GEOServices, LLC, Geotechnical and Materials Engineers

September 30, 2020

Tennessee Department of Environment & Conservation
Division of Water Resources
3711 Middlebrook Pike
Knoxville, Tennessee 37921

ATTN: Mrs. Shari Winburn

Subject: **Anderson County MS4 Annual Report Submittal**
NPDES Permit # TNS075108
Anderson County, Tennessee
GEOServices Project No. 24-20568

Dear Mrs. Winburn:

GEOServices, LLC (GEOServices) has helped Anderson County Municipal Separate Storm Sewer System (MS4) with their 2020 Annual Report. GEOServices is submitting this document on behalf of our clients for regulatory compliance. We appreciate your attention to this matter.

If you have any questions, please do not hesitate to contact us at your convenience.

Respectfully submitted,
GEOServices, LLC

Jason Mann, EI
Environmental Project Manager

Tennessee Department of Environment and Conservation
Division of Water Resources
William R. Snodgrass Tennessee Tower,
312 Rosa L. Parks Avenue, 11th Floor, Nashville, Tennessee 37243
1-888-891-8332 (TDEC)

Phase II Small Municipal Separate Storm Sewer System (MS4) Annual Report

1. MS4 Information

Name of MS4: Anderson County	MS4 Permit Number: TNS075108	
Contact Person: Danny Phillips, Stormwater Coordinator	Email Address: dphillips@andersontn.org	
Telephone: (865) 457-5400	MS4 Program Web Address: www.anderson-county.com/mayor/planninganddevelopment/storm-water/	
Mailing Address: 100 N. Main Street		
City: Clinton	State: Tennessee	ZIP code: 37716

What is the current population of your MS4? ~3000

What is the reporting period for this annual report? July1 2019 to June 30 2020

2. Discharges to Waterbodies with Unavailable Parameters or Exceptional Tennessee Waters (Section 3.1)

A. Does your MS4 discharge into waters with unavailable parameters (previously referred to as impaired) for pathogens, nutrients, siltation or other parameters related to stormwater runoff from urbanized areas as listed on TN's most current 303(d) list and/or according to the on-line state GIS mapping tool (tdeconline.tn.gov/dwr/)? If yes, attach a list. ☒ Yes ☐ No

B. Are there established and approved TMDLs (http://www.tn.gov/environment/article/wr-ws-tennessees-total-maximum-daily-load-tmdl-program) with waste load allocations for MS4 discharges in your jurisdiction? If yes, attach a list. ☒ Yes ☐ No

C. Does your MS4 discharge to any Exceptional Tennessee Waters (ETWs - http://environment-online.tn.gov:8080/pls/enf_reports/f?p=9034:34304:4880790061142)? If yes, attach a list. ☐ Yes ☒ No

D. Are you implementing specific Best Management Practices (BMPs) to control pollutant discharges to waterbodies with unavailable parameters or ETWs? If yes, describe the specific practices: Priority construction sites are established if sites discharge to impaired waterways. Increased inspection frequency of priority construction sites reduces potential impacts to waters with unavailable parameters. ☒ Yes ☐ No

3. Public Education/Outreach and Involvement/Participation (Sections 4.2.1 and 4.2.2)

A. Have you developed a Public Information and Education plan (PIE)? ☒ Yes ☐ No

B. Is your public education program targeting specific pollutants and sources, such as Hot Spots? If yes, describe the specific pollutants and/or sources targeted by your public education program: MS4 staff had a public presence at the Oak Ridge Hazardous Waste Collection Event where brochures were distributed. Additionally, Anderson County had a presence at the Knoxville Home and Garden Show at the Expo Center where 275 contacts were made. ☒ Yes ☐ No

C. Do you have a webpage dedicated to your stormwater program? If yes, provide a link/URL: www.anderson-county.com/mayor/planninganddevelopment/storm-water/ ☒ Yes ☐ No

D. Summarize how you advertise and publicize your public education, outreach, involvement and participation opportunities: COVID canceled most planned events in FY20, with the exception of the Home and Garden Show and the Hazardous Waste Collection event that was publicized with posters and notifications at the Codes Department desk and other locations within the County Courthouse Building.

E. Summarize the public education, outreach, involvement and participation activities you completed during this reporting period: COVID canceled most spring events outlined in Anderson County's PIE plan, but Anderson County joined with the Water Quality Forum and reached 275 contacts in the region, giving out brochures and spreading the word about stormwater issues. The Hazardous Waste Collection event was another outreach event, but no data was collected for education contacts.

F. Summarize any specific successful outcome(s) (e.g., citizen involvement, pollutant reduction, water quality improvement, etc.) fully or partially attributable to your public education and participation program during this reporting period: Anderson County has noticed a significant increase in stormwater complaints received via phone and in-person. Furthermore, as staff revisit auto repair businesses, the sites are cleaner than initial site visits.

4. Illicit Discharge Detection and Elimination (Section 4.2.3)

A. Have you developed and do you continue to update a storm sewer system map that shows the location of system outfalls where the municipal storm sewer system discharges into waters of the state or conveyances owned or operated by another MS4? ☒ Yes ☐ No

B. If yes, does the map include inputs into the storm sewer collection system, such as the inlets, catch basins, drop structures or other defined contributing points to the sewershed of that outfall, and general direction of stormwater flow? ☒Yes ☐ No

C. How many outfalls have you identified in your storm sewer system? Approximately 60% of the jurisdictional area has been mapped. A GIS layer has been compiled to summarize system inputs, but an accurate number of inlets is not available at this time. Mapping 20% of the system per year is expected to continue, and a comprehensive GIS layer will be finalized.

D. Do you have an ordinance, or other regulatory mechanism, that prohibits non-stormwater discharges into your storm sewer system? ☒Yes ☐ No

E. Have you implemented a plan to detect, identify and eliminate non-stormwater discharges, including illegal disposal, throughout the storm sewer system? If yes, provide a summary: A formal IDDE plan and SOP has been developed and adopted. Dry weather screening processes have been follwed during recent mapping by GEOServices, LLC. Mapping the storm drainage system within the jurisdictional area is ongoing, and illicit discharges are actively pursued during those efforts. ☒ Yes ☐ No

F. How many illicit discharge related complaints were received this reporting period? 0

G. How many illicit discharge investigations were performed this reporting period? 0

H. Of those investigations performed, how many resulted in valid illicit discharges that were addressed and/or eliminated? 0

5. Construction Site Stormwater Runoff Pollutant Control (Section 4.2.4)

A. Do you have an ordinance or other regulatory mechanism requiring:

Construction site operators to implement appropriate erosion prevention and sediment control BMPs consistent with those described in the TDEC EPSC Handbook?	☒ Yes	☐ No
Construction site operators to control wastes such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste?	☒ Yes	☐ No
Design storm and special conditions for unavailable parameters waters or Exceptional Tennessee Waters consistent with those of the current Tennessee Construction General Permit (TNR100000)?	☒ Yes	☐ No

B. Do you have specific procedures for construction site plan (including erosion prevention and sediment BMPs) review and approval? ☒ Yes ☐ No

C. Do you have sanctions to enforce compliance? ☒ Yes ☐ No

D. Do you hold pre-construction meetings with operators of priority construction activities and inspect priority construction sites at least monthly? ☒ Yes ☐ No

E. How many construction sites disturbing at least one acre or greater were active in your jurisdiction this reporting period? 6

F. How many active priority and non-priority construction sites were inspected this reporting period? 6

G. How many construction related complaints were received this reporting period? 8

6. Permanent Stormwater Management at New Development and Redevelopment Projects (Section 4.2.5)

A. Do you have a regulatory mechanism (e.g. ordinance) requiring permanent stormwater pollutant removal for development and redevelopment projects? If no, have you submitted an Implementation Plan to the Division? ☐ Yes ☒ No / ☐ Yes ☒ No

B. Do you have an ordinance or other regulatory mechanism requiring:

Site plan review and approval of new and re-development projects?	☒ Yes	☐ No
A process to ensure stormwater control measures (SCMs) are properly installed and maintained?	☒ Yes	☐ No
Permanent water quality riparian buffers? If yes, specify requirements: _____	☐ Yes	☒ No

C. What is the threshold for development and redevelopment project plans plan review (e.g., all projects, projects disturbing greater than one acre, etc.)? 1 acre

D. How many development and redevelopment project plans were reviewed for this reporting period? 0

E. How many development and redevelopment project plans were approved? 0

F. How many permanent stormwater related complaints were received this reporting period? 0

G. How many enforcement actions were taken to address improper installation or maintenance? 0

H. Do you have a system to inventory and track the status of all public and private SCMs installed on development and redevelopment projects? ☒ Yes ☐ No

I. Does your program include an off-site stormwater mitigation or payment into public stormwater fund? If yes, specify. _____ ☐ Yes ☒ No

7. Stormwater Management for Municipal Operations (Section 4.2.6)

A. As applicable, have stormwater related operation and maintenance plans that include information related to maintenance activities, schedules and the proper disposal of waste from structural and non-structural stormwater controls been developed and implemented at the following municipal operations:

Streets, roads, highways?	☐ Yes	☒ No
Municipal parking lots?	☐ Yes	☒ No
Maintenance and storage yards?	☐ Yes	☒ No
Fleet or maintenance shops with outdoor storage areas?	☐ Yes	☒ No
Salt and storage locations?	☐ Yes	☒ No
Snow disposal areas?	☐ Yes	☒ No
Waste disposal, storage, and transfer stations?	☒ Yes	☐ No

B. Do you have a training program for employees responsible for municipal operations at facilities within the jurisdiction that handle, generate and/or store materials which constitute a potential pollutant of concern for MS4s? ☒ Yes ☐ No

If yes, are new applicable employees trained within six months, and existing applicable employees trained and/or retrained within the permit term? ☒ Yes ☐ No

8. Reviewing and Updating Stormwater Management Programs (Section 4.4)

A. Describe any revisions to your program implemented during this reporting period including but not limited to:

Modifications or replacement of an ineffective activity/control measure. COVID has MS4 staff looking into virtual outreach events. Upgraded mapping GIS software has streamlined mapping efforts. SWPPP review checklist needed improvements.

Changes to the program as required by the division to satisfy permit requirements. NA.

Information (e.g. additional acreage, outfalls, BMPs) on newly annexed areas and any resulting updates to your program. NA.

B. In preparation for this annual report, have you performed an overall assessment of your stormwater management program effectiveness? If yes, summarize the assessment results, and any modifications and improvements scheduled to be implemented in the next reporting period. Several deficiencies were noted during the compilation of this annual report. Several O&M plans were not developed as planned this year, and this will be a focus for FY21. ☒ Yes ☐ No

9. Enforcement Response Plan (Section 4.5)

A. Have you implemented an enforcement response plan that includes progressive enforcement actions to address non-compliance, and allows the maximum penalties specified in TCA 68-221-1106? If no, explain. _____ ☒ Yes ☐ No

B. As applicable, identify which of the following types of enforcement actions (or their equivalent) were used during this reporting period; indicate the number of actions, the minimum measure (e.g., construction, illicit discharge, permanent stormwater management), and note those for which you do not have authority:

Action	Construction	Permanent Stormwater	Illicit Discharge	In Your ERP?	
Verbal warnings	#3	#0	#0	☒ Yes	☐ No
Written notices	#3	#0	#0	☒ Yes	☐ No
Citations with administrative penalties	#0	#0	#0	☒ Yes	☐ No
Stop work orders	#0	#0	#0	☒ Yes	☐ No
Withholding of plan approvals or other authorizations	#0	#0	#0	☐ Yes	☒ No
Additional Measures	#0	#0	#0	Describe: NA	

C. Do you track instances of non-compliance and related enforcement documentation? ☒ Yes ☐ No

D. What were the most common types of non-compliance instances documented during this reporting period? EPSC measures in disrepair and mud in the road are the most common types of non-compliance issues.

10. Monitoring, Recordkeeping and reporting (Section 5)

A. Summarize any analytical monitoring activities (e.g., planning, collection, evaluation of results) performed during this reporting period. Bacteria Sampling was conducted during this reporting cycle.

B. Summarize any non-analytical monitoring activities (e.g., planning, collection, evaluation of results) performed during this reporting period. Dry weather screenings happened during this reporting cycle, but no visual stream assesments have been completed at this time.

C. If applicable, are monitoring records for activities performed during this reporting period submitted with this report. ☒ Yes ☐ No

11. Certification

This report must be signed by a ranking elected official or by a duly authorized representative of that person. See signatory requirements in sub-part 6.7.2 of the permit.

"I certify under penalty of law that this document and all attachments were prepared under my direction 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 and imprisonment for knowing violations."

Danny Phillips, Stormwater Coordinator — Printed Name and Title

Danny Phillips — Signature

9-29-20 — Date

Annual reports must be submitted by September 30 of each calendar year (Section 5.4) to the appropriate Environmental Field Office (EFO), identified in the table below:

EFO	Street Address	City	Zip Code	Telephone
Chattanooga	1301 Riverfront Pkwy, Suite 206	Chattanooga	37402	(423) 634-5745
Columbia	1421 Hampshire Pike	Columbia	38401	(931) 380-3371
Cookeville	1221 South Willow Ave.	Cookeville	38506	(931) 520-6688
Jackson	1625 Hollywood Drive	Jackson	38305	(731) 512-1300
Johnson City	2305 Silverdale Road	Johnson City	37601	(423) 854-5400
Knoxville	3711 Middlebrook Pike	Knoxville	37921	(865) 594-6035
Memphis	8383 Wolf Lake Drive	Bartlett	38133	(901) 371-3000
Nashville	711 R S Gass Boulevard	Nashville	37216	(615) 687-7000

BACTERIA SAMPLING

FOR

ANDERSON COUNTY MS4
(NPDES PERMIT NO. TNS075108)
ANDERSON COUNTY, TENNESSEE

Prepared by:

GEOServices, LLC, Geotechnical and Materials Engineers

GEOServices, LLC
2561 Willow Point Way
Knoxville, Tennessee 37931

January 24, 2020

Project No. 24-19624

TABLE OF CONTENTS

TABLES

APPENDICES

1.0 PROJECT SUMMARY

The National Pollution Discharge Elimination System (NPDES) Permit issued to Anderson County requires analytical stream monitoring activities to measure impacts to surface waters. NPDES Permit No. TNS075108 specifically requires bacteria sampling of impaired streams within the jurisdictional area. Three monitoring locations have been sampled to document the bacteriological integrity of Clear Branch, Coal Creek and Buffalo Creek.

Table 1 below details the sample locations for the analytical monitoring activities. These sample locations were selected based on their historical use and/or at TDEC Water Resource's direction. A map detailing these locations is included in **Appendix A**.

TABLE 1: LOCATION SUMMARY

Waterbody (HUC-12)	Station ID	GPS	Description
Clear Branch (060102070401)	CLEAR000.1AN	N 36.2084°, W -84.1448°	Behind Lake City Middle School
Coal Creek (060102070401)	COAL001.2AN	N 36.2149°, W -84.1247°	Upstream of Lovely Spring
Buffalo Creek (060102070402)	BUFFA000.7AN	N 36.1601°, W -84.0803°	Downstream of Buffalo (Brooks Gap) Bridge

2.0 ANALYTICAL MONITORING

E.Coli Analysis

E. coli sampling and analysis was performed at three (3) monitoring locations in accordance with *Division of Water Resources Quality System Standard Operating Procedure for Chemical and Bacteriological Sampling of Surface Water (August 2018)*. Established TDEC stations were used to monitor Coal Creek and Buffalo Creek. An additional station was chosen on Clear Branch due to the potential influence from the jurisdictional area. The sampling sites are located in the Lower Clinch River Watershed. Photos taken at the monitoring locations are included in **Appendix B** of this report.

Each grab sample included filling a 200 ml bottle, with sodium thiosulfate as preservative, in the middle of the thalweg of the wadeable stream. Powder-free nitrile gloves are included in the sampling procedure to avoid contamination of the sample, and sterile bottles were unopened prior to sampling. The collected

samples were immediately stored on ice and delivered to the laboratory within the requisite 6-hour holding time.

The collection efforts were performed by qualified GEOServices staff within a thirty (30) day window during the summer of 2019. All samples were delivered to a certified laboratory in accordance with the accepted standards. Microbac Laboratories, Inc. conducted all sampling analysis, and chain of custody documentation is included in **Appendix C**. The collection efforts are summarized in **Tables 2, 3 and 4**, which detail the sampling dates, locations, and results of the Most Probable Number of coliform per 100mL (MPN/100) of each sample.

TABLE 2: CLEAR BRANCH MILE 0.1 E.COLI ANALYSIS

Date	Time	Station ID	Temperature (Celsius)	pH	D.O. (mg/L)	Conductivity (mS/cm)	E.coli (MPN/100ml)
8/2/2019	1132	CLEAR000.1AN	21.4	7.91	6.75	279.000	980
8/6/2019	1220	CLEAR000.1AN	20.8	8.07	6.78	295.000	2000
8/13/2019	1039	CLEAR000.1AN	21.1	7.78	6.53	265.000	2400
8/27/2019	1438	CLEAR000.1AN	21.3	7.75	6.84	326.000	1700
8/30/2019	1018	CLEAR000.1AN	18.3	7.79	7.26	318.000	290
							Geometric Mean = 1183

The E.coli geometric mean value for Clear Branch at mile 0.1 is above the TDEC General Water Quality Criteria (0400-40-03) threshold (126) for Recreational use.

TABLE 3: COAL CREEK MILE 1.2 E.COLI ANALYSIS

Date	Time	Station ID	Temperature (Celsius)	pH	D.O. (mg/L)	Conductivity (mS/cm)	E.coli (MPN/100ml)
8/2/2019	1153	COAL001.2AN	22.8	7.98	7.38	286.000	690
8/6/2019	1238	COAL001.2AN	21.7	8.08	7.62	288.000	870
8/13/2019	1057	COAL001.2AN	22.9	7.91	6.51	321.000	340
8/27/2019	1459	COAL001.2AN	22.6	8.01	6.63	336.000	460
8/30/2019	1049	COAL001.2AN	20.8	7.93	7.58	328.000	310
							Geometric Mean = 493

The E.coli geometric mean value for Coal Creek at mile 1.2 is above the TDEC General Water Quality Criteria (0400-40-03) threshold (126) for Recreational use.

TABLE 3: BUFFALO CREEK MILE 0.7 E.COLI ANALYSIS

Date	Time	Station ID	Temperature (Celsius)	pH	D.O. (mg/L)	Conductivity (mS/cm)	E.coli (MPN/100ml)
8/2/2019	1224	BUFFA000.7AN	24.7	8.01	7.29	390	180
8/6/2019	1308	BUFFA000.7AN	21.2	8.18	7.83	373	240
8/13/2019	1127	BUFFA000.7AN	23.6	7.99	7.28	376	54
8/27/2019	1520	BUFFA000.7AN	21.3	7.76	7.18	415	390
8/30/2019	1119	BUFFA000.7AN	21.8	7.85	7.29	414	580
							Geometric Mean = 221

The E.coli geometric mean value for Buffalo Creek at mile 0.7 is above the TDEC General Water Quality Criteria (0400-40-03) threshold (126) for Recreational use.

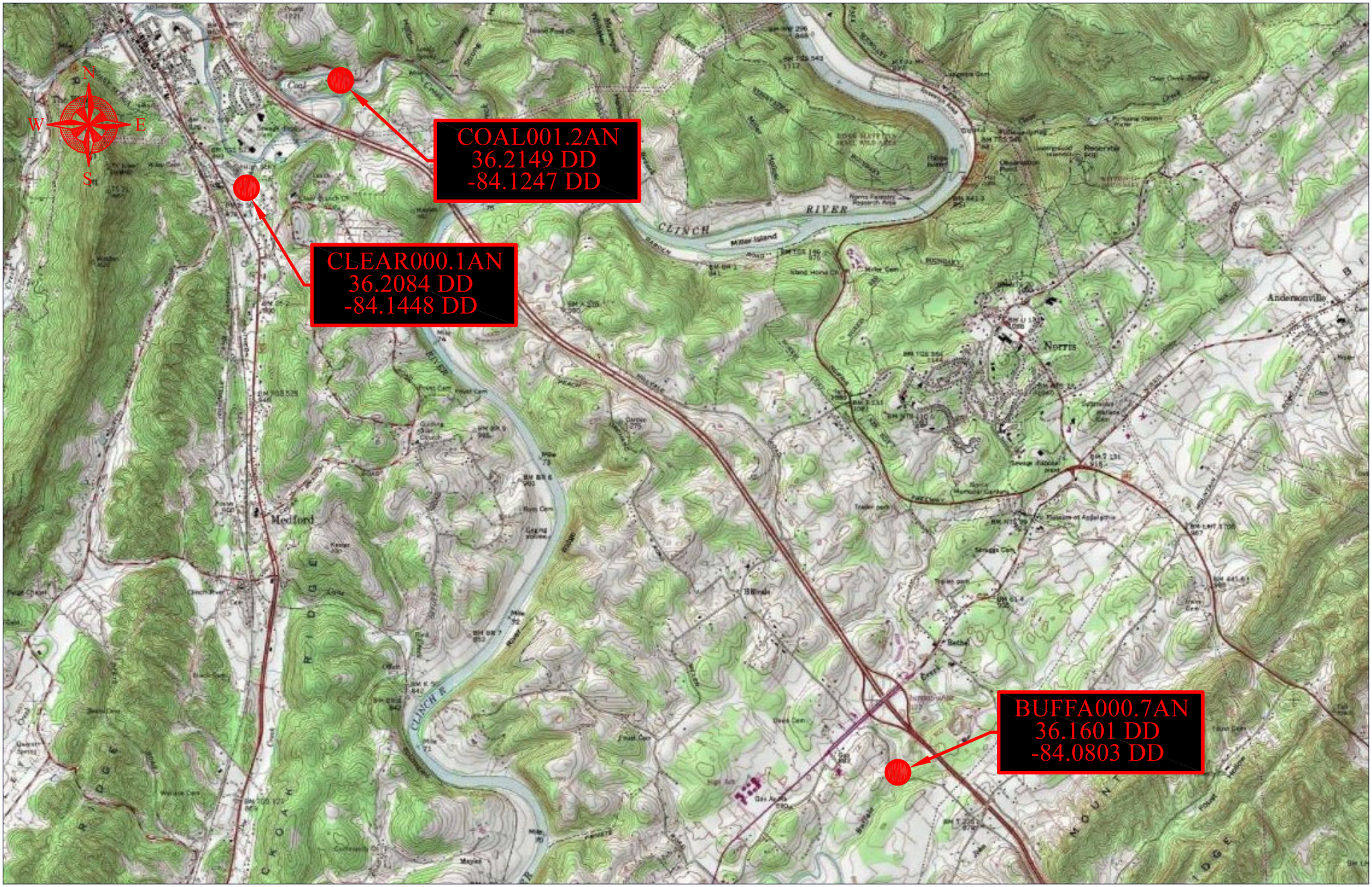
3.0 CONCLUSIONS

E. coli sampling and analysis was performed on Clear Branch, Coal Creek and Buffalo Creek at three discrete locations to meet MS4 compliance objectives. The sampling results indicate higher levels of bacteriological pollution, compared to established in TDEC General Water Quality Criteria (0400-40-03). The target geometric mean value of 126 MPN/100ml was not met during this sampling effort; therefore, all three streams should remain classified as *non-supporting* of the seven designated surface water uses.

The combined results presented herein summarize GEOServices efforts, in accordance GEOServices Proposal Number 14-19418, to satisfy the analytical monitoring requirements for NPDES Permit No. TNS075108. All laboratory results and chain of custody documentation is included in the **Appendix C** of this document and electronic copies will be provided to Anderson County.

APPENDIX A

MAP



SCALE:	NTS
CHECKED BY:	JM
DRAWN BY:	CSG
DATE:	9–17–19

GEOServices, LLC Geotechnical and Materials Engineers

2651 Willow Point Way
Knoxville, Tennessee 37931
Phone: (865) 539-8242
Fax: (865) 539-8252

SAMPLING LOCATIONS
ANDERSON COUNTY MS4
BACTERIA SAMPLING

JOB NO: 24–19624

1

APPENDIX B

PHOTOGRAPHS

Photo 1: CLEAR000.1AN facing upstream

Photo 2: CLEAR000.1AN facing downstream

Photo 3: COAL001.2AN facing upstream

Photo 4: COAL001.2AN facing downstream

Photo 5: BUFFA000.7AN facing upstream

Photo 6: BUFFA000.7AN facing downstream

APPENDIX C

LABORATORY REPORTS

MICROBAC®

Microbac Laboratories, Inc., Maryville

CERTIFICATE OF ANALYSIS

1911877

GEOServices LLC

Jason Mann
2561 Willow Point Way
Knoxville, TN 37931

Project Name: ANderson MS4

Project / PO Number: N/A
Received: 08/02/2019
Reported: 08/05/2019

Analytical Testing Parameters

Client Sample ID: Clear000.1AN
Sample Matrix: Water
Lab Sample ID: 1911877-01
Collected By: Jason Mann
Collection Date: 08/02/2019 11:32

Microbiological Parameters	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
SM9223 B-1997								
E. Coli	**980**	1	MPN/100 mL	1			08/02/19 1739	CWS

Client Sample ID: Cloal001.2AN
Sample Matrix: Water
Lab Sample ID: 1911877-02
Collected By: Jason Mann
Collection Date: 08/02/2019 11:53

Microbiological Parameters	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
SM9223 B-1997								
E. Coli	**690**	1	MPN/100 mL	1			08/02/19 1739	CWS

Client Sample ID: Buffa000.1AN
Sample Matrix: Water
Lab Sample ID: 1911877-03
Collected By: Jason Mann
Collection Date: 08/02/2019 12:24

Microbiological Parameters	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
SM9223 B-1997								
E. Coli	**180**	1	MPN/100 mL	1			08/02/19 1739	CWS

Client Sample ID: DUpBuffa000.1AN
Sample Matrix: Water
Lab Sample ID: 1911877-04
Collected By: Jason Mann
Collection Date: 08/02/2019 12:26

Microbiological Parameters	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
SM9223 B-1997								
E. Coli	**180**	1	MPN/100 mL	1			08/02/19 1739	CWS

Definitions

RL: Reporting Limit

1911877-01 Sampled: 08/02/2019 11:32
GEOServices LLC

MICROBAC 505 E. Broadway Ave., Maryville, TN 37804 | 865.977.1200 p | 865.984.8616 f

TO BE COMPLETED BY MICROBAC

Lab Report Address
Client Name: GEOServices, LLC
Address: 2561 Willow Point Way
City, State, Zip: Knoxville, TN 37931
Contact: Jason Mann
Telephone No.: (865) 776-8208

Invoice Address
Client Name: GEOServices, LLC
Address: 2561 Willow Point Way
City, State, Zip: Knoxville, TN 37931
Contact: Jason Mann
Telephone No.: (865) 539-8242

Turnaround Time
☐ Routine (5 to 7 business days)
☐ RUSH* (notify lab)
(needed by)

Temperature Upon Receipt (°C) 0.8
Therm ID
Holding Time
Samples Received on Ice? ☐ Yes ☐ No ☐ N/A
Custody Seals Intact? ☐ Yes ☐ No ☐ N/A

Report Type
☒ Results Only ☐ Level 1 ☐ Level 2 ☐ Level 3 ☐ Level 4 ☐ EDD

Send Report via: ☐ Mail ☐ Fax ☒ e-mail (address) jmann@geoservicesllc.com
Send Invoice via: ☒ Mail ☐ Fax ☐ e-mail (address)
Compliance Monitoring? ☐ Yes ☐ No
☐ Agency/Program

Project: Anderson MS4 24-19624
Location: Anderson Co.
PO No.:
Sampler Phone No.: (865) 776-8208
Sampled by (PRINT): Jason Mann
Sampler Signature:

* Matrix Types: Soil/Solid (S), Sludge, Oil, Wipe, Drinking Water (DW), Groundwater (GW), Surface Water (SW), Waste Water (WW), Other (specify)
** Preservative Types: (1) HNO3, (2) H2SO4, (3) HCl, (4) NaOH, (5) Zinc Acetate, (6) Methanol, (7) Sodium Bisulfate, (8) Sodium Thiosulfate, (9) Hexane, (U) Unpreserved

REQUESTED ANALYSIS

Lab ID	Client Sample ID	Date Collected	Time Collected	No. of Containers	Matrix	Grab / Comp	Preservative Types **	E.coli	Additional Notes
	CLEAR000.1AN	8/2/19	1132	1	SW	G	8	✓	
	COAL001.2AN		1153	1	SW	G	8	✓	
	BUFFA000.7AN		1224	1	SW	G	8	✓	
	DUP BUFFA000.7AN		1226	1	SW	G	8	✓	

Possible Hazard Identification ☒ Hazardous ☐ Non-Hazardous ☐ Radioactive
Sample Disposition ☒ Dispose as appropriate ☐ Return ☐ Archive

Comments
send report to:
jmann@geoservicesllc.com
24-19624

	Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
		8/2/19 3:18PM		8-2-19 18:18
	Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
	Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time

rev. 7/18/18

MICROBAC®

Microbac Laboratories, Inc., Maryville

CERTIFICATE OF ANALYSIS

1912017

GEOServices LLC

Jason Mann
2561 Willow Point Way
Knoxville, TN 37931

Project Name: STANDARD PRICING

Project / PO Number: N/A
Received: 08/06/2019
Reported: 08/08/2019

Analytical Testing Parameters

Client Sample ID: Clear000.1AN
Sample Matrix: Water
Lab Sample ID: 1912017-01
Collected By: Jason Mann
Collection Date: 08/06/2019 12:20

Microbiological Parameters	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
SM9223 B-1997								
E. Coli	**2000**	1	MPN/100 mL	1			08/06/19 1714	TAA

Client Sample ID: Cloal001.2AN
Sample Matrix: Water
Lab Sample ID: 1912017-02
Collected By: Jason Mann
Collection Date: 08/06/2019 12:38

Microbiological Parameters	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
SM9223 B-1997								
E. Coli	**870**	1	MPN/100 mL	1			08/06/19 1714	TAA

Client Sample ID: Buffa000.7AN
Sample Matrix: Water
Lab Sample ID: 1912017-03
Collected By: Jason Mann
Collection Date: 08/06/2019 13:08

Microbiological Parameters	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
SM9223 B-1997								
E. Coli	**240**	1	MPN/100 mL	1			08/06/19 1714	TAA

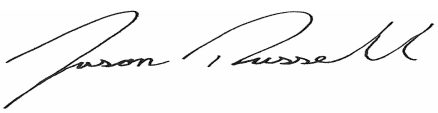
Definitions

RL: Reporting Limit

Report Comments

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included.

Reviewed and Approved By:



Jason Russell
Project Manager
Reported: 08/08/2019 12:17

1912017-01 Sampled: 08/06/2019 12:20
GEOServices LLC

MICROBAC 505 E. Broadway Ave., Maryville, TN 37804 | 865.977.1200 p | 865.984.8616 f

Lab Report Address	Invoice Address	Turnaround Time	*TO BE COMPLETED BY MICROBAC*
Client Name: GEOServices, LLC	Client Name: GEOServices, LLC	☐ Routine (5 to 7 business days) ☐ RUSH* (notify lab)	Temperature Upon Receipt (°C) Therm ID 3.6
Address: 2561 Willow Point Way	Address: 2561 Willow Point Way		Holding Time
City, State, Zip: Knoxville, TN 37931	City, State, Zip: Knoxville, TN 37931	(needed by)	Samples Received on Ice? ☑ Yes ☐ No ☐ N/A
Contact: Jason Mann	Contact: Jason Mann	Report Type	Custody Seals Intact? ☐ Yes ☐ No ☐ N/A
Telephone No.: (865) 776-8208	Telephone No.: (865) 539-8242	☑ Results Only ☐ Level 1 ☐ Level 2 ☐ Level 3 ☐ Level 4 ☐ EDD	

Send Report via: ☐ Mail ☐ Fax ☑ e-mail (address) jmann@geoservicesllc.com Send Invoice via: ☑ Mail ☐ Fax ☐ e-mail (address)

Project: Anderson MS4 24-19624 Location: Anderson Co. PO No.: Compliance Monitoring? ☐ Yes ☐ No ☐ Agency/Program

Sampled by (PRINT): Jason Mann Sampler Signature: J. Mann Sampler Phone No.: (865) 776-8208

* Matrix Types: Soil/Solid (S), Sludge, Oil, Wipe, Drinking Water (DW), Groundwater (GW), Surface Water (SW), Waste Water (WW), Other (specify)

** Preservative Types: (1) HNO3, (2) H2SO4, (3) HCl, (4) NaOH, (5) Zinc Acetate, (6) Methanol, (7) Sodium Bisulfate, (8) Sodium Thiosulfate, (9) Hexane, (U) Unpreserved

REQUESTED ANALYSIS

Lab ID	Client Sample ID	Date Collected	Time Collected	No. of Containers	Matrix	Grab / Comp	Preservative Types **	E.coli	Additional Notes
	CLEAR000.1AN	8/6/19	1220	1	SW	G	8	✓	
	COAL001.2AN	8/6/19	1238	1	SW	G	8	✓	
	BUFFA000.7AN	8/6/19	1308	1	SW	G	8	✓	

Possible Hazard Identification ☑ Hazardous ☐ Non-Hazardous ☐ Radioactive Sample Disposition ☑ Dispose as appropriate ☐ Return ☐ Archive

Comments
send report to:
jmann@geoservicesllc.com
24-19624

Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
J. Mann	8/6/19 1547		8-6-19 1547
Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time

rev. 7/18/18

MICROBAC®

CERTIFICATE OF ANALYSIS

GEOServices LLC
Ben Claxton
2561 Willow Point Way
Knoxville, TN 37931

PROJECT Harper Fiat

REPORT # 1912397
RECEIVED 08/13/2019
REPORTED 08/16/2019

SAMPLE DESCRIPTION: **CLEAR000.1AN** — LAB ID: **1912397-01**

ANALYSIS	RESULT	UNITS	METHOD
Microbiological Parameters			
E. Coli	2400	MPN/100 mL	SM9223 B-1997

SAMPLE DESCRIPTION: **COAL001.2AN** — LAB ID: **1912397-02**

ANALYSIS	RESULT	UNITS	METHOD
Microbiological Parameters			
E. Coli	340	MPN/100 mL	SM9223 B-1997

SAMPLE DESCRIPTION: **BUFFA000.7AN** — LAB ID: **1912397-03**

ANALYSIS	RESULT	UNITS	METHOD
Microbiological Parameters			
E. Coli	54	MPN/100 mL	SM9223 B-1997

REVIEWED BY

Jason Russell/Project Manager

Microbac Laboratories, Inc.
505 East Broadway Avenue, Maryville, TN 37804-5744 | 865-977-1200 p | 865-984-8616 f | www.microbac.com

1912397-01 Sampled: 08/13/2019 10:39
GEOServices LLC

MICROBAC 505 E. Broadway Ave., Maryville, TN 37804 | 865.977.1200 p | 865.984.8616 f

Lab Report Address
Client Name: GEOServices, LLC
Address: 2561 Willow Point Way
City, State, Zip: Knoxville, TN 37931
Contact: Jason Mann
Telephone No.: (865) 776-8208

Invoice Address
Client Name: GEOServices, LLC
Address: 2561 Willow Point Way
City, State, Zip: Knoxville, TN 37931
Contact: Jason Mann
Telephone No.: (865) 539-8242

Turnaround Time
☐ Routine (5 to 7 business days)
☐ RUSH* (notify lab)
(needed by)

Report Type
☒ Results Only ☐ Level 1 ☐ Level 2 ☐ Level 3 ☐ Level 4 ☐ EDD

Temperature Upon Receipt (°C)
Therm ID
Holding Time 1.8
Samples Received on Ice? ☐ Yes ☐ No ☐ N/A
Custody Seals Intact? ☐ Yes ☐ No ☐ N/A

Send Report via: ☐ Mail ☐ Fax ☒ e-mail (address) jmann@geoservicesllc.com
Send Invoice via: ☒ Mail ☐ Fax ☐ e-mail (address)

Project: Anderson MS4 24-19624
Location: Anderson Co.
PO No.:
Compliance Monitoring? ☐ Yes ☐ No
☐ Agency/Program

Sampled by (PRINT): Jason Mann
Sampler Signature:
Sampler Phone No.: (865) 776-8208

* Matrix Types: Soil/Solid (S), Sludge, Oil, Wipe, Drinking Water (DW), Groundwater (GW), Surface Water (SW), Waste Water (WW), Other (specify)
** Preservative Types: (1) HNO3, (2) H2SO4, (3) HCl, (4) NaOH, (5) Zinc Acetate, (6) Methanol, (7) Sodium Bisulfate, (8) Sodium Thiosulfate, (9) Hexane, (U) Unpreserved

REQUESTED ANALYSIS

Lab ID	Client Sample ID	Date Collected	Time Collected	No. of Containers	Matrix	Grab / Comp	Preservative Types **	E.coli	Additional Notes
	CLEAR000.1AN	8/13/19	1039	1	SW	G	8	√	
	COAL001.2AN	8/13/19	1057	1	SW	G	8	√	
	BUFFA000.7AN	8/13/19	1127	1	SW	G	8	√	

Possible Hazard Identification ☐ Hazardous ☐ Non-Hazardous ☐ Radioactive
Sample Disposition ☒ Dispose as appropriate ☐ Return ☐ Archive

Comments
send report to:
jmann@geoservicesllc.com
24-19624

Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
	8/13/19 1313	DOW	8-13-19, 1311
Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time

rev. 7/18/18

MICROBAC®

Microbac Laboratories, Inc., Maryville

CERTIFICATE OF ANALYSIS

1913148

GEOServices LLC

Jason Mann
2561 Willow Point Way
Knoxville, TN 37931

Project Name: STANDARD PRICING

Project / PO Number: N/A
Received: 08/27/2019
Reported: 08/28/2019

Analytical Testing Parameters

Client Sample ID: Clear000.1AN
Sample Matrix: Water
Lab Sample ID: 1913148-01
Collected By: Jason Mann
Collection Date: 08/27/2019 14:38

Microbiological Parameters	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
SM9223 B-1997								
E. Coli	**1700**	1	MPN/100 mL	1			08/27/19 1730	DTH

Client Sample ID: Cloal001.2AN
Sample Matrix: Water
Lab Sample ID: 1913148-02
Collected By: Jason Mann
Collection Date: 08/26/2019 14:59

Microbiological Parameters	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
SM9223 B-1997								
E. Coli	**460**	1	MPN/100 mL	1			08/27/19 1730	DTH

Client Sample ID: Buffa000.7AN
Sample Matrix: Water
Lab Sample ID: 1913148-03
Collected By: Jason Mann
Collection Date: 08/27/2019 15:20

Microbiological Parameters	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
SM9223 B-1997								
E. Coli	**390**	1	MPN/100 mL	1			08/27/19 1730	DTH

Definitions

RL: Reporting Limit

Report Comments

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included.

Reviewed and Approved By:

Chuck Dyer
Customer Relationship Coordinator
Reported: 08/28/2019 17:36

1913148-01 Sampled: 08/27/2019 14:38
GEOServices LLC

MICROBAC 505 E. Broadway Ave., Maryville, TN 37804 | 865.977.1200 p | 865.984.8616 f

Lab Report Address	Invoice Address	Turnaround Time	TO BE COMPLETED BY MICROBAC
Client Name: GEOServices, LLC	Client Name: GEOServices, LLC	☐ Routine (5 to 7 business days) ☐ RUSH* (notify lab)	Temperature Upon Receipt (°C) Therm ID
Address: 2561 Willow Point Way	Address: 2561 Willow Point Way		Holding Time 2.6°C
City, State, Zip: Knoxville, TN 37931	City, State, Zip: Knoxville, TN 37931	(needed by)	Samples Received on Ice? ☐ Yes ☐ No ☐ N/A
Contact: Jason Mann	Contact: Jason Mann	Report Type	Custody Seals Intact? ☐ Yes ☐ No ☐ N/A
Telephone No.: (865) 776-8208	Telephone No.: (865) 539-8242	☒ Results Only ☐ Level 1 ☐ Level 2 ☐ Level 3 ☐ Level 4 ☐ EDD	

Send Report via: ☐ Mail ☐ Fax ☒ e-mail (address) jmann@geoservicesllc.com Send Invoice via: ☒ Mail ☐ Fax ☐ e-mail (address)

Project: Anderson MS4 24-19624 Location: Anderson Co. PO No.: Compliance Monitoring? ☐ Yes ☐ No ☐ Agency/Program

Sampled by (PRINT): Jason Mann Sampler Signature: Jason Mann Sampler Phone No.: (865) 776-8208

* Matrix Types: Soil/Solid (S), Sludge, Oil, Wipe, Drinking Water (DW), Groundwater (GW), Surface Water (SW), Waste Water (WW), Other (specify)

** Preservative Types: (1) HNO3, (2) H2SO4, (3) HCl, (4) NaOH, (5) Zinc Acetate, (6) Methanol, (7) Sodium Bisulfate, (8) Sodium Thiosulfate, (9) Hexane, (U) Unpreserved

REQUESTED ANALYSIS

Lab ID	Client Sample ID	Date Collected	Time Collected	No. of Containers	Matrix	Grab / Comp	Preservative Types **	E.coli	Additional Notes
	CLEAR000.1AN	8/27/19	1438	1	SW	G	8	✓	
	COAL001.2AN	↓	1459	1	SW	G	8	✓	
	BUFFA000.7AN	↓	1520	1	SW	G	8	✓	

Possible Hazard Identification ☐ Hazardous ☐ Non-Hazardous ☐ Radioactive Sample Disposition ☒ Dispose as appropriate ☐ Return ☐ Archive

Comments

send report to:
jmann@geoservicesllc.com
24-19624

Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
Jason Mann	8/27/19 1604	DDW	8/27/19 1602
Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time

rev. 7/18/18

MICROBAC®

Microbac Laboratories, Inc., Maryville

CERTIFICATE OF ANALYSIS

1913384

GEOServices LLC

Jason Mann
2561 Willow Point Way
Knoxville, TN 37931

Project Name: Anderson MS4

Project / PO Number: N/A
Received: 08/30/2019
Reported: 08/31/2019

Analytical Testing Parameters

Client Sample ID: CLEAR000.1AN 8/30/19
Sample Matrix: Water
Lab Sample ID: 1913384-01 **Collection Date:** 08/29/2019 10:18

Microbiological Parameters	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
SM9223 B-1997								
E. Coli	**290**	1	MPN/100 mL	1			08/30/19 1534	CWS

Client Sample ID: COAL001.2AN 8/30/19
Sample Matrix: Water
Lab Sample ID: 1913384-02 **Collection Date:** 08/29/2019 10:49

Microbiological Parameters	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
SM9223 B-1997								
E. Coli	**310**	1	MPN/100 mL	1			08/30/19 1534	CWS

Client Sample ID: BUFFA000.7AN 8/30/19
Sample Matrix: Water
Lab Sample ID: 1913384-03 **Collection Date:** 08/29/2019 11:19

Microbiological Parameters	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
SM9223 B-1997								
E. Coli	**580**	1	MPN/100 mL	1			08/30/19 1534	CWS

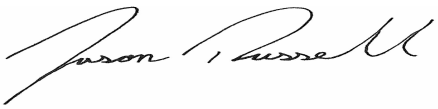
Definitions

RL: Reporting Limit

Report Comments

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included.

Reviewed and Approved By:



Jason Russell
Project Manager
Reported: 08/31/2019 19:47

1913384-01 Sampled: 08/29/2019 10:18
GEOServices LLC

MICROBAC 505 E. Broadway Ave., Maryville, TN 37804 | 865.977.1200 p | 86

AIN OF CUSTODY RECORD

ber

uctions on back

TO BE COMPLETED BY MICROBAC

Temperature Upon Receipt (°C) 4.0°

Therm ID

Holding Time

Samples Received on Ice? ☐ Yes ☐ No ☐ N/A

Custody Seals Intact? ☐ Yes ☐ No ☐ N/A

Lab Report Address

Client Name: GEOServices, LLC

Address: 2561 Willow Point Way

City, State, Zip: Knoxville, TN 37931

Contact: Jason Mann

Telephone No.: (865) 776-8208

Invoice Address

Client Name: GEOServices, LLC

Address: 2561 Willow Point Way

City, State, Zip: Knoxville, TN 37931

Contact: Jason Mann

Telephone No.: (865) 539-8242

jmann@geoservicesllc.com

Turnaround Time

☐ Routine (5 to 7 business days)

☐ RUSH* (notify lab)

(needed by)

Report Type

☒ Results Only ☐ Level 1 ☐ Level 2 ☐ Level 3 ☐ Level 4 ☐ EDD

Send Report via: ☐ Mail ☐ Fax ☒ e-mail (address)

Send Invoice via: ☒ Mail ☐ Fax ☐ e-mail (address)

Project: Anderson MS4 24-19624

Location: Anderson Co.

PO No.:

Compliance Monitoring? ☐ Yes ☐ No

☐ Agency/Program

Sampled by (PRINT): Jason Mann

Sampler Signature: Jason Mann

Sampler Phone No.: (865) 776-8208

* Matrix Types: Soil/Solid (S), Sludge, Oil, Wipe, Drinking Water (DW), Groundwater (GW), Surface Water (SW), Waste Water (WW), Other (specify)

** Preservative Types: (1) HNO3, (2) H2SO4, (3) HCl, (4) NaOH, (5) Zinc Acetate, (6) Methanol, (7) Sodium Bisulfate, (8) Sodium Thiosulfate, (9) Hexane, (U) Unpreserved

REQUESTED ANALYSIS

Lab ID	Client Sample ID	Date Collected	Time Collected	No. of Containers	Matrix	Grab / Comp	Preservative Types **	E.coli	Additional Notes
	CLEAR000.1AN	8/30/19	1018	1	SW	G	8	✓	
	COAL001.2AN	↓	1049	1	SW	G	8	✓	
	BUFFA000.7AN	↓	1119	1	SW	G	8	✓	

Possible Hazard Identification ☒ Hazardous ☐ Non-Hazardous ☐ Radioactive

Sample Disposition ☒ Dispose as appropriate ☐ Return ☐ Archive

Comments

send report to:
jmann@geoservicesllc.com
24-19624

Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
Jason Mann	8/30/19 1401	CWS	8-30-19 1400
Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time

rev. 7/18/18

Page of