02:23

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Kjeldahl Nitrogen, TKN	15.2	8.68	118	75.2-121	

L1331702-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1331702-03 04/01/21 02:33 • (MS) R3636887-5 04/01/21 02:34 • (MSD) R3636887-6 04/01/21 02:38

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Kjeldahl Nitrogen, TKN	5.00	1.43	6.97	6.95	111	110	1	90.0-110	J5		0.287	20

L1331702-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1331702-04 04/01/21 02:40 • (MS) R3636887-7 04/01/21 02:41

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Kjeldahl Nitrogen, TKN	5.00	0.336	5.83	110	1	90.0-110	

Method Blank (MB)

(MB) R3634928-1 03/25/21 18:59

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Nitrate-Nitrite	U		0.0500	0.100

L1329097-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1329097-09 03/25/21 19:08 • (DUP) R3634928-4 03/25/21 19:09

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Nitrate-Nitrite	0.369	0.371	1	0.541		20

L1329105-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1329105-12 03/25/21 19:34 • (DUP) R3634928-5 03/25/21 19:36

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Nitrate-Nitrite	0.297	0.302	1	1.67		20

Laboratory Control Sample (LCS)

(LCS) R3634928-2 03/25/21 19:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Nitrate-Nitrite	2.50	2.35	94.0	90.0-110	

L1329097-08 Original Sample (OS) • Matrix Spike (MS)

(OS) L1329097-08 03/25/21 19:05 • (MS) R3634928-3 03/25/21 19:06

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>
Analyte	mg/l	mg/l	mg/l	%		%	
Nitrate-Nitrite	2.50	0.358	2.80	97.7	1	90.0-110	

L1329105-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1329105-13 03/25/21 19:37 • (MS) R3634928-6 03/25/21 19:38 • (MSD) R3634928-7 03/25/21 19:39

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Nitrate-Nitrite	2.50	0.439	2.89	2.94	98.0	100	1	90.0-110			1.72	20



Method Blank (MB)

(MB) R3634994-1 03/26/21 03:58

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphorus,Total	U		0.0350	0.100

L1329097-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1329097-06 03/26/21 04:01 • (DUP) R3634994-3 03/26/21 04:02

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	ND	ND	1	0.000		20

L1329097-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1329097-10 03/26/21 04:10 • (DUP) R3634994-6 03/26/21 04:14

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphorus,Total	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3634994-2 03/26/21 04:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Phosphorus,Total	4.26	1.28	102	81.2-118	

L1329097-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1329097-07 03/26/21 04:03 • (MS) R3634994-4 03/26/21 04:05 • (MSD) R3634994-5 03/26/21 04:06

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphorus,Total	2.50	ND	2.40	2.35	96.0	94.0	1	90.0-110			2.11	20

Method Blank (MB)

(MB) R3632936-1 03/20/21 12:20

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1329097-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1329097-01 03/20/21 12:22 • (DUP) R3632936-3 03/20/21 12:22

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphate,Ortho	ND	ND	1	0.000		20

L1329097-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1329097-11 03/20/21 12:26 • (DUP) R3632936-4 03/20/21 12:26

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphate,Ortho	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3632936-2 03/20/21 12:20

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Phosphate,Ortho	0.245	0.238	97.3	85.0-115	

L1329105-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1329105-09 03/20/21 12:29 • (MS) R3632936-5 03/20/21 12:29 • (MSD) R3632936-6 03/20/21 12:30

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphate,Ortho	0.500	ND	0.534	0.529	104	103	1	80.0-120			0.941	20

Method Blank (MB)

(MB) R3632939-1 03/20/21 12:53

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Phosphate,Ortho	U		0.0140	0.0300

L1329105-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1329105-10 03/20/21 12:53 • (DUP) R3632939-3 03/20/21 12:54

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Phosphate,Ortho	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3632939-2 03/20/21 12:53

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Phosphate,Ortho	0.245	0.239	97.8	85.0-115	

L1329105-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1329105-13 03/20/21 12:54 • (MS) R3632939-4 03/20/21 12:55 • (MSD) R3632939-5 03/20/21 12:55

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Phosphate,Ortho	0.500	0.0910	0.601	0.602	102	102	1	80.0-120			0.166	20



GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

S&ME - Huntsville

360 D Quality Circle NW
Suite 450

Huntsville, AL 35896

Report to:
Ms. Emily Kennedy

Project Description:
Gadsden MS4

Phone: 256-837-8882

Client Project #
4482-16-056

Lab Project #
QOREHAL-448216056

Collected by (print):

E. Davis

Site/Facility ID #

P.O. #

Collected by (signature):

[Signature]

Rush? (Lab MUST Be Notified)

Same Day Five Day
Next Day 5 Day (Rad Only)
Two Day 10 Day (Rad Only)
Three Day

Quote #

Date Results Needed

No. of
Cntrs

Immediately
Packed on ice: Y X

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs
AT 5	Grab	WW	Surf	3/18/21	1425	4
GD 4		WW			1300	4
RC 2		WW			1305	4
SS 13		WW			1300	4
SS 14		WW			1400	4
GD 12		WW			1330	4
~~GD 12~~		WW			~~1330~~	4
SME2		WW		1130	1245	4
GD 8		WW		1245	1245	4
CO 13		WW			1244	4

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other

Remarks:

pH Temp

Flow Other

Samples returned via:

UPS FedEx Courier

Tracking #

Relinquished by: (Signature)

[Signature]

Date:

3/19/21

Time:

1:00

Received by: (Signature)

Trip Blank Received: Yes No

HL2/MSCH
TR1

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: 13.1 = 1.4 °C
Bottles Received: 52

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: 3-20-21 Time: 1000

Hold:

Condition:

NCF 100

Analysis / Container / Preservative

Pres
Cntr

PORTHO 100ml Amb NoPres

PT 250mlHDPE-H2SO4

TKN / NO2NO3 250mlHDPE-H2SO4

TSS 1L-HDPE NoPres

Chain of Custody Page 1 of 1



12055 Lebanon Rd
Mount Laurel, TN 37122
Phone: 615-758-5858
Phone: 800-767-5858
Fax: 615-758-5858



SCG # 1329105
J173

Account: QOREHAL

Template: T114559

Prelog: P819620

PM: 034 - Craig Cethron

PR: 12/28/20 KB

Shipped Via: FedEx Ground

Remarks Sample # (Lab only)

-01
-02
-03
-04
-05
-06
-07
-08
-09

Sample Receipt Checklist

COC Seal Present/Intact: MP Y
COC Signed/Accurate: MP Y
Bottles arrive intact: MP Y
Correct bottles used: MP Y
Sufficient volume sent: MP Y
If Applicable
VCA Error Readings: MP Y
Preservation Concept/Checked: MP Y
RAD Screen 40.5 mR/hr: MP Y

If preservation required by Login: Date/Time

L1329105 QOREHAL NCF PM

Shortholds

Time estimate: 0h

Time spent: 0h

Members

PM Paul Minnich (responsible)

CC Craig Cothron

- ☐ Login Clarification needed
- ☐ Chain of custody is incomplete
- ☐ Please specify Metals requested
- ☐ Please specify TCLP requested
- ☐ Received additional samples not listed on COC
- ☐ Sample IDs on containers do not match IDs on COC
- ☒ Client did not "X" analysis
- ☐ Chain of Custody is missing
- ☐ If no COC: Received by: _____
- ☐ If no COC: Date/Time: _____
- ☐ If no COC: Temp./Cont.Rec./pH: _____
- ☐ If no COC: Carrier: _____
- ☐ If no COC: Tracking #: _____
- ☐ Client informed by call
- ☒ Client informed by Email
- ☐ Client informed by Voicemail
- ☒ Date/Time: 3/22/21 1250 _____
- ☒ PM initials: cc _____
- ☒ Client Contact: Deborah Jones _____

Comments

Paul Minnich

20 March 2021 11:11 AM

Samples -11 through -13 have no tests marked and no hold comments. Logged per P#

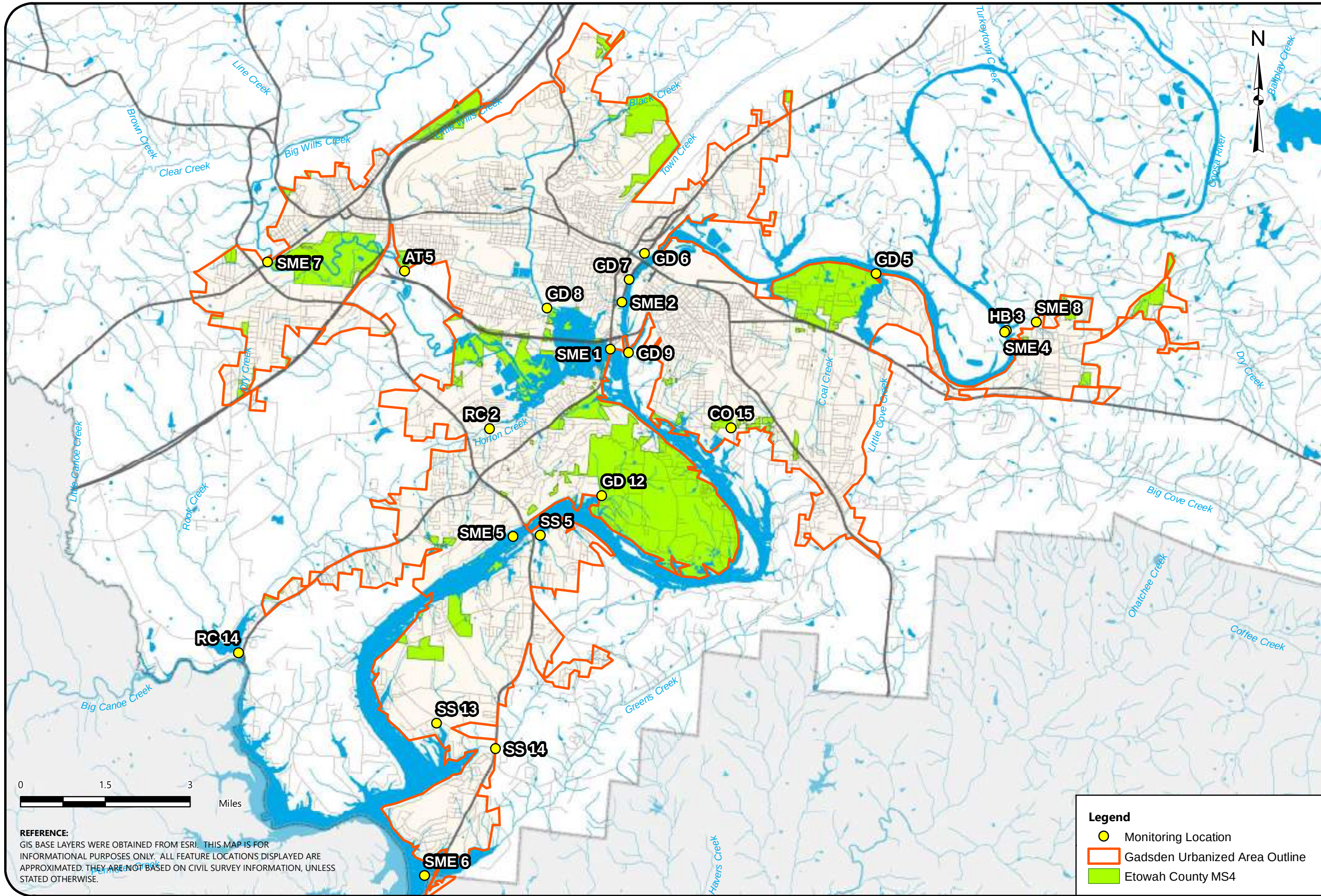
Craig Cothron

22 March 2021 12:51 PM

Run for same analysis as other samples.

Appendix J – Etowah County (ALR040009)

Appendix J-1 – Etowah County Figures



REFERENCE:
GIS BASE LAYERS WERE OBTAINED FROM ESRI. THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS DISPLAYED ARE APPROXIMATED. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.

- Legend**
- Monitoring Location
 - Gadsden Urbanized Area Outline
 - Etowah County MS4

ETOWAH COUNTY MS4 BOUNDARIES

GADSDEN ALABAMA URBANIZED AREA
PHASE II SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM
NPDES GENERAL PERMIT ALR040009

SCALE:
1:100,000

DATE:
5-28-21

PROJECT NUMBER
4482-20-045

FIGURE NO.

1

Appendix J-2 – Etowah County Control Measure Tables

ETOWAH COUNTY						
CONTROL MEASURE 1 - PUBLIC EDUCATION AND OUTREACH						
See Section 10.1 of the Annual Report and the SWMP						
ACTIVITY NO.	STRATEGIES	2020-2021 IMPLEMENTATION STATUS	2021-2022 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
1	Storm Water Web Page: Update the Storm Water web page on the Etowah County website	The County maintained information on Storm Water Management on the web page. The 2018-2019 Annual Report was added to the webpage. 88 page views (72 unique) were recorded for the webpage.	The County will maintain the webpage by adding additional information such as articles, pictures, and links to the web page.	The County Website, Engineering webpage, and the web site recorded hit information are attached. (See Document 1-1)	http://etowahcounty.org/engineering/storm-water/	NO
2	Annual Report and SWMPP Availability: Provide the SWMPP and current Annual Report for public viewing on the County's website	The current Annual Report and the 2017 SWMPP are available for viewing on the County's website. 88 page views (72 unique) were recorded for the stormwater webpage.	The County will provide the current Annual Report and SWMPP for public viewing on the County's website.	The County Website, Engineering webpage, and the web site recorded hit information are attached. (See Document 1-1)	http://etowahcounty.org/engineering/storm-water/	NO
3	Partnerships in Educational and Public Involvement Events: Partner with Keep Etowah Beautiful (KEB), Clean Water Partnership of Alabama, and Alabama Power to distribute educational material and promote events	The County participated and/or contributed monetarily in the following events that were held: Message in a Bottle and the Water Festival . The Great American Cleanup and Renew Our Rivers were cancelled due to Covid-19	The County will continue partnership efforts and participation in community events.	See Activities 3a and 3b Keep Etowah Beautiful website information is also attached. (See Document 1-2)		NO
3a	Partnerships in Educational and Public Involvement Events: Message in a Bottle	November 4 - December 13, 2020 Promoted by Etowah County's funding of Keep Etowah Beautiful. The event is a competition for students with winners being announced at an annual awards breakfast.	The County will continue partnership efforts and participation in community events.	Participation totals are listed on the Keep Etowah Beautiful Community Programs for 2020 Summary Page and is attached. (See Document 1-2)	970 K-12 Grade Students 54 Teachers	NO
3b	Partnerships in Educational and Public Involvement Events: Renew Our Rivers	Canceled due to Covid.	The County will continue partnership efforts and participation in community events.	Renew our Rivers cancellation notice and the original planning information are attached. (See Document 1-3)	Renew Our Rivers was cancelled due to Covid-19. 0 total participants for event. 0 tons collected in 2020 event for entire county. 0 Passenger Tires, 0 Tractor Tires, 0 Truck Tires	NO
4	Water Quality Awareness Week: Promote an annual <i>Water Quality Awareness Week</i> through County resources	The county did not promote or participate in a Water Quality Awareness Week during the reporting period. All activities were canceled due to Covid.	The County will promote the 2021 <i>Water Quality Awareness Week</i> .	All activities were canceled due to Covid. No Documentation is attached.		NO

ETOWAH COUNTY						
CONTROL MEASURE 1 - PUBLIC EDUCATION AND OUTREACH						
See Section 10.1 of the Annual Report and the SWMP						
ACTIVITY NO.	STRATEGIES	2020-2021 IMPLEMENTATION STATUS	2021-2022 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
5	Etowah County Water Festival: Annually promote and participate in an annual <i>Etowah County Water Festival</i>	The 2020 <i>Etowah County Water Festival</i> was held virtually on February 12, 2021 . This is normally held at Gadsden State Community College. Due to Covid-19, information was sent to area schools and were covered in the classroom by teachers.	The County will participate in and promote the 2021 <i>Etowah County Water Festival</i> .	Participation totals are listed on the Keep Etowah Beautiful Community Programs for 2020 Summary Page and is attached. (See Document 1-2)	55 Adult Volunteers 61 - 4th Grade Teachers 1189 - 4th Grade Students	NO
6	Great American Clean-up: Partner with Keep Etowah Beautiful	The <i>Great American Cleanup</i> was canceled due to Covid.	The County will participate in and promote the 2021 <i>Great American Cleanup</i> .	The GAC cancellation confirmation is included the KEB events summary. (See Document 1-2)	Volunteers - 0 Total Tonnage - 0	NO
7	Partner with the Etowah County NRCS: Partner with NRCS to educate and assist agricultural land users within the county on how agricultural runoff contributes to organic enrichment and excess nutrient loading in Lake Neely Henry	There were no people referred to the NRCS in 2020. The Engineering office was closed to the public due to Covid. NRCS estimated they distribute 200+ copies of educational materials related to storm water and soil preservation in addition to callers that are directed to the information on their website.	Etowah County will continue to partner with NRCS.	The available information was updated. Flyers, brochures and available materials are attached. (See Document 1-4)	NRCS also has educational materials available in their office. The County points citizens to the NRCS for additional information.	NO
8	Gadsden-Etowah MS4 Steering Committee Meetings: Coordinate and/or participate in meetings as a committee member for entity updates, networking and coordination of activities and BMP strategies	A Steering Committee Meeting was held on October 14, 2020; however, a County representative did not attend.	An annual meeting will be held in 2020-2021 reporting period.	The agenda for the 10/14/20 meeting is attached. (See Document 1-5)		NO
9	Educational Materials on Construction Site Storm Water Impacts: Provide the educational pamphlet to individuals requesting building/development permits	0 permit issued during the reporting period. 0 Educational materials provided to permittees	The County will provide educational materials to individuals requesting building/development permits.	The available information was updated. Flyers, brochures and available materials are attached. (See Document 1-4)		NO
10	Public Reporting and Tracking System: Provide a contact number on the County's Storm Water Management webpage for the public to provide input on the development, revision, and implementation of the SWMPP	5 inquiries received 5 complaints addressed 5 reports contained required information to find and address the suspected problem	The County will publicize the reporting phone number on the County's website and track received reports and the County's responses to the received reports. The County will evaluate the current public reporting and tracking methods.	The Storm Water web page, incident tracking sheet, and summary of notable discharge investigations are attached. (See Documents 1-1, 1-6, and 1-7)		NO

ETOWAH COUNTY						
CONTROL MEASURE 1 - PUBLIC EDUCATION AND OUTREACH						
See Section 10.1 of the Annual Report and the SWMP						
ACTIVITY NO.	STRATEGIES	2020-2021 IMPLEMENTATION STATUS	2021-2022 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
11	No Dumping Signs: Maintain signs and place additional signs in problem areas as necessary	Signs are placed upon request. If signs are ineffective, the litter enforcement agent becomes involved. If the area continues to have litter issues, it is considered for surveillance. The County has two cameras that are rotated to different areas on an as needed basis.	The County will continue to place or maintain these signs in problem areas.	Pictures of the sign and typical placement are attached. (See Document 1-8)	The County maintains approximately 50 signs. The County maintains "No Dumping \$500 fine" signs and these No Dumping areas are under video surveillance signs. These are put out in the County through Keep Etowah Beautiful as part of the effort to eliminate/reduce unauthorized disposal of waste.	NO
12	Additional Strategy: Free Garbage Disposal Days	Advanced Disposal had open-top containers at several locations across the County on May 2, August 1 and November 7, 2020 and February 6, 2021 for residents in unincorporated areas of the County. Event is advertised through public notices and at the Commission Meetings.	The County will continue to support this effort in order to reduce illegal dumping of materials.	Public notices for each date are attached. (See Document 1-9)		NO
13	Additional Strategy: Drug Collection Day	The County sponsored a Drug Collection Day at the Etowah County Courthouse on November 21, 2020 and advertised the event on local television, radio and print media as well as Facebook, and County bulletin boards.		Countywide email, flyer, and news story are attached. (See Document 1-10)		NO
14	Additional Strategy: Adopt-A-Mile Program	The County provided trash bags for cleanup, maintains the Adopt-A-Mile signs, and disposes of the garbage collected.		PALS program brochure, County Adopt-A-Mile policy as well as other programs of ALPALS are attached. (See Document 1-11)		NO
15	Additional Strategy: Whorton Bend Clean-up Day	District 6 Commissioner organized an event for February 20th, 2021, to clean-up the Whorton Bend area of the district.		An excerpt from Page 2 of the Etowah County Commission Work Session on February 23, 2021 (See Document 1-12)	An estimated 57 people participated including 4 to 5 deputies, 2 inmates and the use of County equipment to transport debris.	NO
16	Additional Strategy: Litter Ordinance - The Sheriff's office enforces the State littering code	Due to changes at the Sheriff's Department, enforcements are no longer logged separately from other investigations.		The Littering Code can be viewed at the link below: http://alisondb.legislature.state.al.us/alison/codeofalabama/1975/coatoc.htm		NO

ETOWAH COUNTY						
CONTROL MEASURE 1 - PUBLIC EDUCATION AND OUTREACH						
See Section 10.1 of the Annual Report and the SWMP						
ACTIVITY NO.	STRATEGIES	2020-2021 IMPLEMENTATION STATUS	2021-2022 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
17	Additional Strategy: Oil Waste Recycling - Manage a drop-off facility at the County Shop for used oil and filters	530 gallons of used oil was collected in Fleet Maintenance		Ticket for collection of used oil and photos of used oil filter collection are attached. (See Document 5-9)	The County collects used oil and filters at the Maintenance Shop.	NO
18	Additional Strategy: Recycling Program - Manage a recycling program for aluminum cans and scrap metal	7.64 tons collected at Etowah County's Gadsden shop		Photos of collection areas and invoices attached. (See Document 5-10)	The County recycles aluminum cans in the break room at the maintenance shop. The County recycles metal from County projects.	NO

ETOWAH COUNTY						
CONTROL MEASURE 2 - ILLICIT DISCHARGE DETECTION AND ELIMINATION						
See Section 10.2 of the Annual Report and the SWMP						
ACTIVITY NO.	STRATEGIES	2020-2021 IMPLEMENTATION STATUS	2021-2022 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
1	Identify Priority Areas: Re-evaluate the drainage basins and determine the Priority Areas for the reporting period	2 drainage basins (Whorton Bend and Tillison Bend) have been identified and IDP Assessments performed on each basin 2 Priority Areas were identified based on population density 0 drainage basins newly listed as a priority area 0 drainage basins de-listed from priority area list	The County will re-evaluate the drainage basins and determine the Priority Areas for the reporting period.	The Storm Water System Map is attached. (See Document 2-1)	Whorton Bend was determined to be the Priority Area based on population density. This area is the peninsula off of Highway 411.	NO
2	Outfall Identification: Implement a stream-walking program to identify outfalls and map a portion of water bodies that receive discharge from the MS4 20% of 35.16 miles of stream inventory is 7.0 miles per reporting period	The County has completed the stream walking for the highly populated areas of the UA (Whorton Bend and Tillison Bend). 47 outfalls were identified The County re-evaluated the boundaries of the County lines and UA. Some previously identified County areas are now annexed into the Cities. Additionally some County areas are highly inundated with water and are not easily accessible. Both of these situations would reduce the number of stream miles remaining. Through field activities, the County spent some time evaluating areas to determine access. It is believed that heavy flooding this Spring skewed their observations; therefore the County did not complete the UA map to show all annexed areas.	The County plans to update their UA map to show annexed areas and indicated which areas are inaccessible during the next reporting period. The County will determine the number of stream miles remaining and will identify outfalls through the stream walking program and map water bodies. The SWMP will be updated during the next reporting period with the obtained information.	A table of identified outfalls and maps are attached. (See Documents 2-1 and 2-2)	Field observations are maintained at the Etowah County Engineering office.	NO
3	Probable Outfall Verification: Add probable outfalls to the GIS database and label as unverified. Verify outfalls within 18 months	0 probable outfalls identified 0 outfalls verified	Probable outfalls identified will be added to the storm water system map and verified as identified.		Field observations are maintained at the Etowah County Engineering office.	NO
4	Outfall Reconnaissance Inventory: Conduct dry weather monitoring of 20% of major outfalls in Priority Areas	The County inspected 13 of the 28 identified major outfalls in Priority Areas. This is 46.4% of the major outfalls.	The County will conduct dry weather monitoring of 20% of major outfalls in Priority Areas.	A list of outfalls inspected and an ORI field sheet are attached. (See Documents 2-3 and 2-4)	Field observations are maintained at the Etowah County Engineering office.	NO
4a	Outfall Reconnaissance Inventory: Conduct dry weather monitoring of 15% of all known outfalls	The County inspected 13 of the 47 known outfalls. This is 27.7% of the known outfalls.	The County will conduct dry weather monitoring of 15% of all known outfalls.	A list of outfalls inspected and an ORI field sheet are attached. (See Documents 2-3 and 2-4)	Field observations are maintained at the Etowah County Engineering office.	NO

ETOWAH COUNTY						
CONTROL MEASURE 2 - ILLICIT DISCHARGE DETECTION AND ELIMINATION						
See Section 10.2 of the Annual Report and the SWMP						
ACTIVITY NO.	STRATEGIES	2020-2021 IMPLEMENTATION STATUS	2021-2022 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
5	Suspect Discharge Sampling: Field crews will collect samples of suspected illicit discharges for laboratory analysis	9 identified dry weather flows 0 suspect discharges 0 samples collected 0 confirmed illicit discharges	Field crews will collect samples of suspected illicit discharges for laboratory analysis.	Completed ORI forms for locations with flow are attached. (See Document 2-4)	Field observations are maintained at the Etowah County Engineering office.	NO
6	Outfall Ranking: Designate the inspected outfalls as having obvious, suspect, possible, or unlikely discharge potential based on data from each ORI Field Sheet	13 outfalls inspected 0 outfalls required further investigation	Designate the inspected outfalls as having obvious, suspect, possible, or unlikely discharge potential based on data from each ORI Field Sheet.	A table with each inspected outfall ranking is attached. (See Document 2-3)		NO
7	Discharge Investigation: Illicit discharge investigations will be performed to determine the source of a discharge problem	0 illicit discharge investigations 0 confirmed illicit discharges 0 sources determined 0 discharges eliminated	Where illicit discharges are identified, the County will conduct an illicit discharge investigation to determine the source.	The illicit discharge log is attached. (See Document 2-5)	No illicit discharges identified during this reporting period.	NO
8	Corrective Action Record Keeping: Create a case log detailing pertinent information for each identified suspect illicit discharge or illicit connection	0 confirmed illicit discharges 0 corrected illicit discharges 0 eliminated illicit discharges 0 confirmed illicit discharges where corrective action is pending	When a suspect illicit discharge or illicit connection is identified, a case log will be created to track information related to the incident or report.	The illicit discharge log is attached. (See Document 2-5)	No illicit discharges identified during this reporting period.	NO
9	Update Storm Water System Map - Existing Features: Update the existing GIS map as storm drain features are identified	No new information or features were added to the Storm Water System Map.	The existing storm water system map will be updated as features are identified.	The Storm Water System Map is attached. (See Document 2-1)		NO
10	Update Storm Water System Map - Future Additions: Proposed additions to the County MS4, including new storm sewer and drainage ditches, will be mapped based on the civil plans provided to the County	0 civil plans provided to the County 0 verified new features or outfalls No new information was added to the Storm Water System Map	Proposed and new additions will be mapped based on civil plans provided to the County.	The Storm Water System Map is attached. (See Document 2-1)		NO
11	Evaluate IDDE Ordinance: Etowah County currently does not have the authority to enact an illicit discharge ordinance, and would require action from the Alabama Legislature to gain that ability	0 complaints received 0 illicit discharges identified 0 resolved violations 0 repeat offenders 0 enforcement actions taken	The County will evaluate the potential for an Ordinance annually.	The illicit discharge log is attached. (See Document 2-5)	In Etowah County, Home Rule is limited by the State constitution. Counties have no general grant of power in the State Constitution and must go to the Alabama Legislature for authority to engage in any activity not currently authorized by the State Constitution. Authority may be granted through constitutional amendments or by an act of the legislature known as "local legislation." Etowah County currently does not have the authority to enact an illicit discharge ordinance, and would require action from the Alabama Legislature to gain that authority.	NO

ETOWAH COUNTY						
CONTROL MEASURE 2 - ILLICIT DISCHARGE DETECTION AND ELIMINATION						
See Section 10.2 of the Annual Report and the SWMP						
ACTIVITY NO.	STRATEGIES	2020-2021 IMPLEMENTATION STATUS	2021-2022 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
12	Distribute Storm Water Educational Material: Distribute educational materials to public highlighting identification and reporting of potential illicit discharges	The County placed educational materials at County owned buildings however our office was closed to the public due to Covid-19	The County will provide educational materials to the public via the webpage and/or materials in County buildings.	The available information was updated. Flyers, brochures and available materials are attached. (See Document 1-4)		NO
12a	Distribute Storm Water Educational Material: The County will provide educational materials highlighting identification and reporting of potential illicit discharges on the County's storm water webpage	88 page views (72 unique) were recorded for the webpage.	The County will provide educational materials to the public via the webpage and/or materials in County buildings.	The County Website, Engineering webpage, and web site recorded hit information are attached. (See Document 1-1)		NO
13	Public Reporting and Tracking: Evaluate the reporting and tracking system for illicit discharges (including spills or illegal dumping), impaired waterways, and violations of ordinances relating to storm water pollution	5 reports received 5 complaints addressed 5 complaints resolved 5 reports contained required information to find and address the suspected problem	The County will publicize the reporting number on the County's website and track received complaints and the County's responses to the received complaints. The County will evaluate the current public reporting and tracking methods.	The Storm Water web page, incident tracking sheet, and summary of notable discharge investigations are attached. (See Documents 1-1, 1-6, and 1-7)		NO
14	Municipal Training: Train County personnel on the identification of illicit discharges and procedures for reporting illicit discharges within the County organization	S&ME addressed illicit discharge identification in the Annual Training handout. This handout was provided to County employees on March 11-24, 2021 . 42 County employees attended training.	The County will train personnel on the identification of illicit discharges and procedures for reporting illicit discharges within the County organization.	A copy of the provided training is attached. (See Document 5-4)		NO
15	Storm Water Monitoring Locations: Update existing GIS map with storm water monitoring locations	Monitoring points SME 4, SME 5, SME 6, SME 7, and SME 8 were added in May of 2020. Monitoring points CO14, SME 3, and G3 were removed from the monitoring program.	Monitoring point SME 3 will be reinstated and SME 2 will be removed from the monitoring program.	The updated map of monitoring points is attached. (See Document 2-6)		NO
16	Evaluation of Monitoring Data: Evaluate the collected monitoring data and make recommendations to add and/or modify monitoring points	An evaluation of the stormwater data has been provided in the 2020-2021 Evaluation.	Stormwater data will be evaluated during the 2021-2022 reporting period.	See summary of monitoring reports in Annual Report.		NO
17	NPDES Industrial Permitting: Evaluate permitted and unpermitted facilities in the County MS4	0 unpermitted facilities were reported to the ADEM during the reporting period	Unpermitted facilities will be reported to the Industrial Permits Section of ADEM.		Etowah County continues to rely on ADEM for NPDES permitting enforcement	NO

ETOWAH COUNTY						
CONTROL MEASURE 3 - CONSTRUCTION SITE STORM WATER RUNOFF						
See Section 10.3 of the Annual Report and the SWMP						
ACTIVITY NO.	STRATEGIES	2020-2021 IMPLEMENTATION STATUS	2021-2022 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
1	Erosion and Sediment Control Ordinance: County's Subdivision Regulations, Article V, Section 5-4-4 (Road Construction Requirements) regulates storm water management within the County Evaluate the effectiveness of the Ordinance each reporting period	The County evaluated the Ordinance on its effectiveness in addressing erosion and sediment control and no changes were deemed necessary	The County will evaluate the Ordinance annually.	The County's ordinance can be viewed at the link below: http://etowahcounty.org/departments/engineering/ Subdivision Regulations are attached. (See Document 3-1)	0 non-compliant construction sites 0 enforcement actions taken 0 non-compliant sites reported to ADEM 0 repeat offenders	NO
2	Construction Site Inspection Program: Conduct regular inspections of construction sites within the County Evaluate the effectiveness of the inspection program.	The County evaluated the effectiveness of the construction site inspection program and no changes were deemed necessary	The County will implement the Construction Site Inspection Program.	There were no active construction sites within the County MS4 during the reporting period.	0 inspections completed 0 non-compliant construction sites 0 enforcement actions 0 sites needed to be reported to ADEM to obtain compliance 0 repeat offenders	NO
2a	Sediment and Erosion Control Plan Review: Review Sediment and Erosion Control Plans and Storm Water Management Plans for all new construction Evaluate the effectiveness of the plan review program	The County evaluated the Program on its effectiveness and no changes were deemed necessary.	The County will review Sediment and Erosion Control Plans and Storm Water Management Plans for all new construction.	There were no new developments within the County MS4 during the reporting period.	0 plans reviewed 0 plans approved 0 plans rejected 0 sites subject to ALR100000 0 plans met ADEM requirements	NO
3	BMP Training Program: Conduct annual CBMP training for County inspectors and reviewers	Refresher QCI training was canceled on May 19th, 2020. All certifications were extended until May 31, 2021 Robert Nail QCP, #53963 Mel Smith QCI, #39562 Tyson Burwell QCI #31730 William Vaughn QCI #T2437	Refresher trainings will be completed.	Cancellation email and QCI certificates are attached. (See Document 3-2)		NO
4	Public Reporting and Tracking: Evaluate the reporting and tracking methods for non-compliant construction sites, illicit discharges, impaired waterways, and violations of ordinances relating to storm water pollution, as well as, comments concerning the SWMPP.	5 reports received 5 complaints addressed 5 complaints resolved 5 reports contained required information to find and address the suspected problem	The County will publicize the reporting number on the County's website and track received complaints and the County's responses to the received complaints. The County will evaluate the current public reporting and tracking methods.	The Storm Water web page, incident tracking sheet, and summary of notable discharge investigations are attached. (See Documents 1-1, 1-6, and 1-7)		NO
5	Notify ADEM of Non-Compliant Sites: The County will notify ADEM of any construction sites where a possible violation of the Clean Water Act has occurred	0 construction sites were reported to ADEM to obtain compliance	The County will rely on ADEM for construction NPDES enforcement when a permit is required but has not been obtained or of situations where the County's enforcement actions have not resulted in compliance.		Non-compliant sites will be reported to the Construction Section of the Storm water Management Division of ADEM in Birmingham, Alabama by phone and/or email.	NO

ETOWAH COUNTY						
CONTROL MEASURE 4 - POST-CONSTRUCTION STORM WATER MANAGEMENT						
See Section 10.4 of the Annual Report and the SWMP						
ACTIVITY NO.	STRATEGIES	2020-2021 IMPLEMENTATION STATUS	2021-2022 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
1	Reducing Post-Construction Runoff Volume: Article IV Section 4.2 (Construction Plan Requirements) of the Etowah County Subdivision Regulations requires submittal of a Storm Drainage Plan with submittal of a Major Subdivision Plat. Sections 4-2(2)e-h require details of pre- and post-construction runoff, drainage structures, and compatibility with existing drainage to be provided with each submitted plan. Etowah County Subdivision Regulations 5-1(4) Page 24 and 5-4-4 Page 30 requires developers to meet the rules and standards of ADEM and other appropriate State and Federal agencies. Evaluate the effectiveness of the Subdivision Regulations each reporting period	The County evaluated the Ordinance on its effectiveness in reducing runoff from new development or redevelopment and no changes were deemed necessary.	The County will evaluate the Ordinance annually.	The County's ordinance can be viewed at the link below: http://etowahcounty.org/departments/engineering/ Subdivision Regulations are attached. (See Document 3-1)	0 submitted plans included measures to reduce runoff volume.	NO
2	Reducing Pollutants from Development: Etowah County Subdivision Regulations 5-4-4(11) Page 33 specify storm drainage runoff requirements for developers Evaluate the effectiveness of the Subdivision Regulations each reporting period	The County evaluated the Ordinance on its effectiveness in reducing pollutants from new development or redevelopment and no changes were deemed necessary.	The County will evaluate the Ordinance annually.	The County's ordinance can be viewed at the link below: http://etowahcounty.org/departments/engineering/ Subdivision Regulations are attached. (See Document 3-1)	0 developments required treatment of storm water runoff.	NO
3	Long-Term Maintenance for Storm Water Controls: Etowah County Subdivision Regulations 5-4-4(11) Page 33 states, "Parcels of land containing either a flood retention pond or sedimentation pond shall be retained by the developer or home owner's association with the maintenance of said ponds to be the responsibility to remain with either the developer or home owner's association." Evaluate the effectiveness of the Subdivision Regulations each reporting period	The County evaluated the Ordinance on its effectiveness in addressing long-term maintenance of storm water controls and no changes were deemed necessary.	The County will evaluate the Ordinance annually.	The County's ordinance can be viewed at the link below: http://etowahcounty.org/departments/engineering/ Subdivision Regulations are attached. (See Document 3-1)	0 submitted plans included detailed maintenance procedures 0 maintenance agreements reviewed 0 maintenance provisions approved 0 maintenance provisions denied 0 enforcement actions taken	NO

ETOWAH COUNTY						
CONTROL MEASURE 4 - POST-CONSTRUCTION STORM WATER MANAGEMENT						
See Section 10.4 of the Annual Report and the SWMP						
ACTIVITY NO.	STRATEGIES	2020-2021 IMPLEMENTATION STATUS	2021-2022 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
4	Evaluate Obstacles to Low Impact/Green Development: Review and evaluate policies and ordinances to identify regulatory and policy impediments to the installation of green infrastructure and low-impact development techniques	0 obstacles identified	The County will review and evaluate policies and ordinances to identify regulatory and policy impediments to the installation of green infrastructure and low-impact development techniques. The County utilizes open ditching to allow green infrastructure.	The job cost report for ditching activities is attached. (See Document 4-1)	The County utilizes open ditching to allow green infrastructure. We are not aware of any conflicts at the time.	NO
5	Sediment and Erosion Control Plan Review: Review Sediment and Erosion Control Plans for all new construction for review of post-construction controls Evaluate the effectiveness of the plan review program	The County evaluated the Program on its effectiveness and no changes were deemed necessary.	The County will review Sediment and Erosion Control Plans for all new construction for review of post-construction controls.	There were no new developments for the reporting period.	0 plans reviewed 0 plans approved 0 plans rejected 0 post-construction designs approved 0 post-construction designs rejected	NO
6	Construction Site Inspection Program: Inspect post-construction controls after stabilization is complete to confirm post-construction storm water measures/structures have been installed according to the submitted plan Annually inspect each site to confirm post-construction BMPs are functioning as designed Evaluate the effectiveness of the inspection program	The County evaluated the Program on its effectiveness and no changes were deemed necessary.	The County will implement the Construction Site Inspection Program.	No new post-construction storm water controls were installed during the reporting period.	0 inspections completed 0 projects completed per submitted plans 0 projects not constructed in accordance to submitted plans	NO
7	Post-Construction Structural Controls Inventory: Update an inventory of post-construction structural controls including those owned by the County	0 post-construction structural controls are located within the UA	The County will update an inventory of post-construction structural controls including those owned by the County.			NO
8	Additional Strategy: Highway Erosion Control	Etowah County worked to reduce runoff within our right-of way and monitor our areas for erosion. The County utilized riprap in areas resistant to permanent vegetation.		Erosion Control report with dates, materials, and hours is attached (See Document 4-2)	The County will continue to use riprap and grassing as erosion countermeasures when applicable.	
9	Additional Strategy: Preservation of Endangered Rush Darter	Partnered with Alabama Department of Conservation and Natural Resources to preserve the endangered Rush darter on unnamed tributary to Bristow Creek	By February of 2021, the project to improve the habitat for the Rush darter, including construction of a 40-foot bridge, was completed.	United States Fish and Wildlife project documentation and photos are attached. (See Document 4-3)	The project over Dry Creek is completed.	

ETOWAH COUNTY**CONTROL MEASURE 4 - POST-CONSTRUCTION STORM WATER MANAGEMENT**

See Section 10.4 of the Annual Report and the SWMP

ACTIVITY NO.	STRATEGIES	2020-2021 IMPLEMENTATION STATUS	2021-2022 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
10	Additional Strategy: Preservation of Endangered Trispot Darter	Partnered with Alabama Department of Conservation and Natural Resources to preserve the endangered Trispot darter on unnamed tributary to Ballplay Creek. On January 20th, 2021, met with Cal Johnson from ADEM on Jones Chapel Road to search for and map the habitat of the Trispot darter	We plan to continue to assist ADEM and the Alabama Department of Conservation and Natural Resources to preserve the endangered Trispot darter	United States Fish and Wildlife project documentation and photos are attached. (See Document 4-3)		

ETOWAH COUNTY						
CONTROL MEASURE 5 - POLLUTION PREVENTION AND GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS						
See Section 10.5 of the Annual Report and the SWMP						
ACTIVITY NO.	STRATEGIES	2020-2021 IMPLEMENTATION STATUS	2021-2022 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
1	County Facilities: Maintain a list of County facilities that have the potential to discharge pollutants through storm water runoff Update SOPs for facilities as needed and inspect facilities monthly	2 County facilities	Maintain a list of facilities.	A list of County facilities and addresses is attached. (See Document 5-1)		NO
1a	County Facilities: Inspect each facility for good housekeeping practices on a quarterly basis. Establish a inspection checklist by May 31, 2017	4 inspections were performed at each facility 0 housekeeping deficiencies related to storm water were identified	Inspect each facility for housekeeping on a quarterly basis.	Example inspection reports are attached. (See Document 5-2)		NO
1b	County Facilities: SOPs were established for each facility	Updates were not necessary	Update SOPs for facilities as needed.	Established SOPs are attached. (See Document 5-3)		NO
2	Employee Training: Implement a BMP training program for County personnel each reporting period	In-person training was canceled due to Covid. S&ME developed an Annual Training handout that was provided to County employees on March 11-24, 2021. 42 County employees attended training.	The County will train personnel on good housekeeping.	A copy of the provided training is attached. (See Document 5-4)		NO
3	Vehicle Maintenance Program: Conduct routine inspections of municipal vehicles and equipment	Daily inspections were performed on vehicles before they were driven. 14 vehicle or equipment leaks identified and corrected during the reporting period	The County will conduct routine inspections.	Work orders for the identified leaks are attached. (See Document 5-5)		NO
4	Vehicle Wash Area: Specify areas for vehicle washing. Each Department location will be reviewed, inspected, and modified as needed throughout the year	1 designated municipal vehicle washing area 4 inspections performed (quarterly) 0 deficiencies noted	Each vehicle washing area will be reviewed, inspected, and modified as needed throughout the year.	Photo of designated wash area and example inspection checklists are attached. (See Documents 5-6 and 5-2)		NO
5	Pesticide Applications: Ensure pesticide applicators have current certifications Public Works will review all areas where pesticides are to be used	The County used various pesticides (insecticides and herbicides) to control insect pests and unwanted vegetation. Steve Talton Permit #2004281 Exp. 4-28-2023. Samuel Woodward Permit # 2002374 Exp. 3-28-2022 Thomas Guthery Permit #2004411 Exp. 5-28-2023. The County will report the areas where the pesticides were applied and whether or not there was a potential for waterways to be impacted.	The County will continue to recertify County employees as required Should other pesticide applications be needed, the County will review applicator certifications and licensing during the bid process.	Certifications and herbicide report with dates, materials, and hours are attached. (See Documents 5-7 and 5-8)		NO

ETOWAH COUNTY						
CONTROL MEASURE 5 - POLLUTION PREVENTION AND GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS						
See Section 10.5 of the Annual Report and the SWMP						
ACTIVITY NO.	STRATEGIES	2020-2021 IMPLEMENTATION STATUS	2021-2022 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
6	Litter Ordinance: The Sheriff's office enforces the State littering code	Due to changes at the Sheriff's Department, enforcements are no longer logged separately from other investigations.	The Sheriff's office will enforce the State littering code.	The Littering Code can be viewed at the link below: http://alisondb.legislature.state.al.us/alison/codeofalabama/1975/coatoc.htm		NO
7	Litter, Floatables, and Debris - Oil Waste Recycling: Manage a drop-off facility at the County Shop for used oil and filters	530 gallons of used oil was collected in Fleet Maintenance	The County will manage the drop-off facility.	Ticket for collection of used oil and photos of used oil filter collection are attached. (See Document 5-9)	The County collects used oil and filters at the Maintenance Shop.	NO
8	Litter, Floatables, and Debris - Recycling Program: Manage a recycling program for aluminum cans and scrap metal	7.64 tons collected at Etowah County's Gadsden shop		Photos of collection areas and invoices attached. (See Document 5-10)	The County recycles aluminum cans in the break room at the maintenance shop. The County recycles metal from County projects	NO
9	Additional Strategy: Whorton Bend Clean-up Day	District 6 Commissioner organized an event for February 20th, 2021, to clean-up the Whorton Bend area of the district.		An excerpt from Page 2 of the Etowah County Commission Work Session on February 23, 2021 in attached. (See Document 1-12)	An estimated 57 people participated including 4 to 5 deputies, 2 inmates and the use of County equipment to transport debris.	
10	Additional Strategy: Dead Animal Removal	The County removed dead animals from the roadside		Documentation of dead animal disposal is attached. (See Document 5-11)		
11	Additional Strategy: Clearing of drainage structures	The County cleared and removed trees and brush from drainage ways/rights-of-way as needed.		Report of hours and dates for brush removal is attached. (See Document 5-12)		
12	Additional Strategy: Free Garbage Disposal Days	Advanced Disposal had open-top containers at several locations across the County on May 2, August 1 and November 7, 2020 and February 6, 2021 for residents in unincorporated areas of the County. Event is advertised through public notices and at the Commission Meetings.	The County will continue to support this effort in order to reduce illegal dumping of materials.	Public notices for each date are attached. (See Document 1-9)		
13	Additional Strategy: Adopt-A-Mile Program	The County provided trash bags for cleanup, maintains the Adopt-A-Mile signs, and disposes of the garbage collected.		PALS program brochure, County Adopt-A-Mile policy as well as other programs of ALPALS are attached. (See Document 1-11)		

ETOWAH COUNTY						
CONTROL MEASURE 5 - POLLUTION PREVENTION AND GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS						
See Section 10.5 of the Annual Report and the SWMP						
ACTIVITY NO.	STRATEGIES	2020-2021 IMPLEMENTATION STATUS	2021-2022 PROPOSED EFFORTS	SUPPORTING DOCUMENTATION	COMMENTS	PROPOSED CHANGES
14	Additional Strategy: "No Dumping" Signs	Signs are placed upon request. If signs are ineffective, the litter enforcement agent becomes involved. If the area continues to have litter issues, it is considered for surveillance. The County has two cameras that are rotated to different areas on an as needed basis.	The County will continue to place or maintain these signs in problem areas.	Pictures of the sign and typical placement are attached. (See Document 1-8)	The County maintains approximately 50 signs. The County maintains "No Dumping \$500 fine" signs and these No Dumping areas are under video surveillance signs. These are put out in the County through Keep Etowah Beautiful as part of the effort to eliminate/reduce unauthorized disposal of waste.	

Appendix J-3 – Etowah County Supporting Documents

SUPPORTING DOCUMENTS
AVAILABLE UPON REQUEST