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June 15, 2021

Mr. Roland McCarthy
City Manager
City of Cordele
501 North 7th Street
Cordele, Georgia 31015-4366

RE: City of Cordele Annual Watershed Assessment Report for 2020
Cordele, Crisp County, Georgia
TTL Project No.: 000200601075.00

Dear Mr. McCarthy:

TTL, Inc. (TTL) is pleased to submit this Annual Watershed Assessment Report for the 2020 monitoring year. This watershed assessment was performed in general accordance with requirements of the watershed protection plan for Cordele, Georgia, *Watershed Protection Plan – Gum Creek Water Pollution Control Plant Service Area*, prepared by Ecological Solutions, Inc. in February 2014. Please sign the certification page of each report, retain two copies for your records, and forward one copy to the Georgia EPD by June 30, 2021.

Georgia Environmental Protection Division
Watershed Protection Branch
2 Martin Luther King, Jr Drive
Atlanta, Georgia 30334

We appreciate the opportunity to provide these services and look forward to working with you in the future. If you have any questions concerning the enclosed report, please do not hesitate to contact us at (229) 432-5805.

Sincerely,
TTL, Inc.

Melissa R. Norris, P.G.
Project Professional

James R. Smith, P.G.
Senior Project Professional

REPORT OF WATERSHED ASSESSMENT 2020

**CORDELE, GEORGIA
CRISP COUNTY
TTL PROJECT NO. 000200601075.00**

Submitted to:

City of Cordele
501 North 7th Street
Cordele, Georgia 31015-4366

Prepared by:

TTL, Inc.
3202 Gillionville Road
Albany, Georgia 31721
229-432-5805



June 15, 2021

Annual Certification of Watershed Protection Plan Implementation

I certify, under penalty of law, that all phases and requirements of the approved Watershed Protection Plan for Cordele, Georgia, are being implemented. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. This certification is made for the period of June 2, 2020 to June 15, 2021.

City of Cordele Authorized Representative (Print)

City of Cordele Authorized Representative (Signature)

Date:_____

SIGNATURE OF ENVIRONMENTAL PROFESSIONALS

TTL, Inc. has completed this 2020 watershed assessment in general conformance with the requirements of the *Watershed Protection Plan – Gum Creek Water Pollution Control Plant Service Area* prepared by Ecological Solutions, Inc. in February 2014.

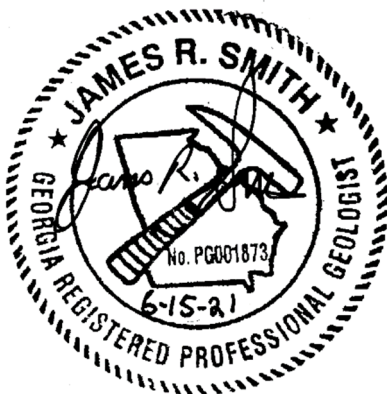


Melissa R. Norris, P.G.

Project Professional

6/15/2021

Date



James R. Smith, P.G.

Senior Project Professional

6/15/2021

Date

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1.0 Introduction and Purpose

The City of Cordele is located on Interstate 75 (I-75), 140 miles south of Atlanta in Crisp County, Georgia. Water and sewage services are provided by the City of Cordele to residential, commercial, and industrial customers both inside and outside of the city limits. Wastewater treatment for the City of Cordele is provided by the Gum Creek Water Pollution Control Plant (WPCP) which discharges treated effluent to Gum Creek. The wastewater treatment facility has a monthly average design capacity of 5 million gallons per day (MGD) and provides advanced treatment of wastewater for the City of Cordele. The Georgia Department of Natural Resources Environmental Protection Division (GA EPD) has promulgated requirements governing the discharge of treated effluent that require the city to implement a watershed management plan (EPD, 2004). The city has begun implementing its Watershed Protection Plan (WPP), dated February 2014. A copy of the plan is included in this report as Appendix A.

The plan is used to assess the chemical, physical, and biological condition of the watershed and identify potential impacts on the watershed's current and future health. Data collected in 2020 and subsequent years will be compared to the baseline data collected in 2014 to determine the effectiveness of watershed management practices intended to improve and protect the water quality and the biological condition of the watershed.

Based on EPD recommendations during a teleconference call with Mr. Dan Schreiber of the GA EPD on March 21, 2018, sample location descriptions have been updated to reflect the station descriptions as described in the Watershed Protection Plan. In 2017, sample locations Station 2 and Station 5 were eliminated and replaced with two additional locations: Station 2A and Station 3A. These locations were determined to be more representative of the watershed conditions (see Table 2 – attached). Additionally, in an e-mail discussion with Mr. Dan Schreiber of the GA EPD in November of 2018, the EPD recommended that Station 4 be eliminated from the watershed sampling. Based on this recommendation, Station 4 was eliminated from the watershed sampling beginning in 2019.

2.0 Watershed Characterization

The corporate boundary of the City of Cordele is located primarily within two of the three watersheds which are the focus of the WPP: Gum Creek and Cedar Creek. The Gum Creek watershed begins to the north and east of the City of Cordele and drains to the southwest into Lake Blackshear on the Flint River. The Gum Creek watershed area is approximately 84 square miles and includes most of the City

of Cordele. For the 2020 monitoring period, four of the five sampling locations for the watershed assessment are located in the Gum Creek watershed. The Georgia Department of Natural Resources – Wildlife Resources Division (WRD) operates a fish hatchery adjacent to Gum Creek and downstream of Williams Lake, an intermittently impounded portion of Gum Creek. Cedar Creek flows west into Lake Blackshear and has a watershed area of approximately 48 square miles. For the 2020 monitoring period, one sampling location is located in the Cedar Creek watershed. Elevation of the two watersheds changes from approximately 350 feet above Mean Sea Level (MSL) at the headwaters to approximately 236 feet MSL at Lake Blackshear. Figure 1 is a topographic map showing the study area location.

The estimated population of the City of Cordele is approximately 11,147 people based on the 2010 census (U.S. Census Bureau, 2016). This figure represents slightly less than 50% of the population of Crisp County, Georgia. Land cover data from the 2006 National Land Cover Dataset indicate that agriculture, forestry, and land development are the dominant land uses within these two watersheds (USGS, 2016). Table 1 provides land cover data for the portion of the Gum Creek and Cedar Creek watersheds assessed during the 2020 study.

EPD has assigned beneficial water uses and water quality criteria to protect those uses to all surface waters in the state of Georgia. Georgia Environmental Rule 391-3-6-.03 Water Use Classification and Water Quality Standards lists the water quality criteria and beneficial uses of State waters. Beneficial uses include Drinking Water, Wild River, Scenic River, Recreation, Fishing, and Coastal Fishing. Gum Creek and Cedar Creek have been assigned the Fishing beneficial use and must meet the associated water quality criteria as described in rule 391-3-6-.03 (EPD, 2021).

The City of Cordele operates a Phase II Municipal Separate Storm Sewer System (MS4) Program with an approved stormwater management program in compliance with the 2017-2022 NPDES Permit (Permit No. GAG610000). The Best Management Practices included in this program include items such as: public education, public involvement and volunteer initiatives; training and certification of workers; documentation requirements for illicit discharges; erosion and sediment ordinances and land disturbing activity permit requirements.

Structural Best Management Practices

Based on the 2020 MS4 Annual Report (<https://cordeleengineering.com>), the City of Cordele currently records 1,977 catch basins, 23.35 miles of ditches, 7 publicly owned detention/retention ponds and 87.9 miles of storm drain lines. Of these, the City documented inspections on 1491 catch basins, approximately 15 miles of ditches, 0 detention/retention ponds and 29.2 miles of storm drain lines in 2020. The City conducted inspections of 5 of 5 municipal facilities on the inventory. Additionally, the City was not able to meet the street and parking lot cleaning objective of a minimum of 300 miles of streets cleaned during 2020 due to down equipment and Covid impacts.

Non-Structural Best Management Practices

Due to the extenuating circumstances encountered during the 2020 COVID crisis, the City of Cordele was unable to host scheduled cleanup event: Great American Cleanup and Rivers Alive. On February 26, 2020 the City of Cordele conducted a cleanup event on Greer Street in place of the Gum Creek Bridge Cleanup Event. The City of Cordele Public Works Department released an updated 2020 brochure “The Cordele Storm Water Management Program and You”, and continued progress on the municipal website updates. The City of Cordele conducted a Presentation on SWMP on September 23, 2020. Examples of public outreach activities and a copy of the 2020 MS4 Annual Report are included in the Appendix B.

3.0 Water Quality Assessment

Aquatic communities in waterbodies function as continual monitors of environmental quality. Any stress (biological, chemical, or physical) imposed on an aquatic ecosystem may result in changes to the pre-stress community structure. The WPP requires the city to record data associated with the stresses on the watershed, and the narrative in this section presents the data collection methods and results from the 2020 assessment.

Figure 2 is an aerial map of the Gum Creek and Cedar Creek watersheds. Five sampling locations have been designated for this plan. Based on GA EPD recommendations during a teleconference call on March 21, 2018, sample location descriptions have been updated to reflect the station descriptions as described in the Watershed Protection Plan. Therefore, the ML-# nomenclature used in the 2015 through 2017 annual reports will henceforth be replaced with the original Station # identifier described in the April 2014 Watershed Protection Plan.

Sample locations Station 2, Station 4 and Station 5 have been eliminated and replaced with two additional locations: Station 2A and Station 3A. These sampling points are located on two unnamed tributaries to Gum Creek upstream of the water treatment facility. These sample locations capture potential surface drainage from the vicinity of the Cordele Airport and are representative of the major land uses in the Gum Creek Watershed. The updated sample locations, as follows, were evaluated in the 2020 monitoring year:

- Station 1 Active / formerly ML-1
- Station 2 Eliminated 2018 / formerly ML-2
- Station 2A Active
- Station 3 Active / formerly ML-3
- Station 3A Active
- Station 4 Eliminated 2019/ formerly ML-4
- Station 5 Eliminated 2018 / formerly ML-6
- Station 6 Active / formerly ML-5

Sampling location descriptions and location coordinates are shown in Table 2. Figure 3 shows the location of each sampling station included in the watershed assessment. Photographs of the sampling locations are included in Appendix C.

3.1 Biological Assessment

EPD issued revised guidance in October 2015 which requires that biological monitoring be conducted twice during a five-year period. Biological monitoring was performed at Station 1 and Station 3 in October 2014. The macroinvertebrate assessment was conducted at Station 6, but there was insufficient flow for the fish sampling for the same event. Station 2 and Station 4 were not wadeable at the time of the 2014 assessment. In October 2016 biological monitoring was attempted for the Cordele watershed. However, due to low stream flow conditions, the only sampling achieved was the macroinvertebrates at Station 3. Station 1, Station 5, and Station 6 were dry and could not be sampled during the same event. In October 2016 Station 2 and Station 4 were not wadeable and therefore could not be sampled. Based on EPD recommendations, TTL conducted biological monitoring for the updated sampling locations in September 2019 (Station 1, Station 2A, Station 3, Station 3A and Station 6). Station 6 was dry, and therefore was not sampled.

Site index scores have been calculated for the streams in the study area by EPD based on a study of reference reaches within the subcoregion. TTL utilized the revised GADNR/WRD SOPs in order to update the Index of Biotic Integrity (IBI) scoring for data collected during the 2014 and 2019

assessments as described in GADNR/WRD: *Part III: Scoring Criteria for the Index of Biotic Integrity and the Index of Well-Being to Monitor Fish Communities in Wadeable Streams in the Apalachicola and Atlantic Slope drainage basins of the Southeastern Plains Ecoregion of Georgia, 2020* (GADNR/WRD, 2020). A brief summary of the previous biological assessment findings for the Cordele Watershed is provided in Section 3.1.2 below. The next biological assessment is scheduled to be conducted in 2022.

3.1.2 Bioassessment Summary

Station 1: Station 1 is located near the headwaters of Gum Creek and has a drainage area of approximately 34.5 square miles. This section of reach experiences intermittent flow. Station 1 received macroinvertebrate Site Index Score rankings from poor (2014) to fair (2019). The fish community IBI ranked very poor at Station 1 in 2014. No fish were observed during the fish community assessment event at Station 1 on September 24, 2019. Therefore, an IBI score was not calculated for Station 1. Please note that the stream segment was partially disconnected stagnate pools with no measurable flow for this event. The habitat ranked suboptimal during the 2014 and 2019 assessments.

Station 2A: Station 2A is an unnamed tributary to Gum Creek. This section of stream has been ditched and much riparian buffer consisted of maintained grasses. Water levels are deep, and tend to stagnate in this section of reach. Station 2A received a macroinvertebrate site index score of 20 (poor) during the 2019 assessment. The habitat ranking for Station 2A of 88.5 - marginal, was the lowest of the monitoring locations. Water levels were too high to conduct the fish assessment in 2019.

Station 3A: The unnamed tributary to Gum Creek at monitoring Station 3A has a drainage area of approximately 1.98 square miles. This section of reach has been ditched and scored an average of 120.5 – suboptimal for habitat ranking. Station 3A received a macroinvertebrate Site Index Score of 20 (poor) and Fish IBI of 19 (very poor) during the 2019 biological assessment.

Station 3: Gum Creek at Station 3 has a drainage area of approximately 56.5 square miles, and is the furthest downstream monitoring location included in the Cordele Watershed Assessment. The macroinvertebrate site index scores at Station 3 ranged from 24 – fair (2016) to 30 – fair (2019). Fish IBI scores ranked very poor in both 2014 and 2019. There was insufficient flow to conduct the fish

assessment during the 2016 biological monitoring. Station 3 has consistently scored suboptimal habitat rankings.

Station 6: Cedar Creek at Station 6 exhibits an intermittent flow regime, and was dry during the 2016 and 2019 biological assessments. No fish sampling has been conducted for Station 6 due to insufficient stream flow. Station 6 received a macroinvertebrate Site Index Score of 21 – poor during the 2014 assessment. This section of reach scored 131.5 to 133 – suboptimal habitat rankings.

In general, biological and habitat assessments indicate streams in the Cordele area are impaired by geomorphic factors causing sedimentation and habitat simplification, as well as lack of diverse flow regimes (i.e. minimal pool and glide habitat, insufficient combination of fast and slow flowing water). Poor bank stability was also a key issue and may be contributing to the increased sedimentation. Overall, these stations do not support diverse or abundant macroinvertebrate and fish communities but are typical of small intermittent tributaries located within the Dougherty Plain ecoregion. Table 3 includes a summary of the macroinvertebrate Site Index Scores, Fish IBI scores and habitat rankings for the 2014, 2016 and 2019 biological assessments. Appendix D contains the revised fish community metric calculations based on the updated GA DNR/WRD scoring criteria issued in 2020.

3.2 Physical Characterization

The City of Cordele lies within the Southeastern Plains Level III Ecoregion and within the Dougherty Plain Level IV Ecoregion (Griffith, 2001). The Dougherty Plain ecoregion is characterized as mostly flat to gently rolling and underlain by near-surface limestone producing a karst topography containing springs and sinkholes. Streams within this ecoregion are typically low-gradient and have sandy bottoms. Gum and Cedar Creeks are subwatersheds within the Middle Flint River hydrologic unit. Crops such as peanuts, pecans, and cotton are common within the Dougherty Plain ecoregion. Common tree species include pines, red oaks, and hickories on the uplands and blackgum, sweetgum, water oak, and cypress within the wetter, poorly drained depressions.

Gum Creek in the vicinity of the Station 1 was flowing for the majority of the study period. Gum Creek at Station 3 has a well-defined channel but is affected by stormwater runoff from the downtown area of Cordele and by a small spring that enters on the left bank.

Station 4 on Gum Creek is downstream of the Cordele wastewater treatment facility and immediately upstream of the small dam which forms Williams Lake at the Cordele Fish Hatchery. The presence of this small dam, which can be opened and closed by hatchery personnel, affects stream flow and water level at Station 4 at times. As previously discussed, in November of 2018 the EPD recommended Station 4 be eliminated. Therefore, Station 4 was eliminated from the Watershed monitoring beginning in 2019. Personnel from the City of Cordele wastewater treatment facility continue to make weekly water quality measurements at Station 3 (upstream of the wastewater treatment facility) and at Station 4 (downstream of the facility). The water quality parameters measured at these two locations include five-day biochemical oxygen demand (BOD5), pH, dissolved oxygen, chlorine (Cl2), and water temperature.

Stations 2A and 3A are located on unnamed tributaries to Gum Creek which flow into Gum Creek between monitoring locations Station 1 and Station 3. Both tributaries have been ditched/alterd and exhibited fairly consistent flow during the 2020 assessment. However, flow conditions at Station 3A tend to stagnate during dryer periods.

Cedar Creek at Station 6 flows through a shallow glide pool. Historically this location has flow only during periods of precipitation. This location exhibited more consistent flow during the 2020 monitoring events, than have typically been observed.

The City of Cordele receives an average annual rainfall amount of approximately 45 inches. Table 4 provides the recorded monthly rainfall totals for Cordele from 2014 through 2020 along with the period of record average rainfall amounts for each month. The rainfall total for 2014 was just slightly above normal, and during 2015 the total rainfall for Cordele was nearly 25 inches above normal. The rainfall total for 2016 (37.72 inches) was slightly below normal, and was slightly above normal in 2017 (48.19 inches). Rainfall totals for 2018 and 2019 were approximately 10 to 16 inches above normal. The recorded rainfall total for 2020 was 61.07 inches; approximately 15 inches above normal.

3.3 Chemical / Bacteriological Water Quality Assessment

According to the WPP, at least four chemical water quality sampling events were scheduled to take place during the year: three dry events and one wet event. A wet event occurs when rainfall has accumulated to one inch. A sample must be taken at one inch, at peak flow condition, and when the flow returns to normal. A dry event is sampled when no rain has fallen within 72 hours. All samples

were taken at mid-stream. A minimum of two fecal coliform and *E. coli* geometric means were to be calculated from May to October. Each geometric mean consists of four samples collected within a 30-day period at intervals not less than 24 hours. The bacteriological samples are collected regardless of weather.

Tables 5A through 5E provide the in-situ measurement results and the results of chemical analyses for the water quality indicators included in the assessment of Gum and Cedar Creeks. A compact disc containing an electronic copy of all sampling results and an electronic copy of this report is included at the back of this report. Field data sheets are included in Appendix E and laboratory analytical reports are included in Appendix F.

3.3.1 Dissolved Oxygen

Dissolved oxygen and biochemical oxygen demand concentrations are indicative of a stream's ability to assimilate organic material. Dissolved oxygen concentrations were measured in Gum Creek and Cedar Creek during four (4) sampling events in May 2020, one (1) sampling event in September, and four sampling events in October 2020.

Dissolved oxygen is oxygen gas molecules present in water and is vital to aquatic plants and animals for respiration. Dissolved oxygen levels vary due to water temperature, time of day (sunlight), season, water depth, barometric pressure, and water turbulence. The addition of nutrients, chemicals, bacteria, decreased flows, and increased water temperature can decrease the amount of dissolved oxygen in a waterbody (EPD 2010). Georgia water quality standards regulations require a minimum dissolved oxygen concentration of 4.0 mg/L and a daily average concentration of 5.0 mg/L in waters supporting warm water species of fish (EPD, 2021).

Station 1: Dissolved oxygen concentrations measured on nine (9) separate sampling events between May 7, and October 29, 2020, at Station 1 on Gum Creek ranged from a minimum of 3.69 mg/L on October 29, 2020, to a maximum of 7.59 mg/L on October 22, 2020. The average dissolved oxygen concentration at Station 1 was 5.94 mg/L during the 2020 sampling period. Station 1 exhibits intermittent stream flow and typically experiences low DO conditions as stream flow drops. The higher DO concentrations observed during the 2020 monitoring period appear to be reflective of the above average rainfall and subsequent increase in stream flow conditions.

Station 2A: At Station 2A on an unnamed tributary to Gum Creek, dissolved oxygen concentrations were measured during nine (9) sampling events. Dissolved oxygen concentration ranged between 0.5 mg/L on September 14, 2020, and 5.43 mg/L on October 15, 2020. The average dissolved oxygen concentration for the nine sampling events at Station 2A was 2.70 mg/L. DO concentrations below the established Georgia Water Quality Standard minimum (4.0 mg/L) were observed during the following six (6) of nine (9) total sampling events: May 7, 2020 (2.47 mg/L), May 26, 2020 (2.02 mg/L), September 15, 2020 (0.5 mg/L), October 8, 2020 (2.71 mg/L), October 22, 2020 (1.39 mg/L) and October 29, 2020 (0.57 mg/L). This sample location is an altered/ditched section of the stream reach which is consistently stagnant, with no observable flow. The low DO conditions observed appear to be a function of intermittent/low flow regime and ponding of waters due to lack of topographic gradient.

Station 3: Dissolved oxygen in Gum Creek at Station 3 during nine (9) 2020 sampling events ranged from a minimum concentration of 3.65 mg/L on October 29, 2020, to a maximum concentration of 7.14 mg/L on October 15, 2020. The average dissolved oxygen concentration during the 2020 sampling period at Station 3 was 5.67 mg/L. Dissolved oxygen concentrations measured at Station 3 by the City of Cordele in May 2020 ranged from 6.6 mg/L to 7.6 mg/L and averaged 7.1 mg/L. In October 2020, dissolved oxygen concentrations measured by the City of Cordele ranged from 4.8 mg/L to 6.5 mg/L and averaged 6.0 mg/L. A table showing the results of the City of Cordele's weekly water quality monitoring at Station 3 (Above Creek Samples) is included in Appendix G.

Station 3A: Dissolved Oxygen was sampled on the unnamed tributary to Gum Creek, Station 3A, during nine (9) sampling events in 2020. Dissolved oxygen concentrations during this period varied between a minimum of 4.30 mg/L on October 29, 2020 to a maximum of 7.32 mg/L on October 15, 2020. The average dissolved oxygen concentration at Station 3A during the 2020 sampling period was 6.05 mg/L.

Dissolved oxygen concentrations measured at Station 4 by the City of Cordele in May 2020 ranged from 7.4 mg/L to 9.9 mg/L and averaged 8.4 mg/L. In October 2020, dissolved oxygen concentrations measured by the City of Cordele ranged from 6.5 mg/L to 8.3 mg/L and averaged 7.4 mg/L. A table showing the results of the City of Cordele's weekly water quality monitoring at Station 4 (Below Creek Samples) is included in Appendix G.

Station 6: At Station 6 on Cedar Creek, dissolved oxygen was measured during seven (7) of the nine (9) sampling events in 2020. Dissolved oxygen concentrations during this period varied between a

minimum of 2.23 mg/L on October 29, 2020 to a maximum of 7.08 mg/L on May 21, 2020. The average dissolved oxygen concentration at Station 6 during the 2020 sampling period was 4.48 mg/L. Station 6 was observed to be dry on September 15, 2020. Do was 2.92 mg/L and 3.18 mg/L on October 8 and 15, respectively. The stream was dry again on October 22. The final recorded DO was 2.23 mg/L on October 29. Low dissolved oxygen concentrations appear to be the result of the natural low to no stream flow conditions of the intermittent feature.

Seven (7) consecutive years of watershed assessment data has been collected for the City of Cordele. A broad range of dissolved oxygen concentrations can be expected during future sampling events within these small, low-flow regime watersheds. Average Dissolved oxygen concentrations measured from 2014 to 2020 are shown on Figure 4. Based on review of the Annual Average DO concentrations, the DO concentrations at each monitoring location appear to generally trending up from 2018 through 2020. This trend is consistent with the increased rainfall (10 + inches above average) and subsequent increased stream flow experienced during the past three years.

3.3.2 Temperature

Water temperature is affected by a number of factors including air temperature, storm water runoff, ground water inflows, turbidity, and exposure to sunlight. Elevated water temperature in streams can affect the health of organisms living in the stream. The temperature criterion for non-trout streams in Georgia, set by the EPD, is less than 32.2°C or 90°F (EPD 2021). Water temperatures at the watershed sampling stations were well below this standard during the 2020 sampling period, ranging from 11.59°C to 26.54°C. Water temperatures measured during the 2020 sampling period were slightly lower than those recorded during the 2014 through 2019 watershed monitoring. Figure 5 shows the annual average water temperatures measured at each of the monitoring locations in 2014 through 2020. Based on review of the Annual Average Temperature readings, the water temperature at each monitoring location appears to be generally trending down from 2018 through 2020. This trend is consistent with the increased rainfall (10 + inches above average) and subsequent increased stream flow experienced during the past three years.

3.3.3 pH

The acidity of a stream is determined by the activity of hydrogen and hydroxyl ions that are present. Acidity is commonly expressed as pH on a dimensionless scale from 0 to 14 with 7 indicating a neutral condition that is neither acidic (pH < 7) or basic (pH > 7). Expressed mathematically, pH is the negative

log of the hydrogen ion activity. In natural waterbodies pH typically ranges from approximately 6.0 standard units (s.u.) to between 8.0 and 9.0 s.u. As pH declines in a waterbody compounds such as metals dissolve and become more toxic to aquatic organisms. At very low pH (less than 5 s.u.) or very high pH (greater than 9 s.u.) the survival of fish and macroinvertebrates becomes unlikely.

The EPD has established water quality criteria for pH in waterbodies that may be affected by municipal and industrial wastes. For streams classified as Fishing the regulations require that pH remain within the range from 6.0 s.u. to 8.5 s.u. (EPD, 2021).

At sampling locations on Gum Creek, pH dropped below the acceptable range established for streams by GAEPD (6.0 s.u.) on 4 occasions, and was not recorded above the acceptable range (8.5 s.u.). The pH was recorded outside the acceptable range once each at Station 1, Station 2A, Station 3 and Station 3A. The pH values recorded during the 2020 sampling period in the Gum Creek watershed were consistent or slightly higher than measurements observed during 2014 through 2019. In 2018 Gum Creek had pH values below the acceptable limits on 8 occasions. In 2017 Gum Creek had pH values below the acceptable limits on 14 occasions. In 2016 there were two pH values below the acceptable range established for streams by GAEPD. In 2015 and 2014 there were three pH values below the acceptable range. In 2019, pH was measured below the acceptable range on 11 occasions.

At the Cedar Creek watershed sampling location (Station 6), pH dropped below the acceptable range established for streams by GAEPD once out of the 8 measurements recorded during the 2020 watershed assessment. The pH value was below the acceptable range on 4 of the 10 measurements recorded in 2019. In 2018, pH dropped below the acceptable range on one occasion out the seven measurements recorded at Station 6. In the Cedar Creek watershed there were no pH measurements during the 2016 monitoring period. During the 2015 monitoring period, none of the pH values measured in the Cedar Creek watershed were outside the acceptable range. Of the ten pH values measured during the 2014 sampling period in the Cedar Creek watershed, three measurements were below the acceptable range.

Figure 6 shows the annual average pH values measured during the 2014 through 2020 monitoring periods. Based on review of the annual average pH readings, the pH at Stations 2A and 3A appear to be trending up from 2018 through 2020, while the pH at Stations 1 and 3 appear to be trending slightly down from 2018 through 2020.

3.3.4 Flow

The volume of water flowing in Gum Creek and Cedar Creek is influenced by several factors, including precipitation, drainage area, ground water contribution to base stream flow, and water withdrawals from the streams. Pumping of ground water for irrigation can also affect the volume of water flowing in streams by lowering ground water levels and disconnecting the stream from shallow ground water. Stream flow calculations for sampling locations on Gum Creek and Cedar Creek can be found on the field data sheets in Appendix E.

At Station 1 on Gum Creek, stream flow measurements ranged from 2.94 cfs on May 13, 2020 to 0.99 cfs on October 15, 2020. There was no measurable flow recorded for Station 2A during the 2020 sampling events. At Station 3 on Gum Creek stream flow was 5.872 cfs on October 15, 2020. There was no measurable flow at Station 3 during the September and October events. At Station 3A stream the flow was 0.576 cfs on October 15, 2020. There was no measurable flow at Station 3A during the September and October events. No measurable stream flow was recorded for Station 6 on Cedar Creek in during the May, September and October 2020 monitoring events.

Based on the flow measurements obtained during the 2020 monitoring period it appears that stream flow was comparable to flow rates observed in 2019. Flow calculations are included in the field data (Appendix E). This trend is consistent with the increased rainfall (10 + inches above average) experienced during the past three years.

3.3.5 Turbidity

Turbidity is the expression of the optical property that causes light to be scattered and absorbed, rather than transmitted in straight lines through the water and is generally related to sediment runoff. Waters with high turbidity can be affected in several ways: elevated sediments can cause increased water temperature and lower dissolved oxygen. Sediments can directly impact biological productivity, species distribution, behavior, feeding, reproduction; and survival of aquatic biota. There are two major direct biota and physical habitat effects on streams and rivers due to sediment. Direct effects on biota include loss of habitat, suppression of photosynthesis by shading; increased drifting and predation on invertebrates; and shifts to turbidity-tolerant fish communities. Macroinvertebrates depend on stable in-stream habitat and with no structural support or food, there is no physical habitat for invertebrates or fish, Georgia's water quality standards regulations simply require that there be no "substantial visual contrast in a water body due to a man-made activity" (EPD, 2021).

Turbidity was measured during each sampling event with a Hach 2100P or a Hannah HI98703 Turbidimeter and the results are reported in Nephelometric Turbidity Units (NTU). Turbidity in Gum Creek at Station 1 varied between a minimum of 0.32 NTU (May 7, 202) to a maximum of 245 NTU (May 21, 2020). The average turbidity at this location was 36.2 NTU. At Station 2A on a tributary to Gum Creek turbidity varied between a minimum value of 0.23 NTU (May 13, 202) and a maximum value of 123 NTU (May 21, 202). The average turbidity at Station 2A was 32.2 NTU. The minimum turbidity reading at Station 3 on Gum Creek was 0.18 NTU (May 7, 2020) and the maximum at this location was 27.4 NTU (May 21, 2020). The average turbidity reading at Station 3 during the study period was 8.7 NTU. The minimum turbidity reading at Station 3A on a tributary to Gum Creek was 0.43 NTU (May 13, 2020) and the maximum at this location was 42 NTU (May 21, 2020). The average turbidity reading at Station 3A during the study period was 13.7 NTU.

Turbidity in Cedar Creek at Station 6 varied between a minimum of 0.27 NTU (May 7, 2020) to a maximum of 27.3 NTU (May 21, 2020). The average turbidity at this location was 11.1 NTU. Turbidity was generally elevated at all locations on May 21, 2020. Based on the Georgia Automated Environmental Monitoring Network, Precipitation Records, there was approximately 2.00 inches of accumulated precipitation during the previous 72 hours for May 21, 2020. Figure 7 shows the annual average turbidity levels measured at each monitoring location in the Gum Creek and Cedar Creek watersheds during the 2014 through 2020 monitoring periods.

3.3.6 Specific Conductance

Specific conductance or specific conductivity is a measure of water's ability to conduct an electric current. The presence of dissolved minerals, such as metals and salts, enhances the water's electrical conductivity. Specific conductance, therefore, is an indication of the amount of dissolved minerals present in a water sample. Elevated conductivity readings in fresh water streams can be due to pollution sources such as acid mine drainage, industrial or domestic wastewater, runoff from parking lots, or malfunctioning septic tanks. Specific conductance is generally higher during dry weather conditions when stream flow declines and is generally lower during wet weather when stream flow is higher in response to rainfall. Conductivity levels above approximately 500 $\mu\text{S}/\text{cm}$ can be detrimental to aquatic macroinvertebrates.

Specific conductivity measurements in the Gum Creek and Cedar Creek watersheds ranged from a minimum value of 53 $\mu\text{S}/\text{cm}$ at Station 1 on Gum Creek to a maximum value of 384 $\mu\text{S}/\text{cm}$ at Station

1 on Gum Creek. Specific conductivity measurements from 2020 were similar to measurements recorded in prior years. Figure 8 shows the annual average specific conductivity measurements for the 2014 through 2020 monitoring periods.

3.3.7 Total Suspended Solids

TSS concentrations can be affected by several factors, including soil type, rainfall and runoff intensity, stream flow and velocity, stream bank stability, and the presence of land disturbance activities in the watershed. The TSS concentrations at Station 1 on Gum Creek ranged from less than 4.00 mg/L to 16.7 mg/L. TSS concentrations at Station 2A on a tributary to Gum Creek varied between a minimum of 6.00 mg/L and a maximum of 22.7 mg/L. At Station 3 the minimum TSS concentration was less than 4.00 mg/L and the maximum TSS concentration was 8.00 mg/L. TSS Concentrations at Station 3A ranged from 8.50 mg/L to 27.70 mg/L. TSS Concentrations at Station 6 on Cedar Creek ranged from 8.33 mg/L to 15.0 mg/L.

TSS concentrations for the Gum Creek and the Cedar Creek watersheds during the 2020 monitoring period were similar to those measured from 2014 to 2019. Figure 9 presents the annual average TSS concentrations measured from 2014 through 2020 at each of the monitoring locations. Averages were calculated using 50% of the reporting limit for laboratory results reported as less than the reporting limit.

3.3.8 Oxygen Demand

Biochemical oxygen demand (BOD) is a measurement of the amount of oxygen consumed during a specified time period (usually five days, BOD₅) by microorganisms while decomposing organic matter in water. BOD levels are indicative of the amount of organic material in a water and the amount of oxygen that may be depleted during its decomposition. BOD is not a conventional pollutant, but is often used as an indicator of water quality. High BOD concentrations indicate that large amounts of dissolved oxygen may be consumed by microorganisms, leaving little for aquatic biota. BOD concentrations in natural waterbodies are generally less than 2 mg/L.

During the May 11, September 15 and October 15, 2020 sampling events, BOD₅ concentrations at all five monitoring locations within the Gum Creek and Cedar Creek watersheds were not detected above the laboratory reporting limits. BOD₅ concentrations at the Gum Creek and Cedar Creek stations during

the 2020 sampling period were slightly lower than concentrations measured during the 2014 through 2019 sampling periods. Figure 10 shows average annual measured BOD₅ concentrations at each of the monitoring locations during the 2014 through 2020 sampling periods. Averages were calculated using 50% of the reporting limit for laboratory results reported as less than the reporting limit.

Monthly average concentrations of BOD₅ reported in the 2020 monitoring period by the Cordele WWTP for its discharge of treated wastewater to Gum Creek varied between a minimum of 5.9 mg/L reported in August and 14.4 mg/L reported in March, in exceedance of the permitted limit of 11 mg/L (<https://echo.epa.gov/detailed-facility-report?fid=GA0024503>).

Chemical oxygen demand (COD) is the amount of oxygen necessary to chemically oxidize organic material and inorganic compounds such as ammonia and nitrite in a water sample. High concentrations of COD indicate that large amounts of dissolved oxygen may be consumed in a waterbody, affecting aquatic biota. COD concentrations in natural waterbodies are generally less than 10 mg/L.

COD concentrations in the Gum Creek watershed ranged from a minimum value of below the laboratory reporting limit at Station 1, 2A, 3, and 3A on May 13, 2020 to a maximum value of 35.0 mg/L at Station 1 on September 15, 2020. COD concentrations in the Cedar Creek watershed ranged from a minimum value of below the laboratory reporting limit to a maximum value of 11.0 mg/L at Station 6. COD concentrations in Gum Creek and Cedar Creek watersheds during the 2020 monitoring period were lower than those reported in 2019, and generally lower than reported during the 2014 through 2018 sampling periods. Figure 11 shows the annual average COD concentrations measured during the 2014 through 2020 sampling periods for each sampling location. Averages were calculated using 50% of the reporting limit for laboratory results reported as less than the reporting limit.

3.3.9 Nutrients

Ecological effects associated with excess nutrients (phosphorus and nitrogen) in streams include algae blooms which can result in depletion of dissolved oxygen and elevated pH values. Some species of algae can release toxins which affect fish and humans who may come in contact with them. In shallow streams, excess nitrogen and phosphorus can lead to excessive growths of filamentous algae and periphyton that affect aquatic habitats for fish and invertebrates. Nitrogen is a naturally occurring plant

nutrient and is the most abundant element in the atmosphere. As a result, it is present in stormwater runoff at much higher concentrations than phosphorus. Phosphorus is also a naturally occurring mineral but is much less abundant than nitrogen in natural environments.

Phosphorus is introduced into the environment by the breakdown of rock and soil minerals, application of commercial fertilizers, and in human and animal wastes. Total phosphorus measures the total amount of phosphorus, both suspended and dissolved, in the water, while orthophosphate is the most common form of phosphorus in water, usually comprising 90% or more of the total phosphorus. Small amounts of phosphorus are essential for plant growth and metabolic reactions in animals and plants. Since phosphorus is usually in short supply in streams, even a small increase can cause significant plant/algal growth. While the plants/algae increase dissolved oxygen during photosynthesis, their respiration and eventual decomposition may consume significant amounts of oxygen, depleting the dissolved oxygen content of a stream (USDA).

Phosphorus is essential for good crop production and its application to pasture and crop land is necessary for animal waste disposal. Fertilization of crops comprises the largest proportion of phosphorus used in agriculture. Erosion from surface runoff transports phosphorus attached to soil and vegetation to surface waters. In watersheds where agriculture is a significant land use, proper best management practices to prevent soil erosion and excess runoff are important tools to prevent the export of excess phosphorus to streams and lakes. Present and future BMPs to control erosion and sedimentation will play a crucial role in lowering and maintaining concentrations of phosphorus in surface waters.

The Georgia EPD reports that the median total phosphorus concentration at stream sampling locations not influenced by upstream wastewater sources is slightly less than 0.05 mg/L in the Southeastern Plains ecoregion (EPD, 2013). The range of total phosphorus concentrations during 2020 at study locations in Gum Creek and Cedar Creek for all monitoring events was less than 0.0200 to 0.331 mg/L. The highest concentration of total phosphorus was measured at Station 3A in both 2019 and 2020. Figure 12 shows annual average total phosphorus concentrations for each sample location measured during the 2014 through 2020 sampling periods in the Gum Creek and Cedar Creek watersheds. Averages were calculated using 50% of the reporting limit for laboratory results reported as less than the reporting limit.

Ammonia occurs naturally in water bodies as a result of the breakdown of organic and inorganic matter in soil and water, excretion from biota, and reduction of atmospheric nitrogen by microorganisms. Municipal wastewater treatment facilities and wastewater from some industries can also be sources of ammonia. Total ammonia concentrations in natural surface waters are typically less than 0.2 mg/L as nitrogen (mg/L as N). Higher concentrations could be an indicator of pollution such as domestic sewage, industrial waste, or fertilizer runoff. Ammonia is a plant nutrient and can contribute to eutrophication. The toxicity of ammonia to fish and invertebrates increases as temperature and pH increase. EPA recommends that ammonia concentrations in fresh waters remain below 1.9 mg/L at a temperature of 20 °C and pH of 7.0 s.u. to avoid chronic toxicity to sensitive fish and invertebrate species (EPA, 2013). Analytical results from the Cordele watershed assessment in 2020 indicate the ammonia concentrations were similar to those recorded during the 2014 through 2019 watershed assessments. The highest total ammonia concentration measured in Gum Creek during the 2020 monitoring period was 1.680 mg/L as N at Station 3A. The highest ammonia concentration measured in the Cedar Creek watershed during the 2020 assessment was less than the laboratory reporting limit of 0.100 mg/L as N at Station 6.

The Cordele WWTP reported monthly average ammonia concentrations in its effluent, during the 2020 monitoring period, ranging from a minimum of 0.12 mg/L as N in September to a maximum of 0.67 mg/L as N in February (<https://echo.epa.gov/detailed-facility-report?fid=GA0024503>). Average annual ammonia nitrogen concentrations measured in the Gum Creek and Cedar Creek watersheds during the 2014 through 2020 monitoring periods are shown in Figure 13. Averages were calculated using 50% of the reporting limit for laboratory results reported as less than the reporting limit.

The total nitrogen concentration in waterbodies is the sum of total Kjeldahl nitrogen and nitrite plus nitrate nitrogen. Nitrogen is an essential plant nutrient and its presence in excess concentrations can contribute to eutrophication of streams and lakes. Natural streams generally have total nitrogen concentrations of less than 2 mg/L. The EPD estimates that streams in the Southeastern Plains ecoregion which are not influenced by the discharge of wastewater have a median total nitrogen concentration of approximately 0.9 mg/L.

Total nitrogen concentrations in Gum Creek ranged from a minimum of less than the laboratory reporting limits at Station 2A to a maximum of approximately 4.705 mg/L at Station 3A. Total nitrogen concentrations measured during the 2020 monitoring period in Gum Creek were generally similar to concentrations measured during the 2014 through 2019 assessment periods. Total Nitrogen

Concentrations measured at Station 6 in the Cedar Creek watershed ranged from 0.803 mg/L to 2.460 mg/L. Average annual total nitrogen concentrations measured in the Gum Creek and Cedar Creek watersheds in 2014 through 2020 are shown in Figure 14. Averages were calculated using 50% of the reporting limit for laboratory results reported as less than the reporting limit.

3.3.10 Metals

Metals occur naturally in many waterbodies but are most often present at levels that do not pose a threat to aquatic life or humans. Metals usually occur in the form of an ore or some other metal compound and are rarely present in the dissolved form at toxic levels. However, low or high pH conditions, atmospheric deposition, land disturbance activities, biological activity, or the presence of industrial sources can cause metals concentrations in streams to exceed acceptable concentrations necessary to prevent impacts to aquatic life. The EPD has established ambient water quality criteria for certain water hardness-dependent metals in freshwater waterbodies based on equations recommended by EPA for the dissolved form of the metals. EPD regulations include criteria to protect against both chronic and acute toxicity to aquatic life.

During the 2020 Cordele watershed assessment sampling in the Gum Creek and Cedar Creek watersheds:

- Dissolved cadmium was not detected in the surface water samples collected during the 2020 monitoring events.
- The concentration of dissolved copper exceeded a hardness-based Instream Water Quality Standard (ISWQS) only once during the 2020 monitoring. The dissolved copper concentration (2.45 µg/L) in the surface water sample collected at Station 2A on September 15, 2020 exceeded both the acute and chronic hardness-based ISWQS values of 2.25 and 1.77 ug/L, respectively.
- Dissolved lead was not detected in the surface water samples collected during the 2020 monitoring events.
- The concentrations of dissolved zinc in the surface water samples collected during the 2020 monitoring events did not exceed a hardness-based ISWQS.

A summary of the concentrations of dissolved metals during the 2020 monitoring event compared to the calculated hardness-based ISQWS values is included in Table 6A through 6E.

3.3.11 Bacterial Pathogen Indicators

Fecal coliform and *E. coli* bacteria are microorganisms which typically inhabit the intestines of warm-blooded animals and are commonly measured to indicate the potential presence of human or animal waste and associated pathogens. Bacterial contamination can cause gastrointestinal health problems in animals and humans. Georgia's surface water quality criteria for the Fishing beneficial use require that during the months of May through October fecal coliform bacteria counts are not to exceed a geometric mean of 200 per 100 mL based on at least four samples collected from a given sampling site over a 30-day period. For the months of November through April, fecal coliform bacteria counts should not exceed a geometric mean of 1000 per 100 mL based on four samples collected from a given sampling site over a 30-day period. Georgia's surface water quality criteria for the Recreational beneficial use require that *E. coli* bacteria counts are not to exceed a geometric mean of 126 per 100 mL based on at least four samples collected from a given sampling site over a 30-day period. (EPD, 2021).

In 2003, EPD published a total maximum daily load (TMDL) for fecal coliform which applied to 28 streams in the Flint River watershed. Gum Creek was included in the TMDL and a waste load allocation (WLA) for point sources of fecal coliform bacteria and a load allocation (LA) for nonpoint sources of fecal coliform bacteria were assigned to this waterbody. Georgia's surface water quality criteria for the Recreational Waters beneficial use require that *E. coli* bacteria counts are not to exceed a geometric mean of 126 per 100 mL based on at least four samples collected from a given sampling site over a 30-day period (EPD, 2021). Therefore, *E. coli* was included in the Cordele watershed assessment.

Fecal coliform bacteria concentrations exceeded Georgia water quality criteria of a geometric mean of not more than 200 colonies per 100 mL during May and October 2020 at all four (4) sampling locations on Gum Creek. The highest geometric mean concentrations on Gum Creek in May 2020 were detected at Station 2A (1,439 colonies/100mL) and Station 3A (1,176 colonies/100mL). The maximum geometric mean concentrations on Gum Creek in October 2020 were detected at Station 3 (534 colonies/100mL) and Station 3A (543 colonies/100mL). Additionally, fecal coliform bacteria concentrations exceeded Georgia water quality criteria of a geometric mean of not more than 200 colonies per 100 mL during May 2020 at sampling Stations 6 on Cedar Creek with 585 colonies per 100 mL. The geometric mean concentrations for coliform bacteria at station 6 were not calculated for the October 2020 sampling due to dry stream conditions during the October 22, 2020 sampling event.

E. coli bacteria geometric mean concentrations were similar to geometric mean concentrations for fecal coliform bacteria. Geometric mean concentrations measured during the May 2020 sampling event ranged from a minimum of 281 colonies/100 ml at Station 3 to a maximum geometric mean concentration of 1,035 colonies/100 ml at Station 3A. During the October sampling, the geometric mean concentration of E. coli bacteria ranged from 212 colonies/100mL at Station 2A to a maximum of 452 colonies/100 mL at Station 3A. Geometric mean concentrations of E. coli bacteria for Station 6 on Cedar Creek was 461 colonies per 100 mL in May 2020. The geometric mean concentrations for E.coli bacteria at station 6 were not calculated for the October 2020 sampling due to dry stream conditions during the October 22, 2020 sampling event.

Bacteriological levels were elevated at all five (5) sampling locations during the May 21, 2020 sampling event, which coincided with two-inches of accumulated precipitation within 72-hours of the sampling event. Stations 3 and 3A both experienced elevated bacteriological levels on October 29, 2020 which coincided with 0.48 inches of accumulated precipitation within 72-hours of the sampling event. No accumulated precipitation was recorded within 72-hours of the other six (6) bacteriological sampling events.

The Cordele WWTP reported monthly geometric average of fecal coliform in its effluent, during the 2020 monitoring period, ranging from 7 colonies per 100 mL in July to 97 colonies per 100 mL in April, well below the permitted limit of 200 colonies per 100 mL (<https://echo.epa.gov/detailed-facility-report?fid=GA0024503>).

All bacteriological sampling results for the 2020 sampling period are included in Tables 7A through 7E. Figure 15 shows the geometric means of fecal coliform sampling results from the 2014 through 2020 sampling periods at stations in the Gum Creek watershed. Figure 16 shows the geometric means of E. coli sampling results from the 2014 through 2020 sampling periods at stations in the Gum Creek watershed. Bacteriological levels compared to recent rainfall accumulation are depicted for each monitoring location in Figures 17 through 21.

4.0 Conclusions

Station 1: Station 1 is located on/near the headwaters of Gum Creek. Surrounding land use is predominately woodlands/wetlands and agricultural. Station 1 exhibits intermittent stream flow and typically experiences expected low DO conditions and higher temperatures as stream flow drops and

water stagnates. The average dissolved oxygen concentration at Station 1 was 5.94 mg/L during the 2020 sampling period. The higher DO concentrations observed during the 2020 monitoring period appear to be reflective of the above average rainfall and subsequent increase in stream flow.

Historically, the geometric mean concentrations for Fecal coliform and E. coli at Station 1 are generally lower than the other sampling locations on Gum Creek. However, the bacteriological levels were elevated at Station 1 and the other four sampling locations during the May 21, 2020 sampling event, which coincided with two-inches of accumulated precipitation within 72-hours of the sampling event. TTL did not observe any other obvious sources for this surge. Overall, sample results for Station 1 appears to be representative of the low-flow regime of this intermittent headwater portion of Gum Creek.

Station 2A: Station 2A is an unnamed tributary to Gum Creek. This sample location is an altered/ditched section of the stream reach. Much of the reach upstream of the sampling location consists of maintained grassed riparian buffer. There is little to no topographic relief and Station 2A consistently stagnates during dryer periods. Sample results indicate elevated total phosphorus at Station 2A and Station 3A, as compared with the other Gum Creek sampling locations. The concentration of dissolved copper exceeded a hardness-based Instream Water Quality Standard (ISWQS) only once during the 2020 monitoring. The source of the copper exceedance could not be identified. The average dissolved oxygen concentration for the nine sampling events at Station 2A was 2.70 mg/L. Station 2A appears to experience lower dissolved oxygen concentrations than the other Gum Creek locations monitored. However, this there is only three (3) years' worth of data available for Station 2A, as it was not implemented into the watershed assessment until 2018.

The highest geometric mean concentrations for Fecal coliform on Gum Creek in May 2020 were detected at Station 2A (1,439 colonies/100mL). Bacteriological levels were specifically elevated during the last two sampling events of May 2020, which coincided with increased rainfall and stream turbidity within seven days of each sampling event. TTL did not observe any other obvious sources for this surge. Overall, Station 2A appears to be primarily impacted by lack of flow and straightened stream reach with maintained grassed riparian buffer. The water at Station 2A appears to sit and stagnate in this altered/ditched section of stream reach possibly due to lack of topographic gradient.

Station 3A: Station 3A is a small, intermittent tributary of Gum Creek that is located just upstream from Station 3. This tributary exhibits a stronger flow regime than Station 1, but still experiences low DO

concentrations related to decreased/absent flow during drier periods. Consistent with the precipitation experienced, the average dissolved oxygen concentration at Station 3A during the 2020 sampling period was 6.05 mg/L. This segment of stream originates in a predominately urban/sub-urban area, flowing past several industrial sites and railroad crossings. Sample results indicate elevated total phosphorus, ammonia as nitrogen and total nitrogen at Station 3A, as compared with the other Gum Creek sampling locations. The highest total lead (4.03 mg/L) and highest total zinc (2.58 mg/L) levels were reported during the 2020 monitoring period occurred at Station 3A. However, the dissolved lead and/or zinc levels did not exceed the ISWQS in the samples collected during 2020. Additionally, bacteriological levels appear to be constantly elevated in this section of stream reach.

Station 3: Station 3 is the furthest downstream segment of Gum Creek sampled as part of this watershed assessment. The flow regime is much more consistent at Station 3, only showing impacts to flow during excessively dry periods.

Station 6: Station 6 is located on Cedar Creek; the surrounding land use is predominately woodlands/wetlands and agricultural. Dissolved oxygen was measured during seven (7) of the nine (9) sampling events in 2020. Dissolved oxygen concentrations during this period varied between a minimum of 2.23 mg/L on October 29, 2020 to a maximum of 7.08 mg/L on May 21, 2020. The average dissolved oxygen concentration at Station 6 during the 2020 sampling period was 4.48 mg/L. Station 6 was observed to be dry on September 15, 2020. Dissolved Oxygen was 2.92 mg/L and 3.18 mg/L on October 8 and 15, respectively. The stream was dry again on October 22. The final recorded DO was 2.23 mg/L on October 29. Low dissolved oxygen concentrations appear to be the result of natural conditions, especially low to no stream flow conditions of the intermittent feature.

Overall, the Gum Creek and Cedar Creek watersheds received an above average amount of rainfall during the past three (3) years (2018 – 2020) compared to the low rainfall totals for the 2016 assessment period. Average water temperatures have decreased since 2015. Average dissolved oxygen concentrations, appeared slightly higher than from 2016, 2017 and 2018. The increase in DO concentrations with increased precipitation suggest that the low DO concentrations are the result of natural conditions, especially low stream flow regimes and large pools where stream velocity is reduced. Average pH values measured during 2020 were generally consistent compared to those measured in previous years, well within the acceptable range. Average turbidity values in 2020 were similar to those recorded in the 2014, 2018 and 2019 monitoring periods which experienced similar rainfall amounts.

The watershed continues to experience elevated fecal coliform and E.coli bacteria levels. The sources for these elevated levels are presumed to be primarily nonpoint sources for two primary reasons. Bacteriological levels were elevated at all five (5) sampling locations during the May 21, 2020 sampling event, which coincided with two-inches of accumulated precipitation within 72-hours of the sampling event. Stations 3 and 3A both experienced elevated bacteriological levels on October 29, 2020 which coincided with 0.48 inches of accumulated precipitation within 72-hours of the sampling event.

In general, biological and habitat assessments indicate streams in the Cordele area are impaired by geomorphic factors causing sedimentation and habitat simplification, as well as lack of diverse flow regimes (i.e. minimal pool and glide habitat, insufficient combination of fast and slow flowing water). Poor bank stability was also a key issue and may be contributing to the increased sedimentation. Overall, these stations do not support diverse or abundant macroinvertebrate and fish communities but are typical of small intermittent tributaries located within the Dougherty Plain ecoregion.

5.0 Recommendations

Managing nonpoint source (NPS) Pollution is an extremely challenging task for any watershed management program. The City of Cordele is experiencing two main types of NPS impacts in the Gum and Cedar Creek watershed assessment areas under review: agricultural and urban.

Agricultural: Monitoring Stations 1 and Station 6 are located in land-use areas dominated by woodland/wetlands and agriculture. Low/intermittent stream flow coupled with runoff from agriculture is likely the main source of elevated bacteriological levels at these two locations. This is further evidenced in the correlation between increased bacteriological levels and recent rainfall events.

Urban Environments: Monitoring Stations 2A, 3 and 3A are located in more Urban/Sub-urban land-use areas. Stations 2A and 3A, are tributaries to Gum Creek which have both been altered by straightening/ditching and reduced riparian buffers. Urban/Sub-urban runoff, modified stream channels and naturally intermittent flow regimes of these two tributaries are the most likely causes for the elevated bacteriological levels. Again, this is further evidenced in the correlation between increased bacteriological levels and recent rainfall events.

The City of Cordele has made great strides in implementing brochure distribution and community involvement programs addressing common urban runoff prevention and stream cleanup efforts. The

City should continue to grow and expand these programs, as active community involvement is a major key to reducing NPS pollution. The City of Cordele may also consider adding agricultural specific community outreach in the areas surrounding Stations 1 and 6. Some of these areas maybe outside the city limits, and may require coordination with county offices and/or the Middle South Georgia Soil and Water Conservation Commission (SWCD) (<https://gaswcc.georgia.gov/soil-water-conservation-districts/region-v>). An example of an agricultural specific brochure is included in Appendix H.

Employee training, inspections, and documentation of illicit discharges or dumping are important for evaluating potential causes of watershed impacts and the subsequent development of remedial actions. The City of Cordele should continue performing structural BMPs and attempt to increase the inspections/documentation of ditches, detention/retention ponds, storm drain lines, as well as non-conformance activities associated with erosion and sediment ordinances and land disturbing activity permit requirements. Additionally, the City's objective of cleaning a minimum of 300 miles of streets and parking lots per year is a valuable tool at reducing NPS pollution and should continue.

6.0 References

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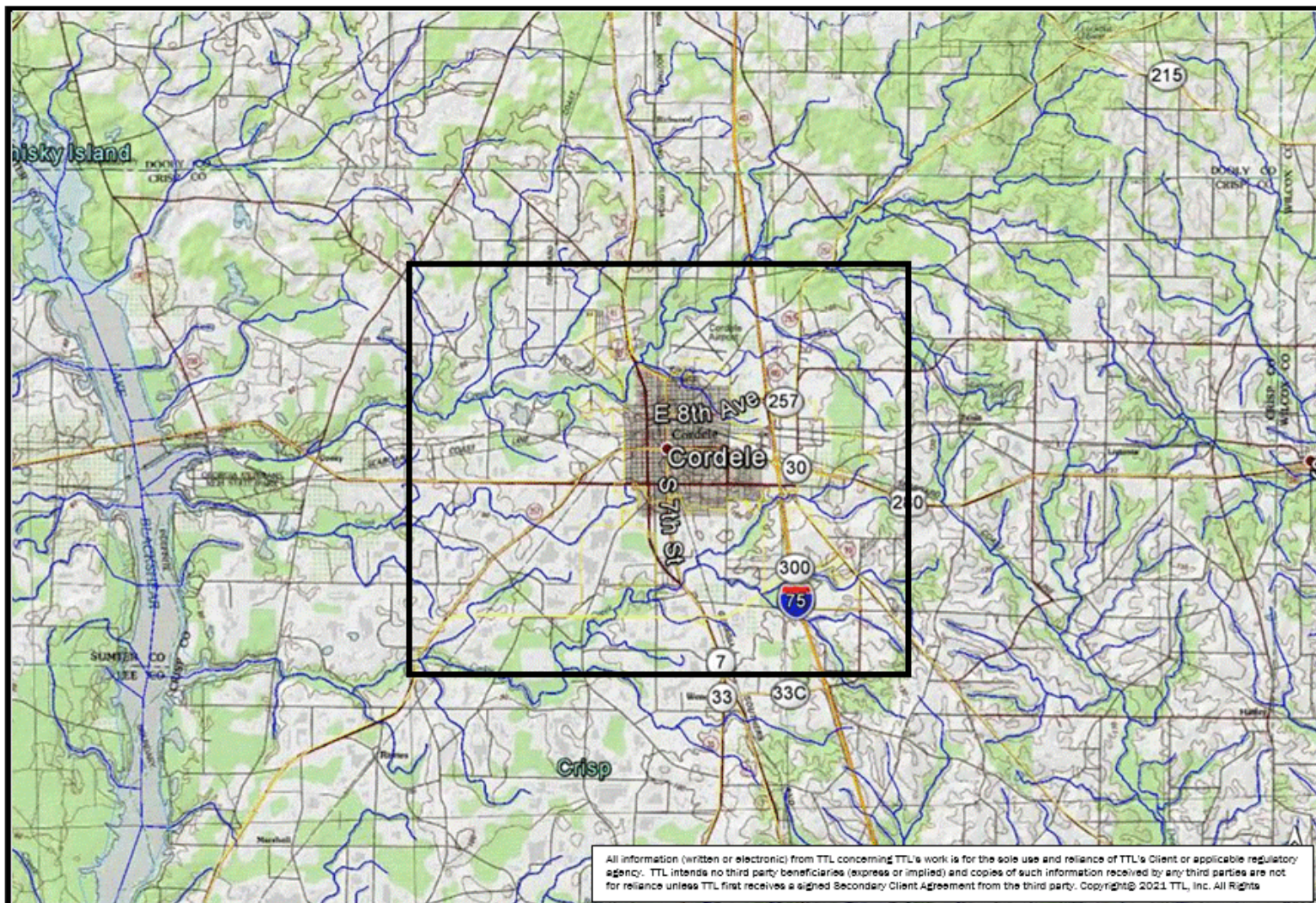
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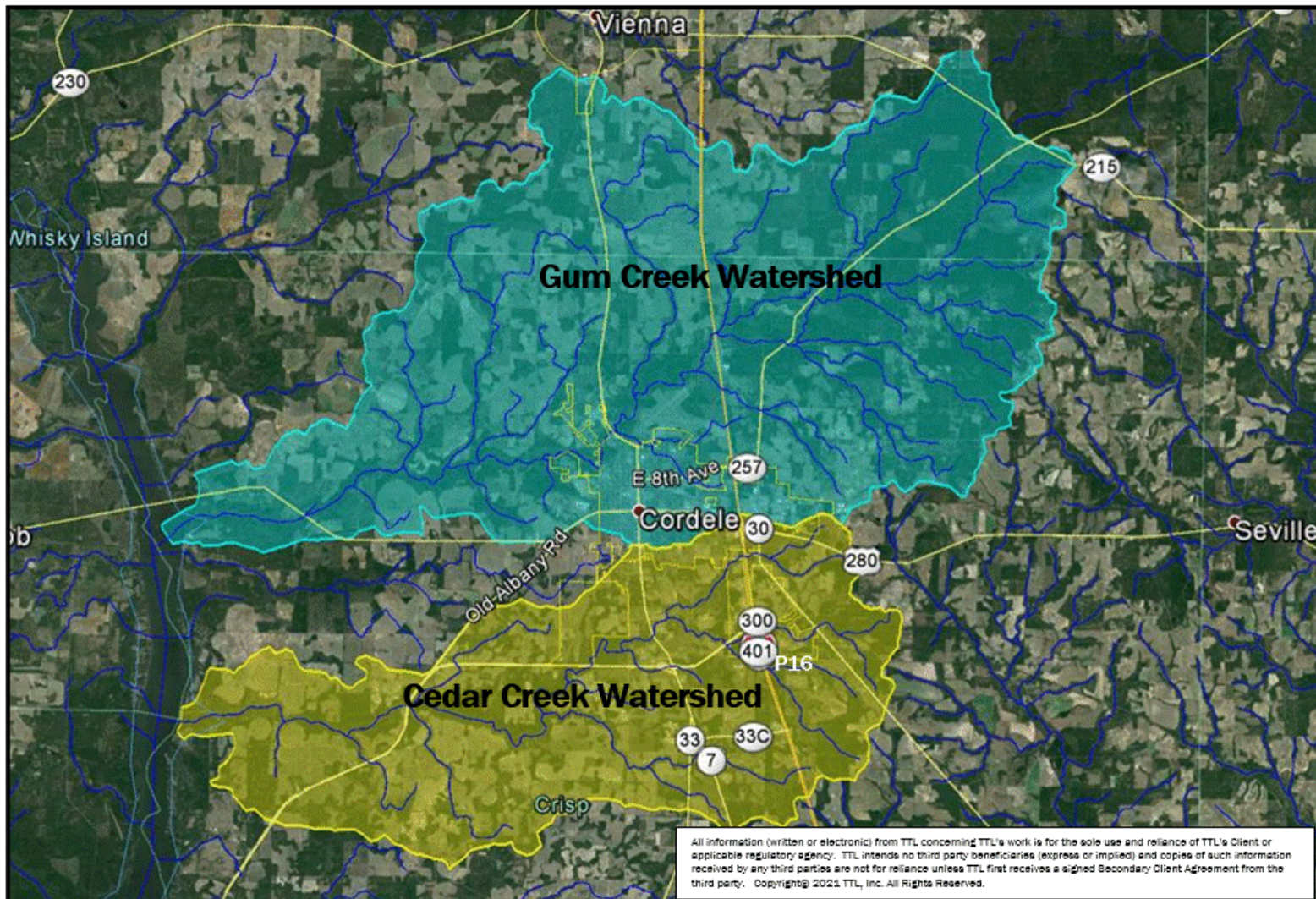
URL: http://streamstatsags.cr.usgs.gov/ga_ss/default.aspx

Figures



TTL

Figure 1
Watershed Assessment Study Area
City of Cordele 2020 Watershed Assessment Report
Cordele, Crisp County, Georgia
TTL Project No.: 000200601075.00



TTL

Figure 2
Aerial Map of Gum Creek and Cedar Creek Watersheds
City of Cordele 2020 Watershed Assessment Report
Cordele, Crisp County, Georgia
TTL Project No.: 000200601075.00

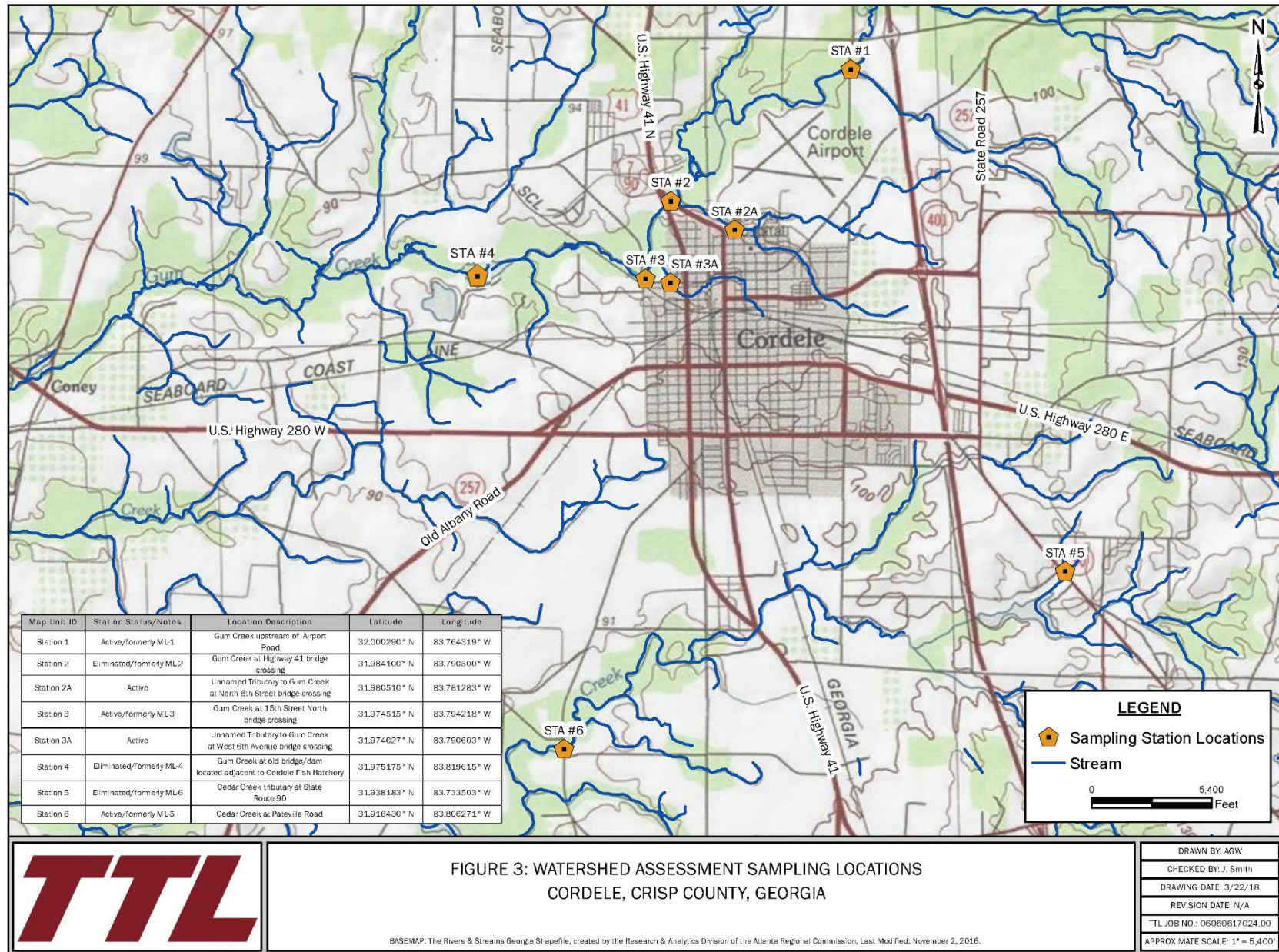


Figure 4. Annual Average Dissolved Oxygen Concentrations at Stations in the Gum Creek and Cedar Creek Watersheds from 2014 - 2020
City of Cordele, Georgia – TTL Project Number 000200601075.00

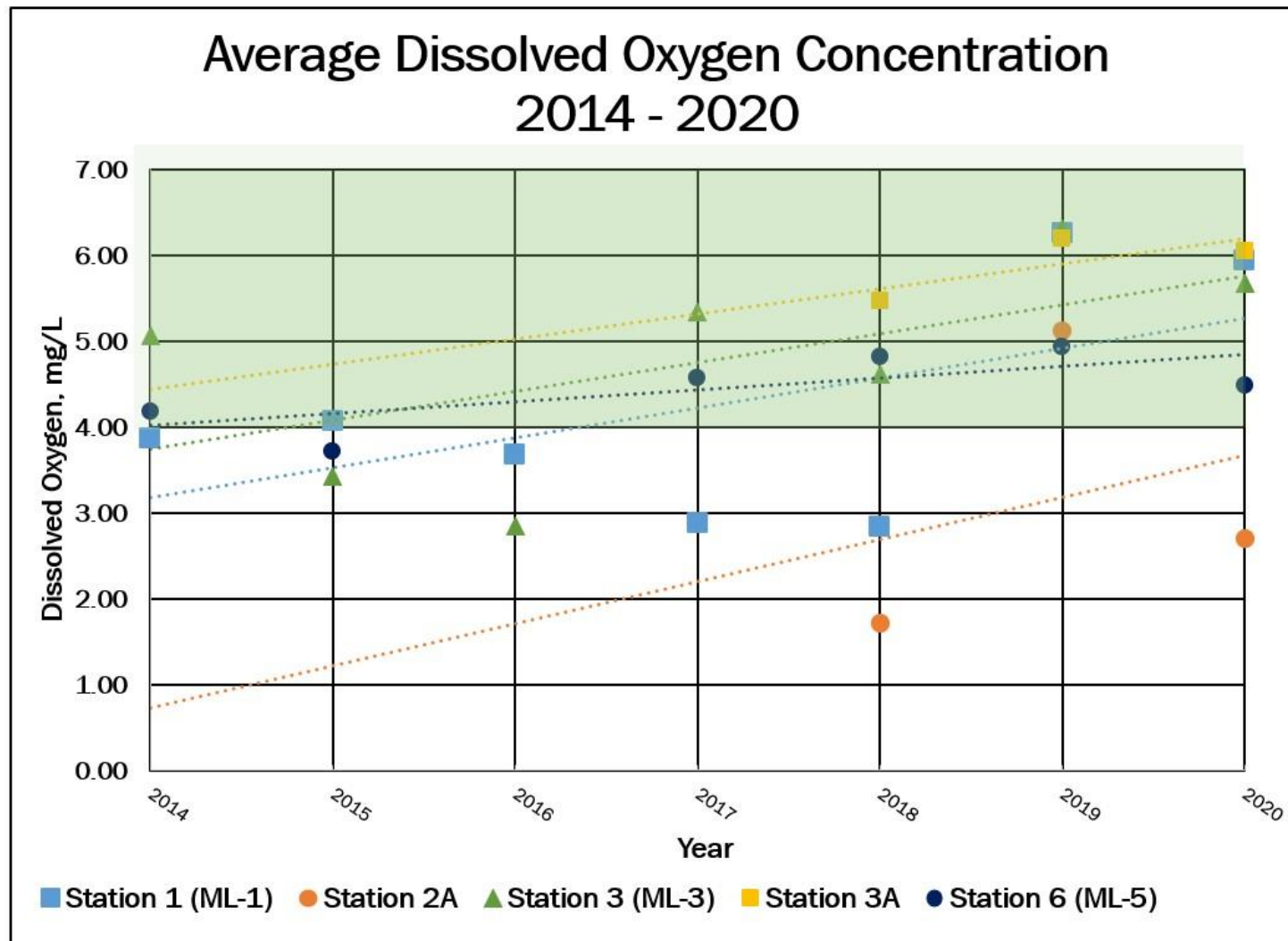


Figure 5. Annual Average Water Temperature at Stations in the Gum Creek and Cedar Creek Watersheds from 2014 - 2020
City of Cordele, Georgia – TTL Project Number 000200601075.00

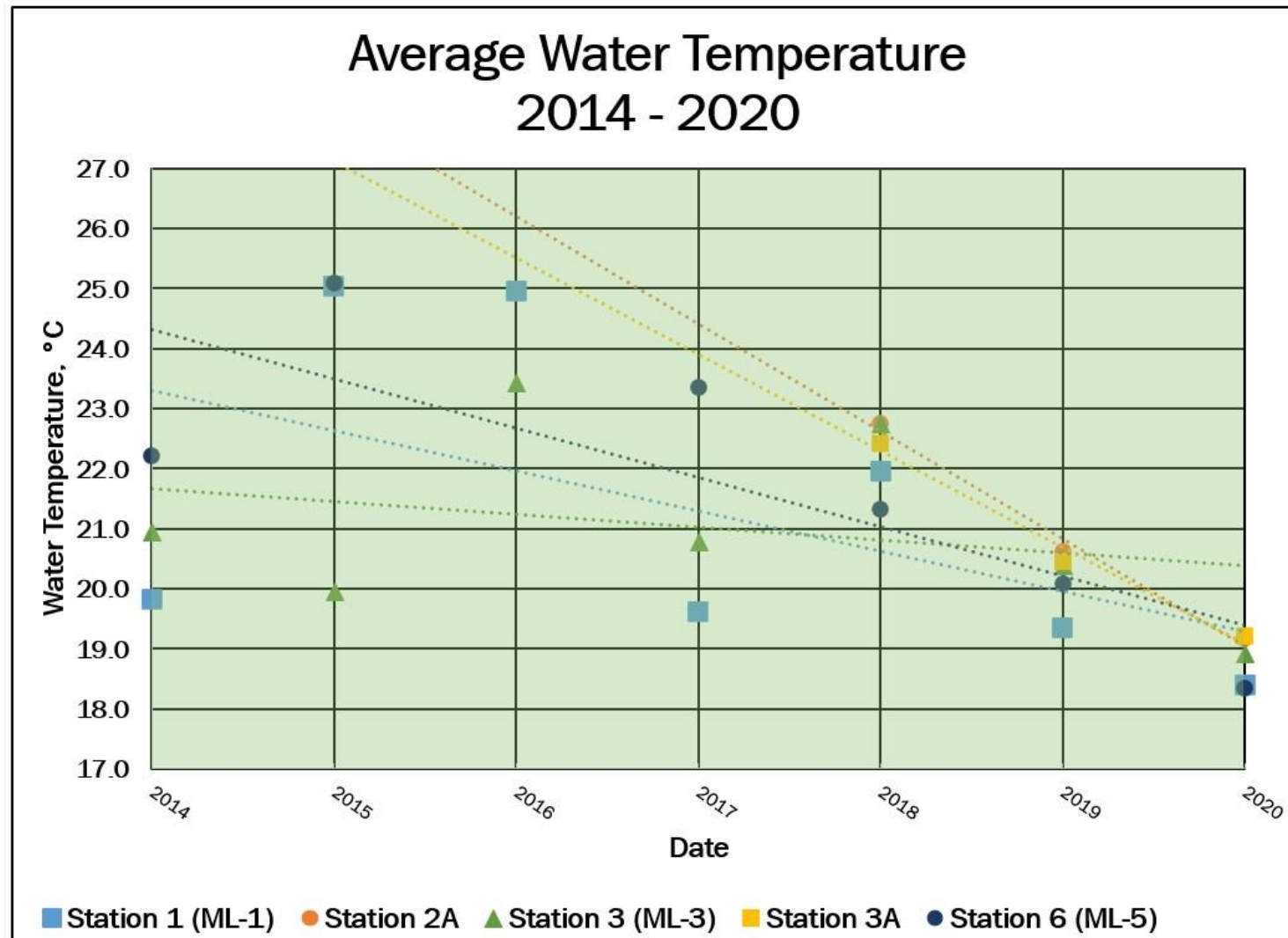


Figure 6. Annual Average Stream pH at Stations in the Gum Creek and Cedar Creek Watersheds from 2014 - 2020
City of Cordele, Georgia – TTL Project Number 000200601075.00

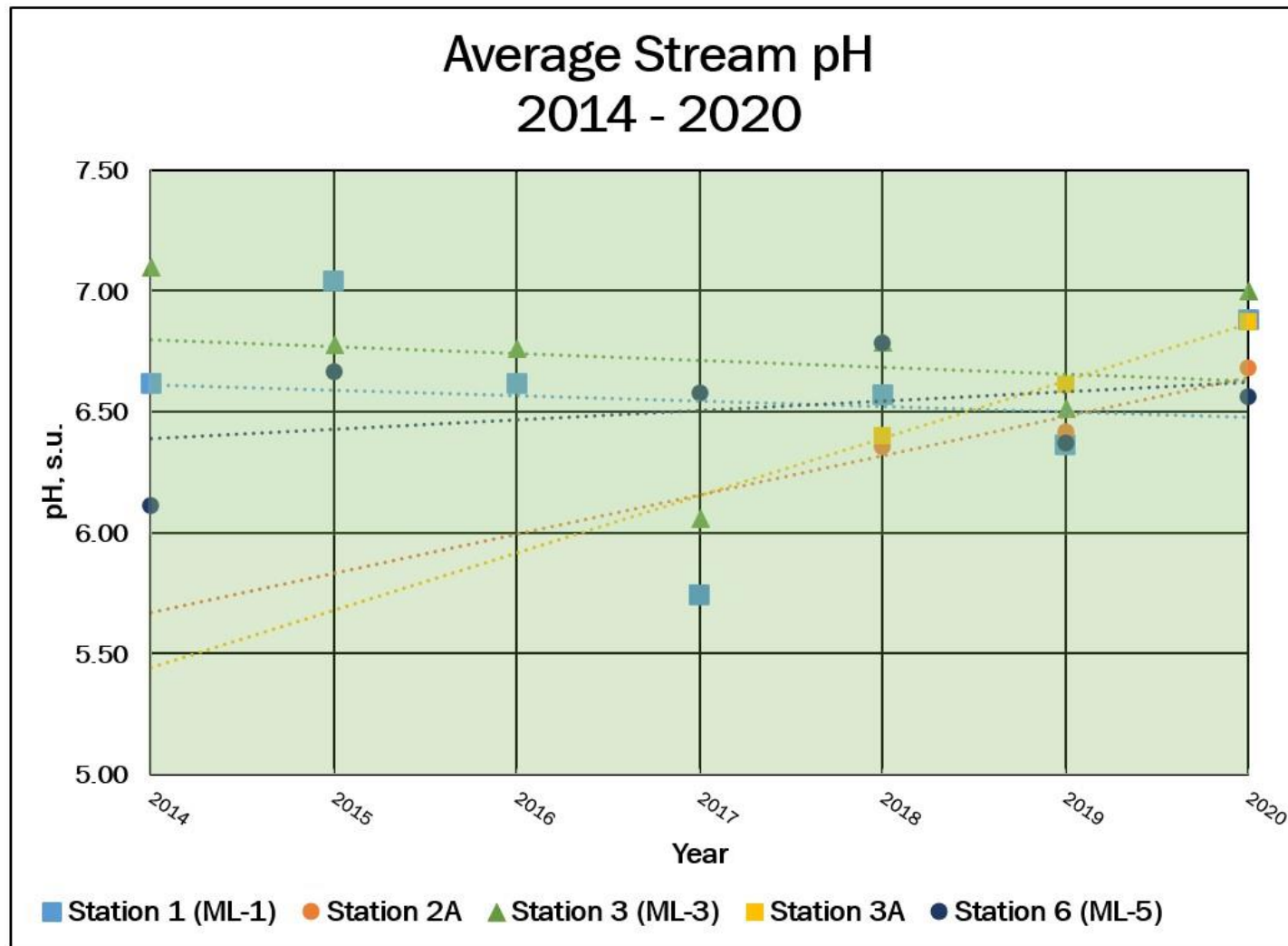


Figure 7. Average Annual Turbidity at Stations in the Gum Creek and Cedar Creek Watersheds from 2014 - 2020
City of Cordele, Georgia – TTL Project Number 000200601075.00

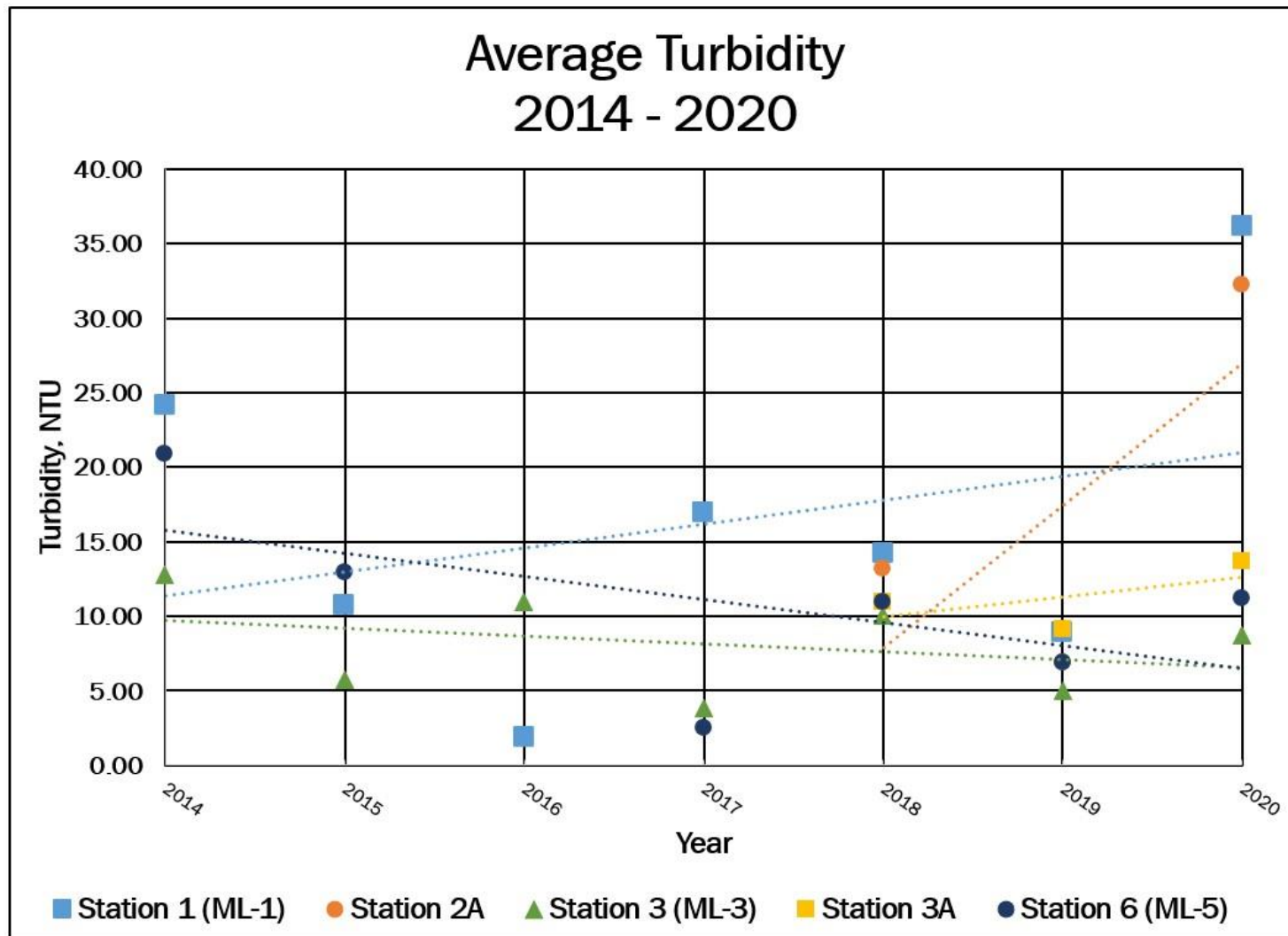


Figure 8. Annual Average Specific Conductivity at Stations in the Gum Creek and Cedar Creek Watersheds from 2014 - 2020
City of Cordele, Georgia – TTL Project Number 000200601075.00

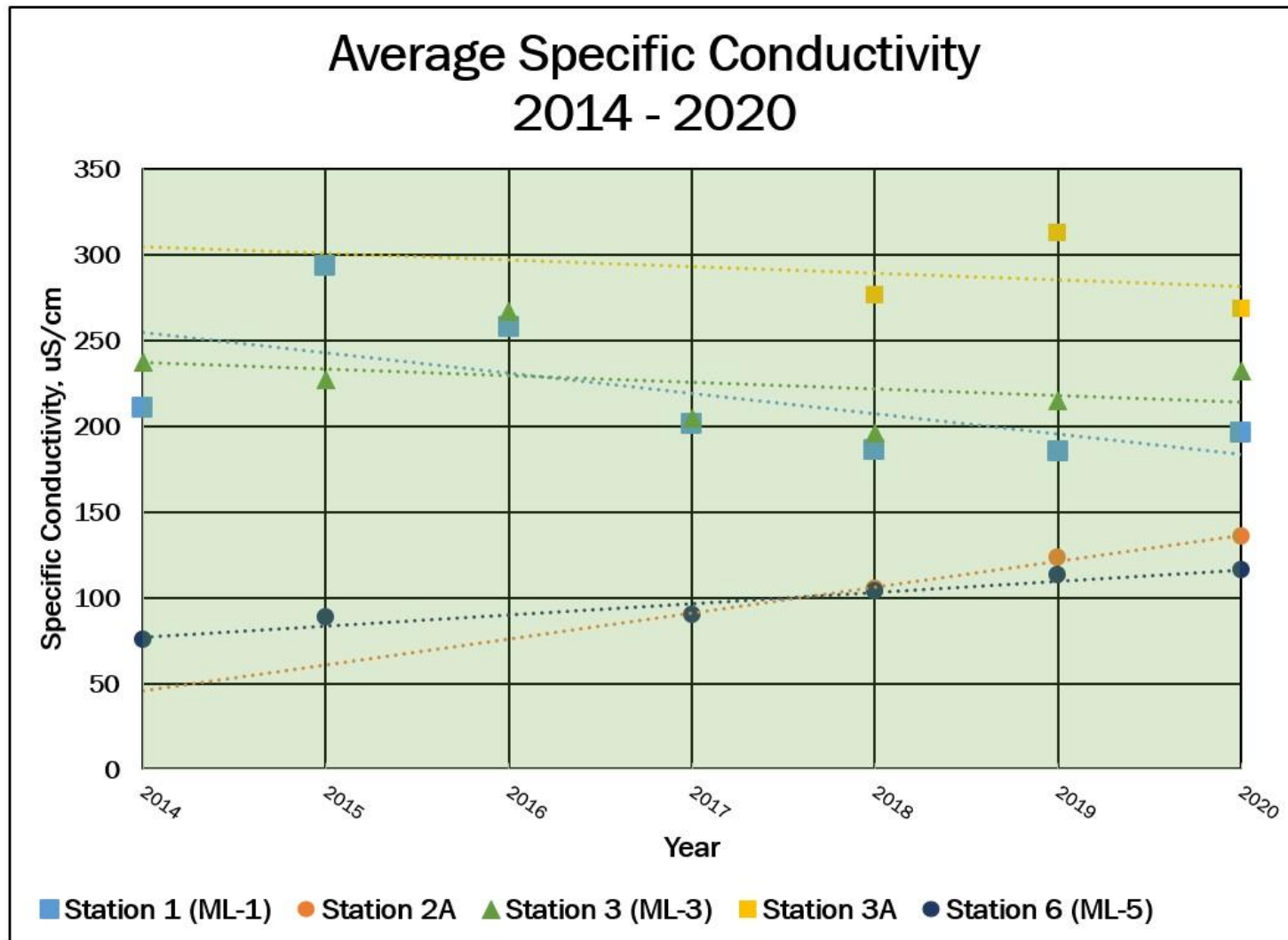


Figure 9. Annual Average Total Suspended Solids (TSS) at Stations in the Gum Creek and Cedar Creek Watersheds from 2014 - 2020
City of Cordele, Georgia – TTL Project Number 000200601075.00

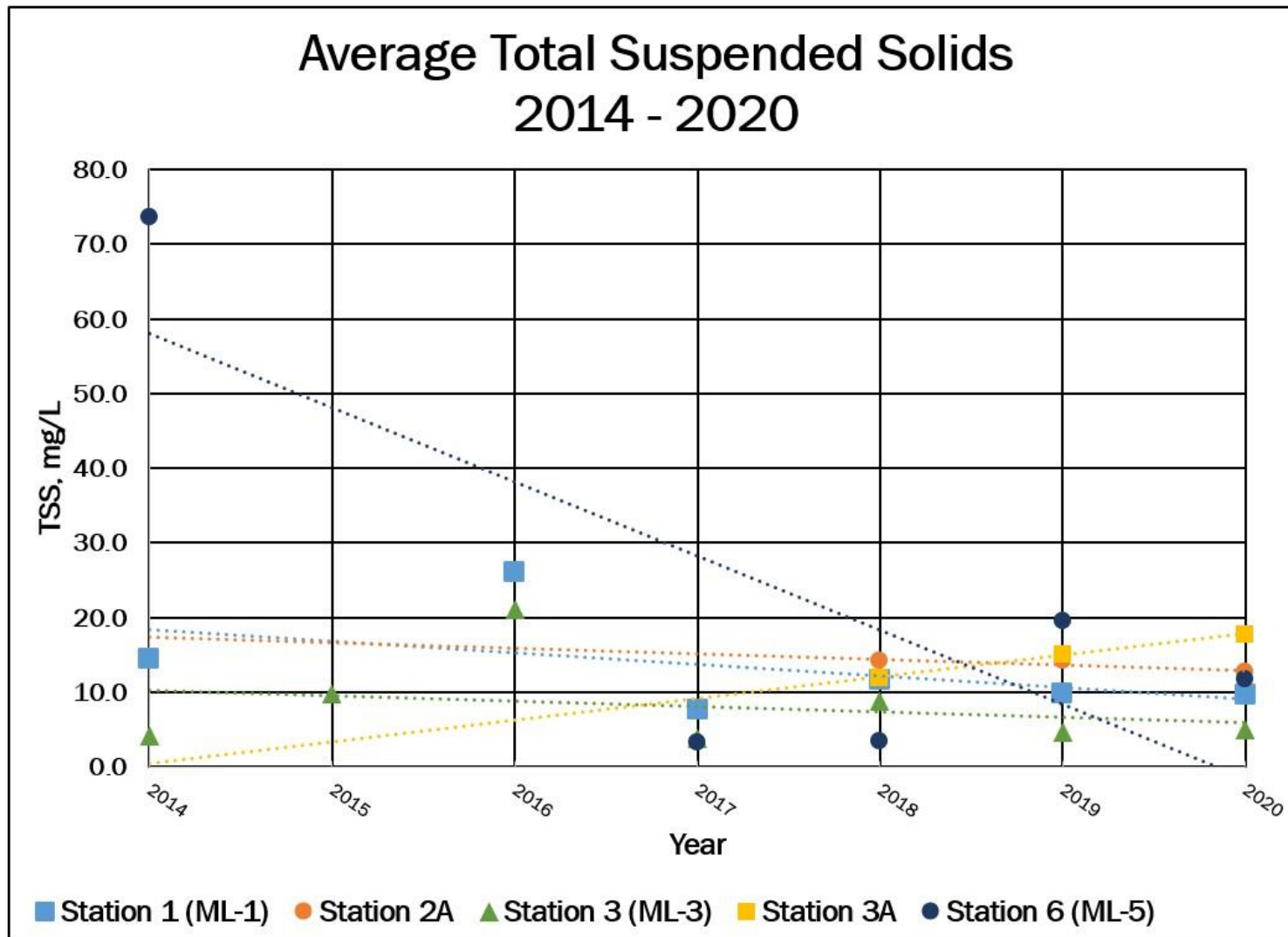


Figure 10. Average Annual Five-day Biochemical Oxygen Demand (BOD₅) at Stations in Gum Creek and Cedar Creek Watersheds from 2014 - 2020
City of Cordele, Georgia – TTL Project Number 000200601075.00

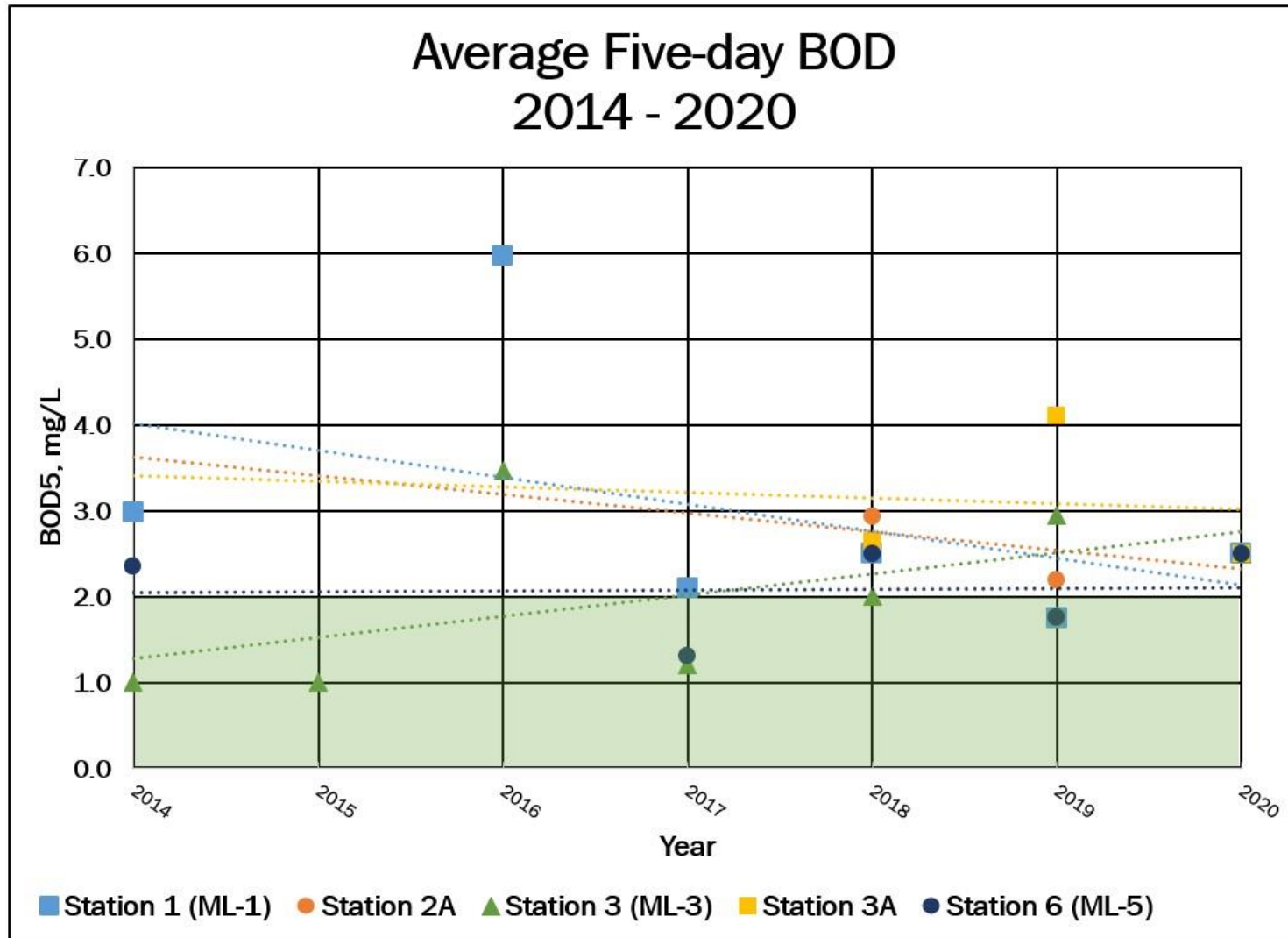


Figure 11. Average Annual Chemical Oxygen Demand (COD) at Stations in the Gum Creek and Cedar Creek Watersheds from 2014 - 2020
City of Cordele, Georgia – TTL Project Number 000200601075.00

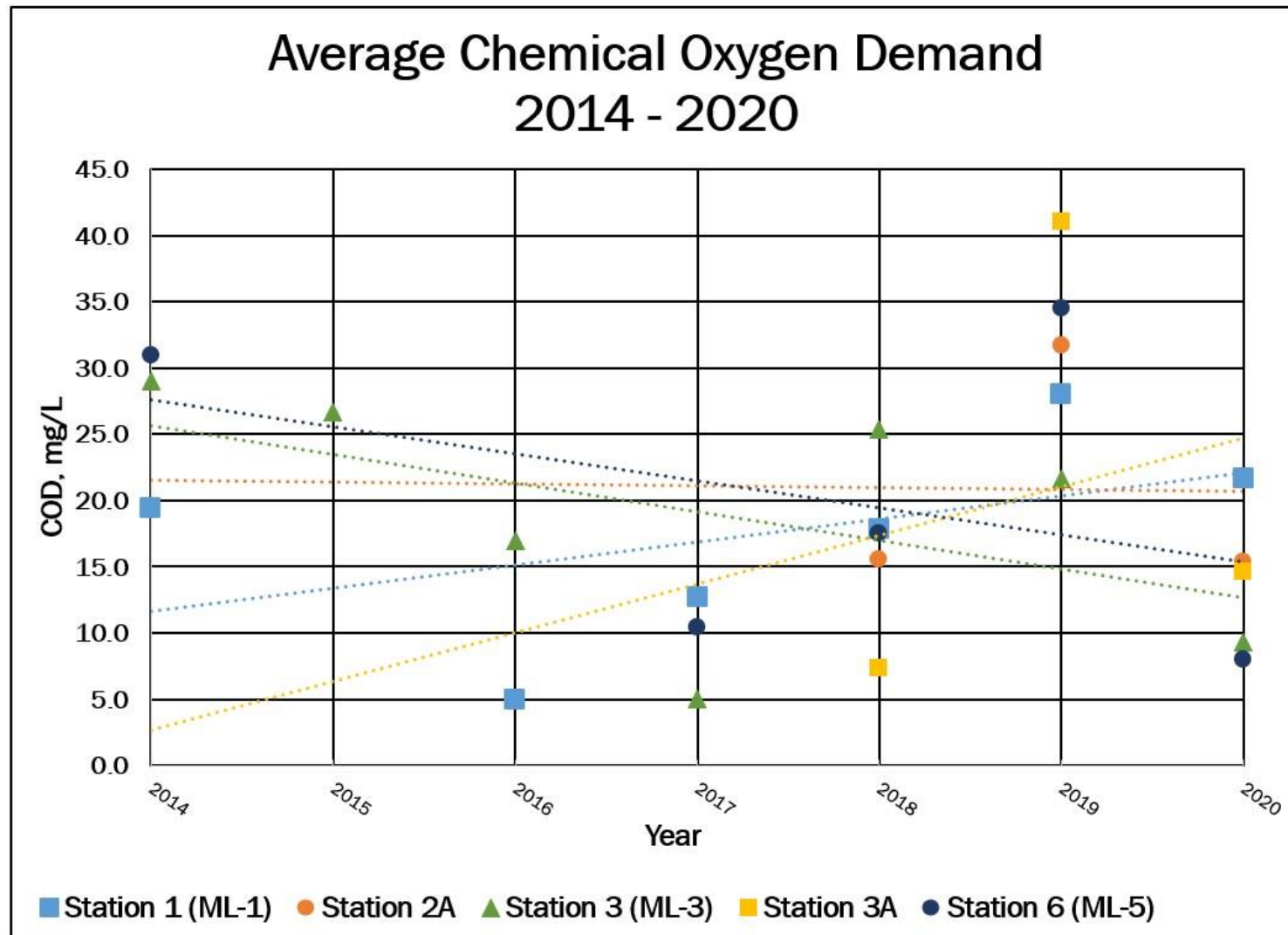


Figure 12. Average Annual Total Phosphorus at Stations in the Gum Creek and Cedar Creek Watersheds from 2014 - 2020
City of Cordele, Georgia – TTL Project Number 000200601075.00

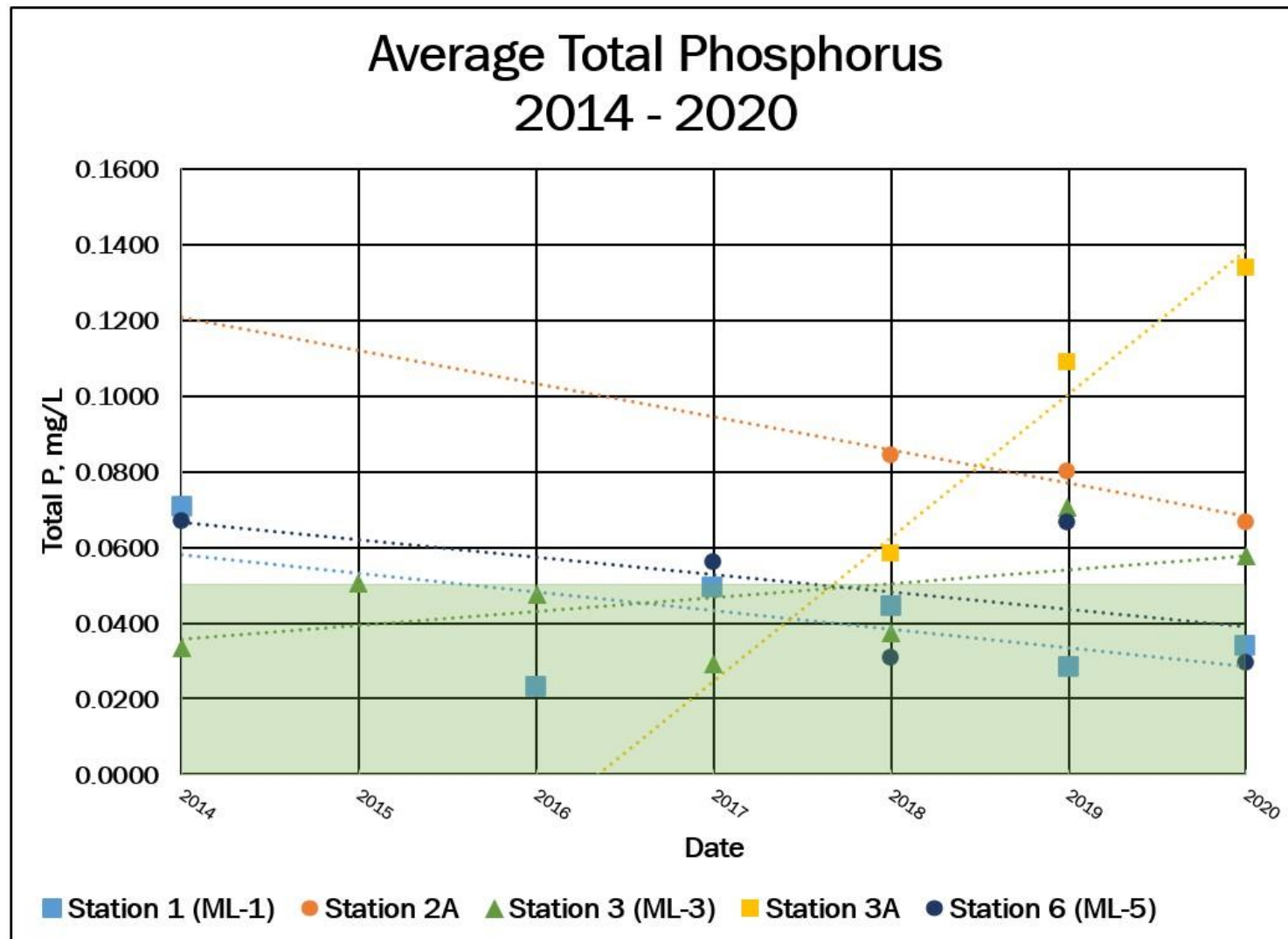


Figure 13. Average Annual Ammonia Nitrogen at Stations in the Gum Creek and Cedar Creek Watersheds from 2014 - 2020
City of Cordele, Georgia – TTL Project Number 000200601075.00

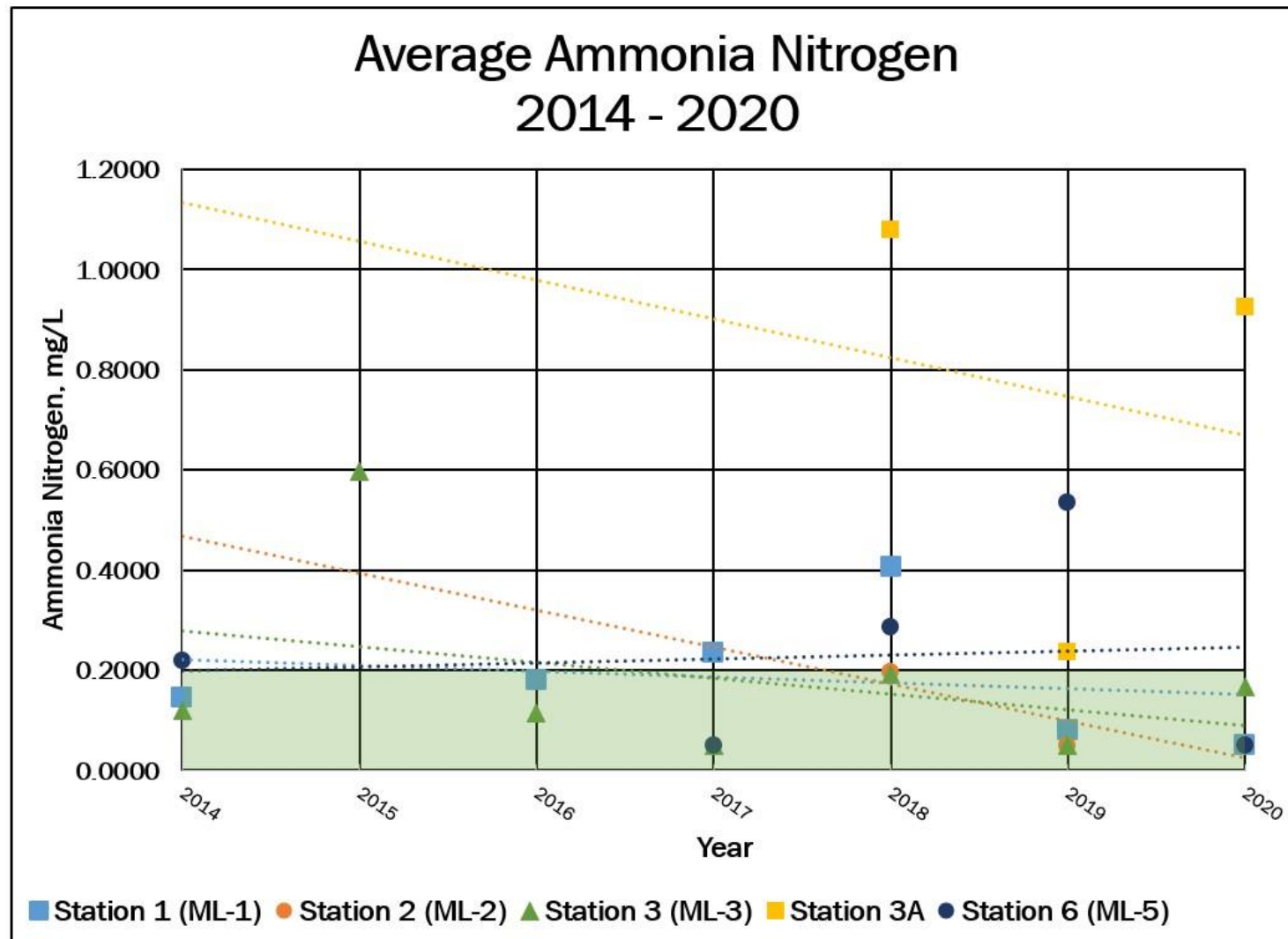


Figure 14. Average Annual Total Nitrogen at Stations in the Gum Creek and Cedar Creek Watersheds from 2014 - 2020
City of Cordele, Georgia – TTL Project Number 000200601075.00

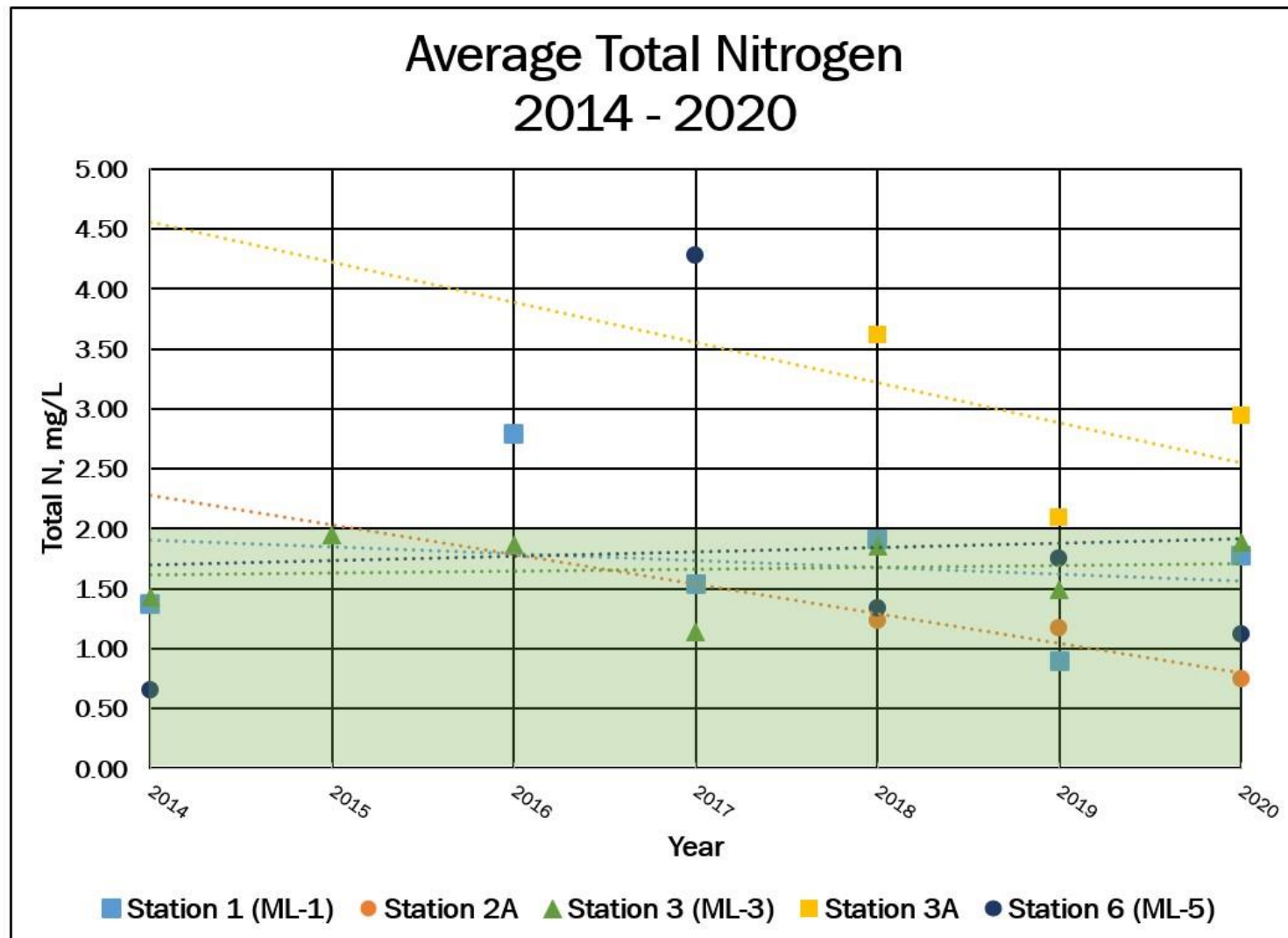


Figure 15. Fecal Coliform Geometric Mean Concentrations at Stations in the Gum Creek and Cedar Creek Watersheds from 2014 - 2020
City of Cordele, Georgia – TTL Project Number 000200601075.00

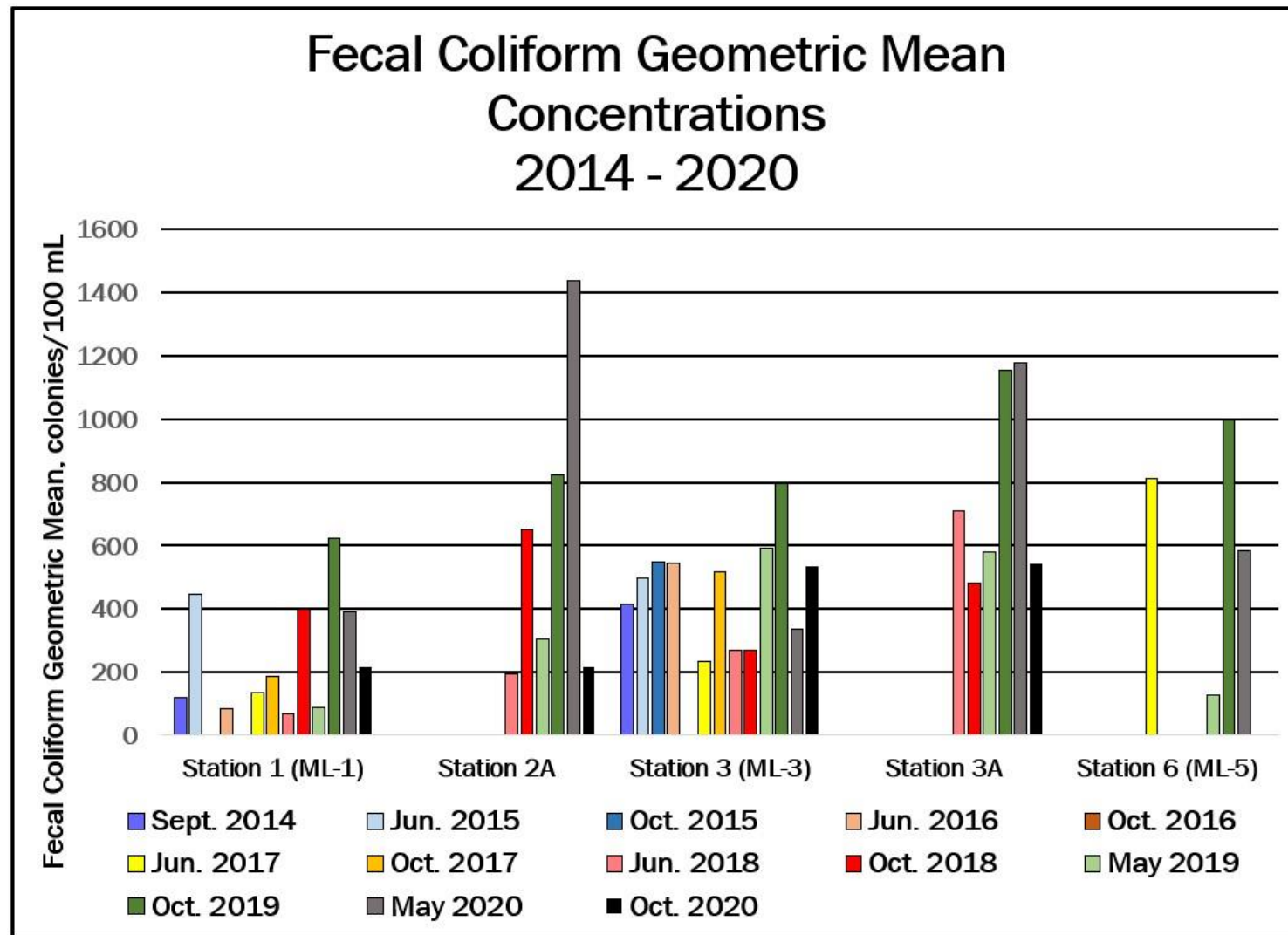


Figure 16. E. coli Geometric Mean Concentrations at Stations in the Gum Creek and Cedar Creek Watersheds from 2014 - 2020
City of Cordele, Georgia – TTL Project Number 000200601075.00

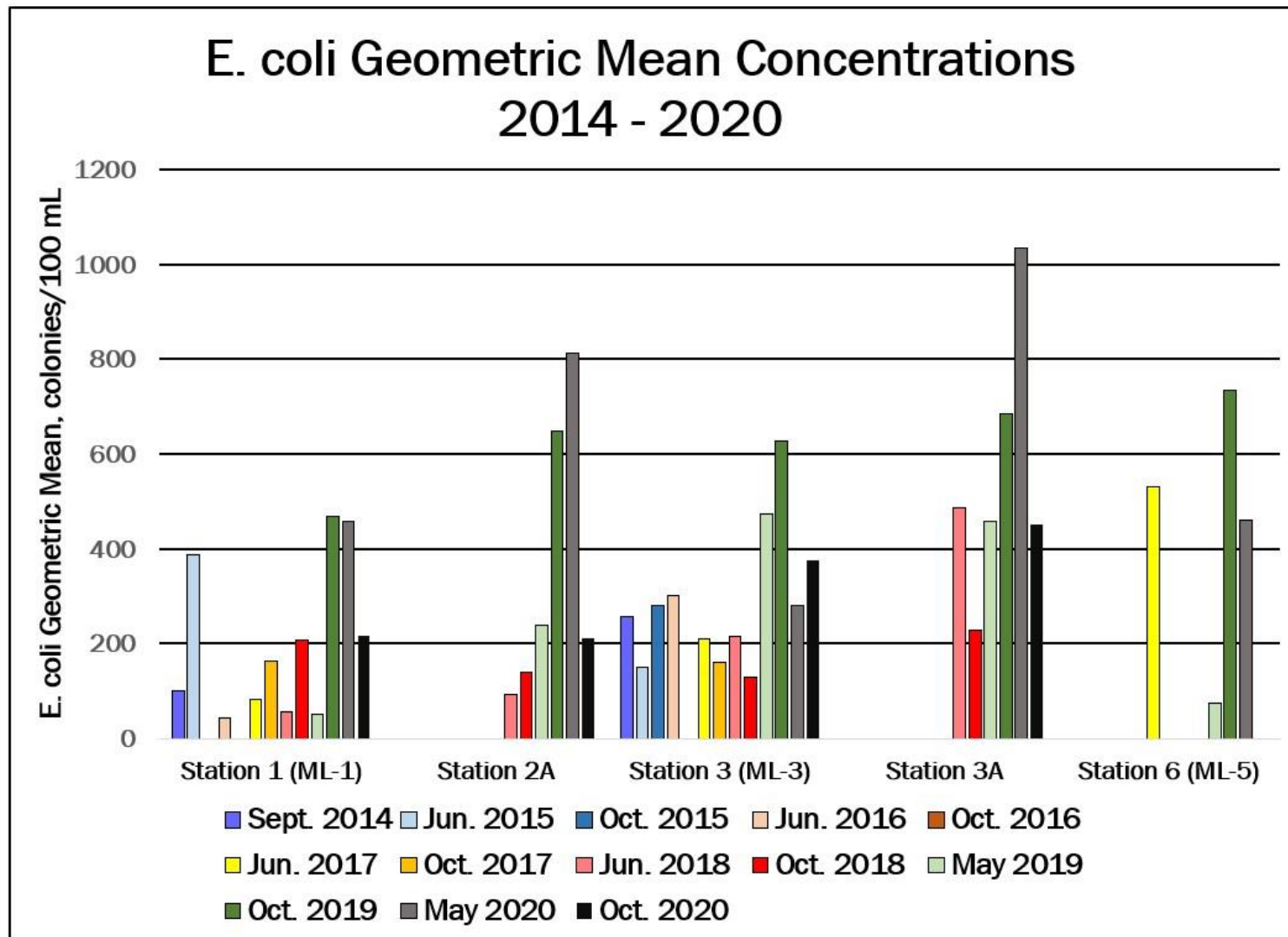


Figure 17. Fecal and E. Coli Bacteria Concentrations Compared to Recent Rainfall – Station 1
City of Cordele, Georgia – TTL Project Number 000200601075.00

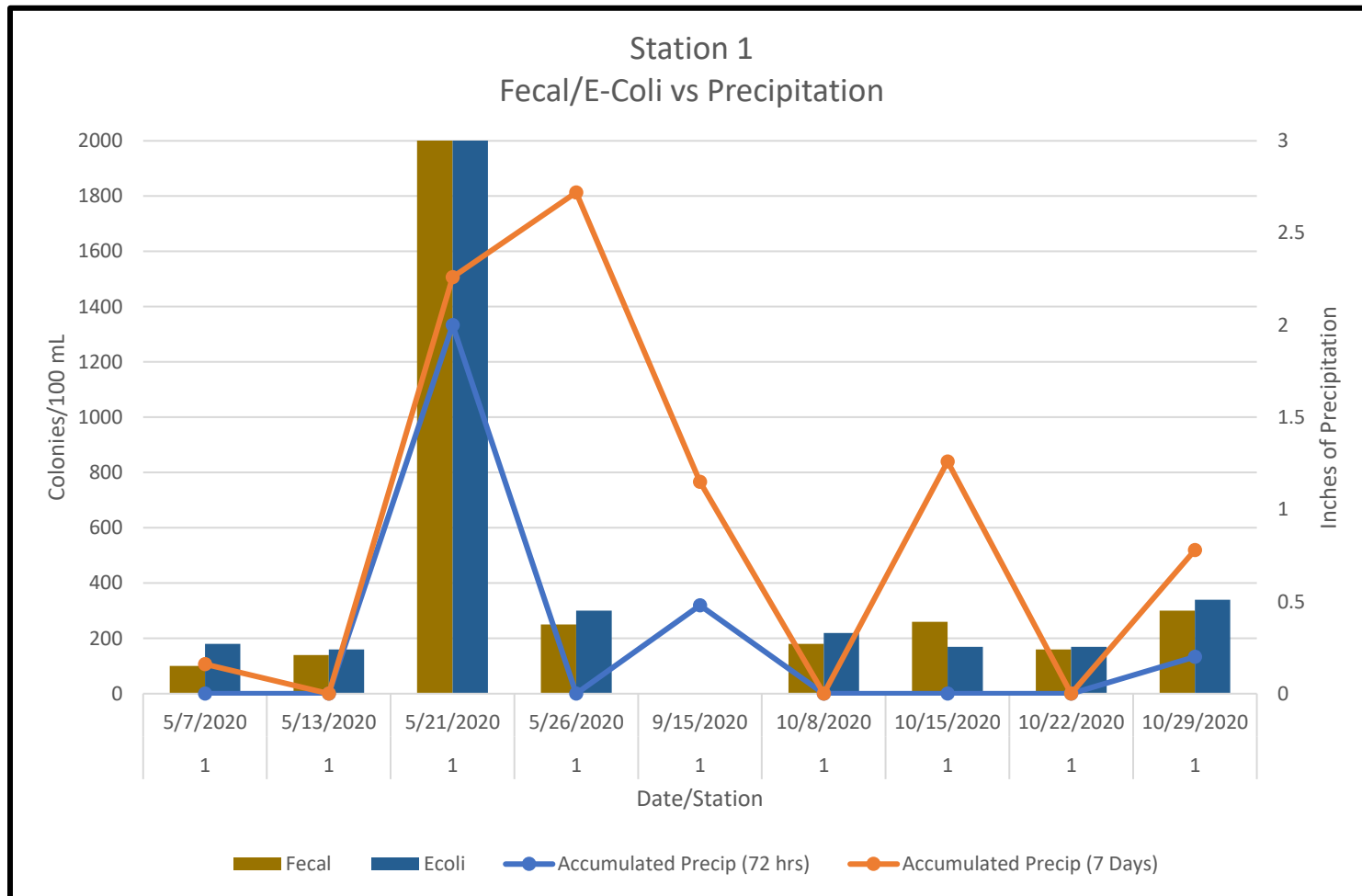


Figure 18. Fecal and E. Coli Bacteria Concentrations Compared to Recent Rainfall – Station 2A
City of Cordele, Georgia – TTL Project Number 000200601075.00

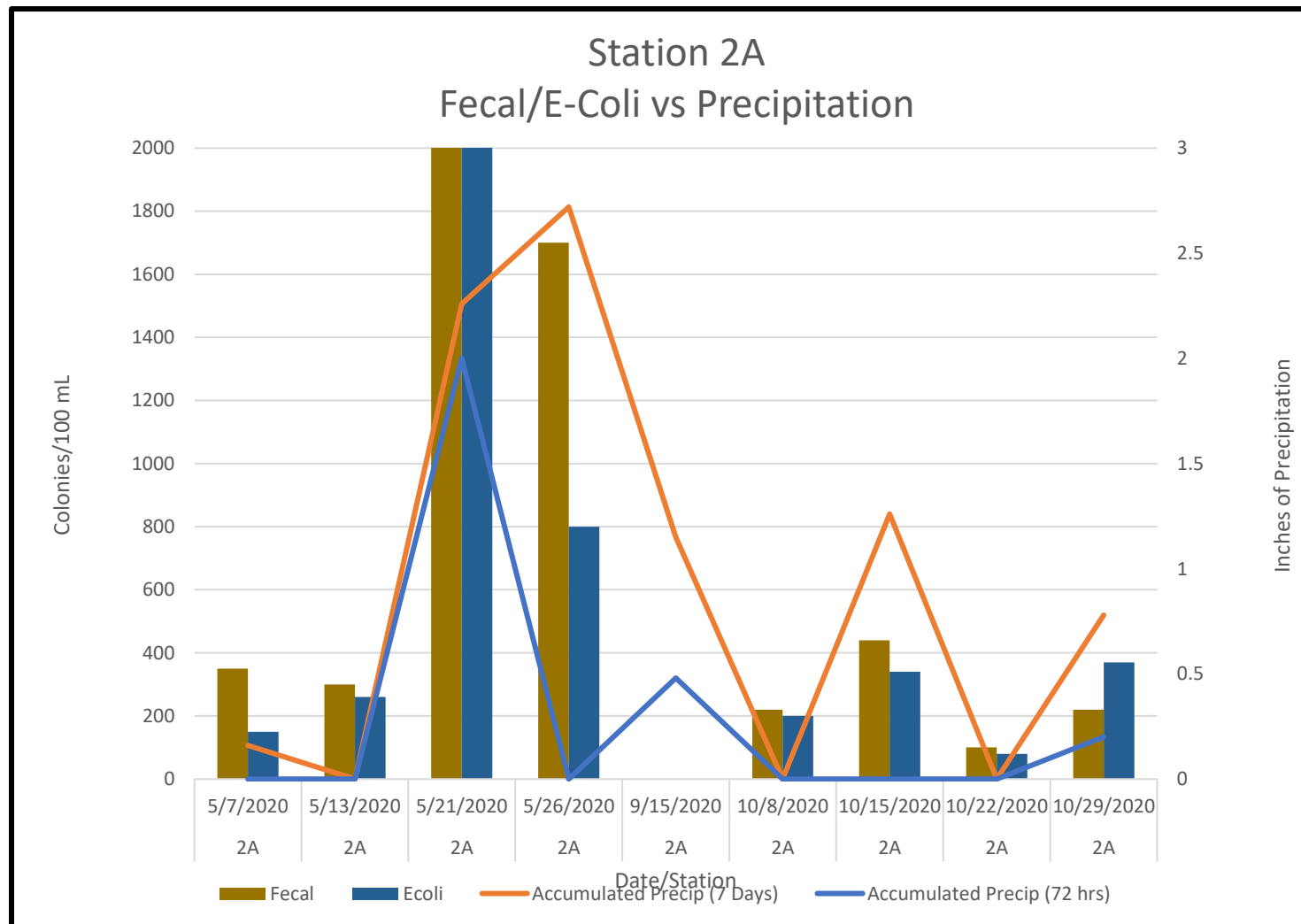


Figure 19. Fecal and E. Coli Bacteria Concentrations Compared to Recent Rainfall – Station 3
City of Cordele, Georgia – TTL Project Number 000200601075.00

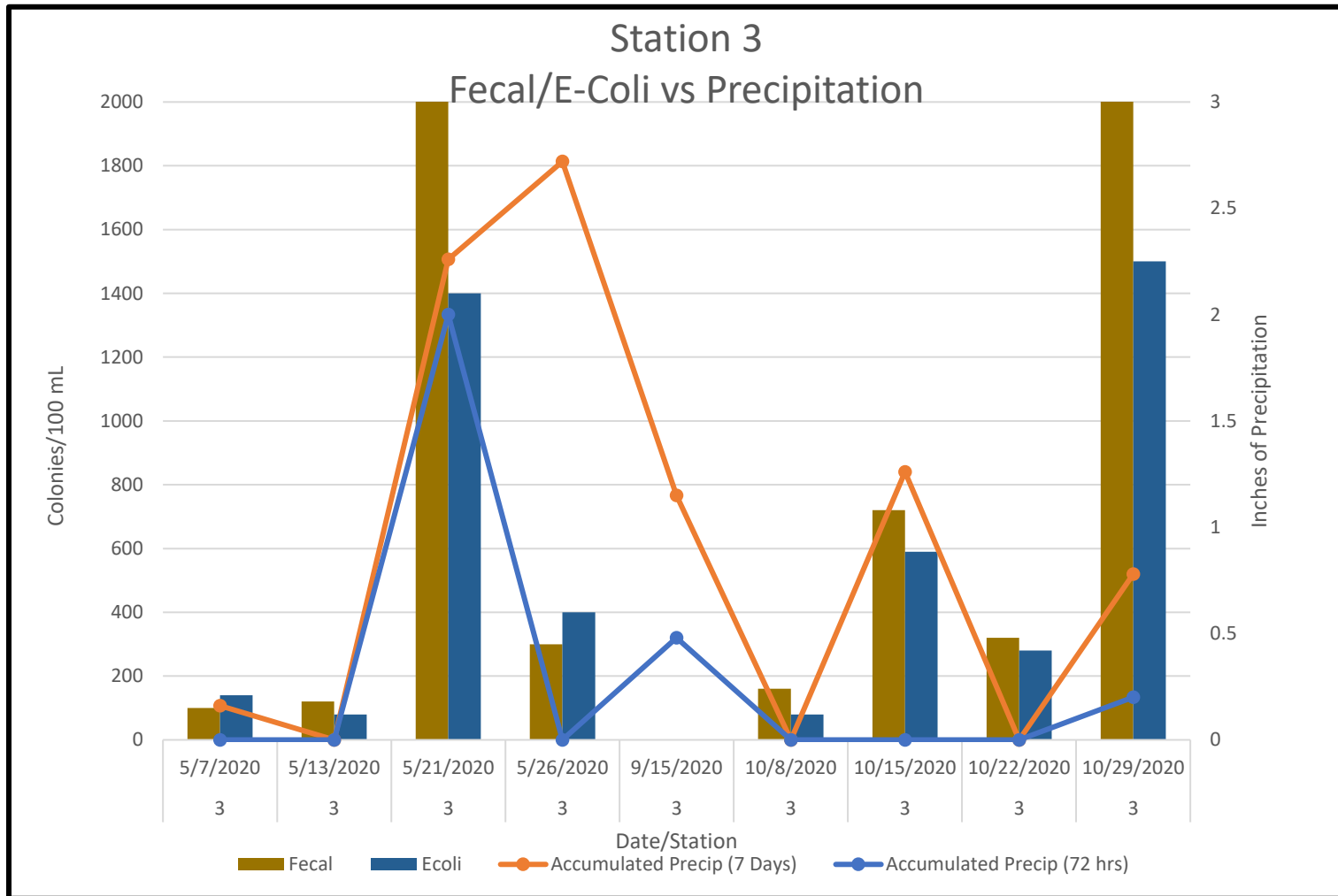


Figure 20. Fecal and E. Coli Bacteria Concentrations Compared to Recent Rainfall – Station 3A
City of Cordele, Georgia – TTL Project Number 000200601075.00

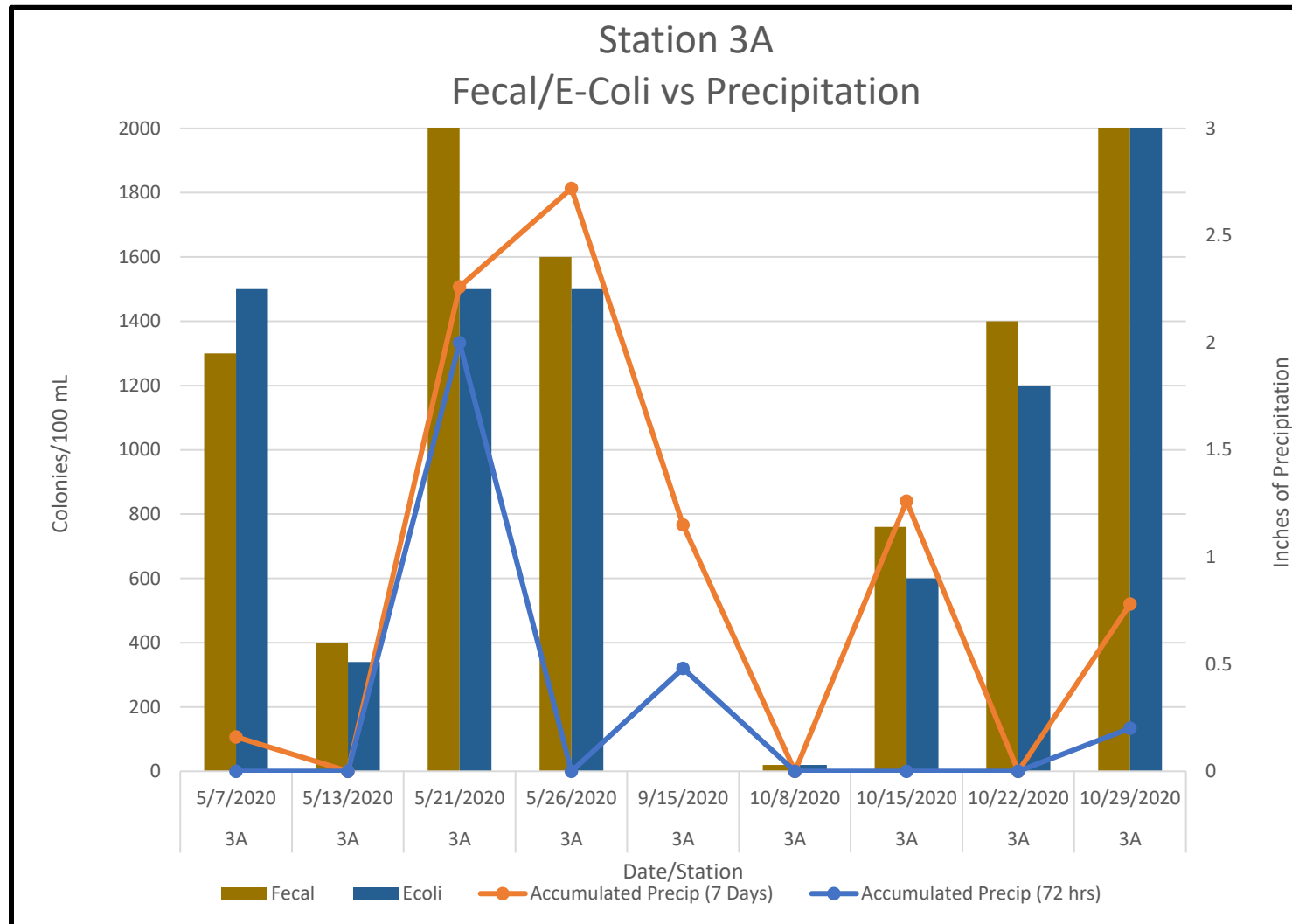
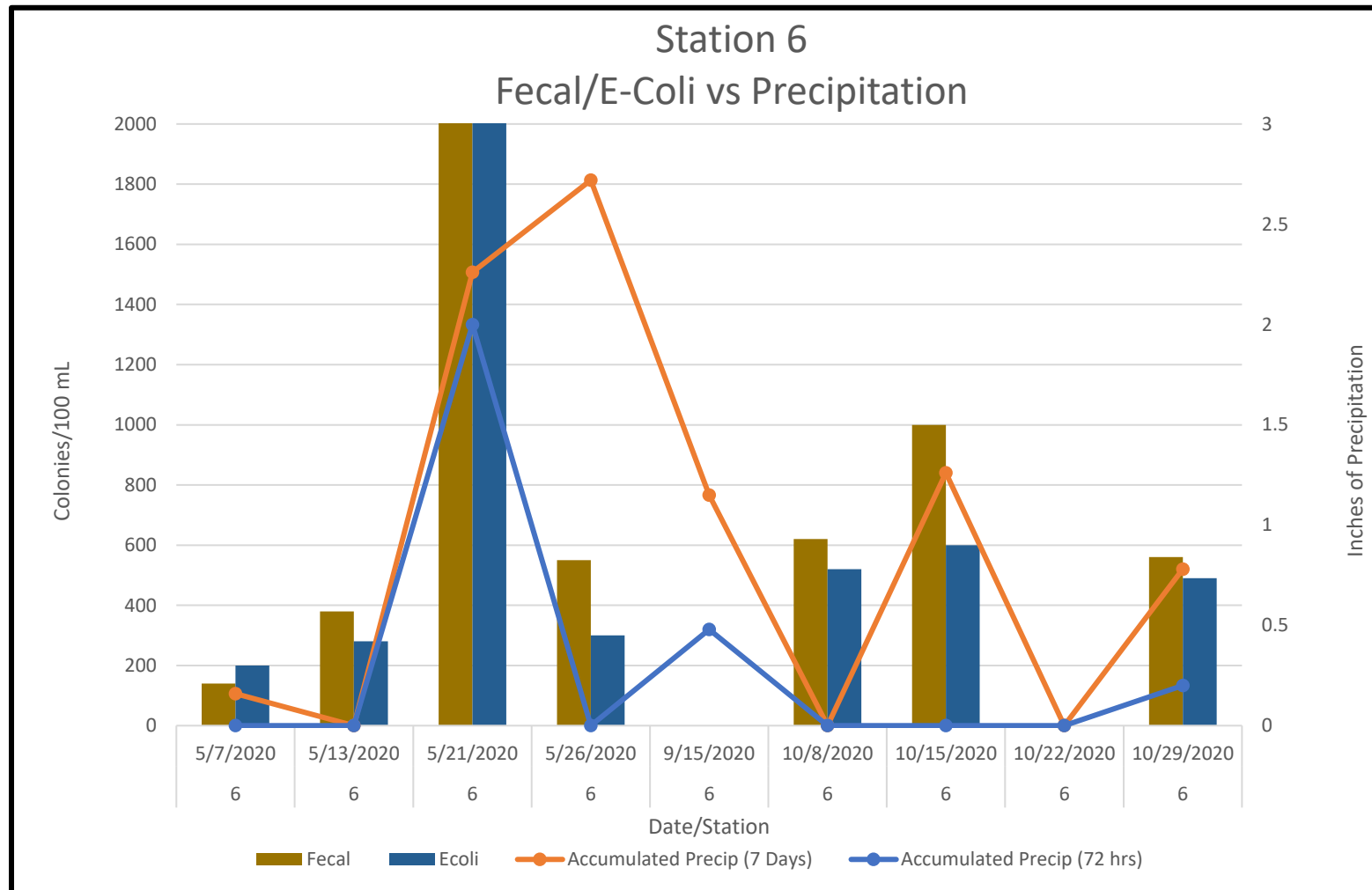


Figure 20. Fecal and E. Coli Bacteria Concentrations Compared to Recent Rainfall – Station 6
City of Cordele, Georgia – TTL Project Number 000200601075.00



Tables

Table 1. Land Cover Data Summary – National Land Cover Dataset, 2006
City of Cordele, Georgia – TTL Project Number 000200601075.00

	Gum Creek Watershed Upstream of Station 4	Cedar Creek Watershed Upstream of Station 6
Drainage Area, square miles	58.7	20.5
Forest Cover - % of Area	43.7	31.0
Agriculture Cover - % of Area	27.8	35.8
Developed Cover - % of Area	14.2	18.6
Impervious Cover - % of Area	4.08	4.72

Table 2. Sampling Locations

City of Cordele, Georgia – TTL Project Number 000200601075.00

Sampling Location	Station Status/Notes	Location Description	Hydrologic Unit Code	Location Coordinates
Station 1	Active / formerly ML-1	Gum Creek upstream of Airport Road	031300060604 Middle Gum Creek	32.000290° N 83.764319° W
Station 2	Eliminated / formerly ML-2	Gum Creek at Highway 41 bridge crossing	031300060604 Middle Gum Creek	31.984100° N 83.790500° W
Station 2A	Active	Unnamed Tributary to Gum Creek at North 6 th Street bridge crossing	031300060604 Middle Gum Creek	31.980510° N 83.781283° W
Station 3	Active / formerly ML-3	Gum Creek at 15 th Street North bridge crossing	031300060605 Lower Gum Creek	31.974515° N 83.794218° W
Station 3A	Active	Unnamed Tributary to Gum Creek at West 6 th Avenue bridge crossing	031300060605 Lower Gum Creek	31.974027° N 83.790603° W
Station 4	Eliminated / formerly ML-4	Gum Creek at old bridge/dam located adjacent to Cordele Fish Hatchery	031300060605 Lower Gum Creek	31.975175° N 83.819615° W
Station 5	Eliminated / formerly ML-6	Cedar Creek tributary at State Route 90	031300060606 Upper Cedar Creek	31.938183° N 83.733503° W
Station 6	Active / formerly ML-5	Cedar Creek at Pateville Road	031300060606 Upper Cedar Creek	31.916430° N 83.806271° W

•Please note changes to sampling locations were agreed upon during a March 21, 2018 teleconference call between Mr. Dan Schreiber of the GA EPD and the City of Cordele.

Table 3. Biological Assessment Summary

City of Cordele, Georgia – TTL Project Number 000200601075.00

Year	Metrics	Station 1	Station 2A	Station 3	Station 3A	Station 6
2014	Macroinvertebrate Site Index Score / Ranking	20 / poor	N/A	27 / fair	N/A	21 / poor
	*Fish IBI Score / Ranking	12 / Very poor		12 / Very poor		NS
	Habitat Ranking (Average)	131 Suboptimal		121 Suboptimal		131.5 Suboptimal
2016	Macroinvertebrate Site Index Score / Ranking	Dry	N/A	24	N/A	Dry
	*Fish IBI Score / Ranking			NS		
	Habitat Ranking (Average)			119 Suboptimal		
2019	Macroinvertebrate Site Index Score / Ranking	30 / fair	20 / poor	30 / fair	20 / poor	Dry
	*Fish IBI Score / Ranking	NS	NS	12 / very poor	19 / very poor	
	Habitat Ranking (Average)	126.5 Suboptimal	88.5 Marginal	150 Suboptimal	120.5 Suboptimal	

N/A = Not Applicable

NS = Not Sampled

Dry = Location dry – no flow

*IBI Score and ranking updated per the 2020 GA WRD Scoring Criteria

Table 4. Precipitation Data for Cordele, Georgia – Station: US GHCND: USC00092266

City of Cordele, Georgia – TTL Project Number 000200601075.00

Month	2014 Recorded Rainfall, inches ¹	2015 Recorded Rainfall, inches ²	2016 Recorded Rainfall, inches ²	2017 Recorded Rainfall, inches ²	2018 Recorded Rainfall, inches ²	2019 Recorded Rainfall, inches ²	2020 Recorded Rainfall, inches ²	Normal Rainfall, inches ³
January	2.95	3.54	4.52	8.07	1.97	5.50	4.30	4.65
February	5.03	5.51	5.24	1.89	4.29	0.92	8.40	4.02
March	4.13	1.43	2.28	1.30	3.40	2.94	6.11	4.86
April	10.01	9.97	1.76	4.42	4.43	3.95	11.05	3.37
May	3.71	2.02	1.07	6.35	7.51	2.77	3.40	2.80
June	2.64	7.01	3.29	6.51	2.23	6.59	2.04	4.48
July	2.72	7.95	4.19	4.75	6.02	3.77	5.47	4.14
August	0.65	5.25	2.01	4.03	3.23	6.58	4.29	3.90
September	6.75	5.48	1.88	3.95	2.41	0.11	9.05	4.25
October	2.08	1.54	0.03	2.67	5.38	10.57	2.31	2.14
November	3.26	9.44	0.00	0.95	8.57	2.07	1.61	3.33
December	5.92	11.73	11.45	3.30	12.11	10.19	3.04	3.95
Total Rainfall	49.85	70.87	37.72	48.19	61.55	55.96	61.07	45.89

1 - 2015 US Climate Data, version 2.2 beta

2 - Georgia Automated Environmental Monitoring Network, Precipitation Records

3 - 2021 US Climate Data, Version 3.0

Table 5A. Field Parameters and Chemical Analyses Results for Station 1 – Gum Creek
City of Cordele, Georgia – TTL Project Number 000200601075.00

Units	Date	Local Time	pH S.U.	Dissolved Oxygen mg/L	Water Temperature °C	Specific Conductivity µSm/cm	Turbidity NTU	Flow cfs	Sample Type 1=wet, 2=dry
	05/07/2020	08:30	6.39	6.53	18.02	152	0.32	NM	
	05/13/2020	08:05	6.98	7.21	16.94	238	16.6	2.94	2
	05/21/2020	08:25	5.52	6.37	19.86	53	245	NM	
	05/26/2020	08:50	6.88	5.67	22.98	179	23.2	NM	
	09/15/2020	09:45	6.22	4.53	25.50	145	17.4	NM	2
	10/08/2020	08:00	7.48	6.46	13.59	195.64	8.72	NM	
	10/15/2020	08:30	7.65	5.39	13.84	185.01	5.19	0.99	2
	10/22/2020	08:15	7.72	7.59	11.92	233.92	4.43	NM	
	10/29/2020	08:10	7.06	3.69	22.84	384	4.89	NM	

S.U. = Standard Units

mg/L = milligrams per Liter

°C = Degree Celsius

µSm/cm = microSiemens per centimeter

NTU = nephelometric turbidity unit

cfs = cubic feet per second

NM = Not Measured

Table 5A. Field Parameters and Chemical Analyses Results for Station 1 – Gum Creek (continued)
City of Cordele, Georgia – TTL Project Number 000200601075.00

Units	Date	Local Time	BOD ₅ mg/L	COD mg/L	Ammonia mg/L as N	Nitrite mg/L as N	Nitrate mg/L as N	Nitrate- Nitrite mg/L as N	TKN mg/L as N	Ortho Phosphate mg/L as P	Total Phosphorus mg/L as P	Sample Type 1=wet, 2=dry
	05/07/2020	08:30	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	05/13/2020	08:05	<5.00	<10.0	<0.100	<0.250	2.19	NS	<0.500	0.032	<0.0200	2
	05/21/2020	08:25	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	05/26/2020	08:50	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	09/15/2020	09:45	<5.00	35.0	<0.100	<0.250	<0.250	NS	0.921	0.034	0.0819	2
	10/08/2020	08:00	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	10/15/2020	08:30	<5.00	25.0	<0.100	<0.250	0.94	NS	0.537	0.028	<0.0200	2
	10/22/2020	08:15	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	10/29/2020	08:10	NS	NS	NS	NS	NS	NS	NS	NS	NS	

mg/L = milligrams per Liter
NS = Not Sampled

Table 5A. Field Parameters and Chemical Analyses Results for Station 1 – Gum Creek (continued)
City of Cordele, Georgia – TTL Project Number 000200601075.00

Units	Date	Local Time	TSS mg/L	Hardness mg/L as CaCO3	Total/Dissolved Cd µg/L	Total/Dissolved Cu µg/L	Total/Dissolved Pb µg/L	Total/Dissolved Zn µg/L	Sample Type 1=wet, 2=dry
	05/07/2020	08:30	NS	NS	NS	NS	NS	NS	
	05/13/2020	08:05	16.7	95	<1.00 / <1.00	<1.00 / <1.00	<1.00 / <1.00	5.7 / 4.17	2
	05/21/2020	08:25	NS	NS	NS	NS	NS	NS	
	05/26/2020	08:50	NS	NS	NS	NS	NS	NS	
	09/15/2020	09:45	10.3	21	<1.00 / <1.00	4.54 / 2.17	1.03 / <1.00	15.5 / 5.08	2
	10/08/2020	08:00	NS	NS	NS	NS	NS	NS	
	10/15/2020	08:30	<4.00	100	<1.00 / <1.00	<1.00 / <1.00	<1.00 / <1.00	2.58 / 1.79	2
	10/22/2020	08:15	NS	NS	NS	NS	NS	NS	
	10/29/2020	08:10	NS	NS	NS	NS	NS	NS	

mg/L = milligrams per Liter

µg/L = micrograms per Liter

NS = Not Sampled

Table 5B. Field Parameters and Chemical Analyses Results for Station 2A – Tributary to Gum Creek
City of Cordele, Georgia – TTL Project Number 000200601075.00

Units	Date	Local Time	pH S.U.	Dissolved Oxygen mg/L	Water Temperature °C	Specific Conductivity µSm/cm	Turbidity NTU	Flow cfs	Sample Type 1=wet, 2=dry
	05/07/2020	08:45	6.00	2.47	20.01	99	105	NM	
	05/13/2020	08:45	6.53	4.04	19.29	104	0.23	NMF	2
	05/21/2020	08:35	5.65	5.14	20.67	54	123	NM	
	05/26/2020	09:10	6.77	2.02	24.52	189	20	NM	
	09/15/2020	11:15	6.09	0.50	26.31	116	12.2	NM	2
	10/08/2020	08:25	7.30	2.71	13.46	165.84	7.22	NM	
	10/15/2020	09:10	7.49	5.43	14.01	120.54	8.16	NMF	2
	10/22/2020	08:45	7.64	1.39	11.59	122.13	6.69	NM	
	10/29/2020	08:30	6.62	0.57	22.53	250	7.17	NM	

S.U. = Standard Units

mg/L = milligrams per Liter

µg/L = micrograms per Liter

°C = Degree Celsius

µSm/cm = microSiemens per centimeter

NTU = nephelometric turbidity unit

cfs = cubic feet per second

NM = Not Measured

NMF = No Measurable Flow

Table 5B. Field Parameters and Chemical Analyses Results for Station 2A – Tributary to Gum Creek (continued)
City of Cordele, Georgia – TTL Project Number 000200601075.00

Units	Date	Local Time	BOD ₅ mg/L	COD mg/L	Ammonia mg/L as N	Nitrite mg/L as N	Nitrate mg/L as N	Nitrate- Nitrite mg/L as N	TKN mg/L as N	Ortho Phosphate mg/L as P	Total Phosphorus mg/L as P	Sample Type 1=wet, 2=dry
	05/07/2020	08:45	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	05/13/2020	08:45	<5.00	<10.0	<0.100	<0.250	0.573	NS	0.528	0.0560	0.0554	2
	05/21/2020	08:35	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	05/26/2020	09:10	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	09/15/2020	11:15	<5.00	23.0	<0.100	<0.250	<0.250	NS	<0.500	0.0410	0.0561	2
	10/08/2020	08:25	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	10/15/2020	09:10	<5.00	18.0	<0.100	<0.250	<0.250	NS	<0.500	0.0320	0.0888	2
	10/22/2020	08:45	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	10/29/2020	08:30	NS	NS	NS	NS	NS	NS	NS	NS	NS	

mg/L = milligrams per Liter
NS = Not Sampled

Table 5B. Field Parameters and Chemical Analyses Results for Station 2A – Tributary to Gum Creek (continued)
City of Cordele, Georgia – TTL Project Number 000200601075.00

Units	Date	Local Time	TSS mg/L	Hardness mg/L as CaCO ₃	Total/Dissolved Cd µg/L	Total/Dissolved Cu µg/L	Total/Dissolved Pb µg/L	Total/Dissolved Zn µg/L	Sample Type 1=wet, 2=dry
	05/07/2020	08:45	NS	NS	NS	NS	NS	NS	
	05/13/2020	08:45	22.7	35	<1.00 / <1.00	<1.00 / <1.00	<1.00 / <1.00	10.2 / 3.88	2
	05/21/2020	08:35	NS	NS	NS	NS	NS	NS	
	05/26/2020	09:10	NS	NS	NS	NS	NS	NS	
	09/15/2020	11:15	6.00	15	<1.00 / <1.00	4.57 / 2.45	<1.00 / <1.00	8.62 / 7.53	2
	10/08/2020	08:25	NS	NS	NS	NS	NS	NS	
	10/15/2020	09:10	9.33	45	<1.00 / <1.00	<1.00 / <1.00	<1.00 / <1.00	4.23 / 1.67	2
	10/22/2020	08:45	NS	NS	NS	NS	NS	NS	
	10/29/2020	08:30	NS	NS	NS	NS	NS	NS	

mg/L = milligrams per Liter

µg/L = micrograms per Liter

NS = Not Sampled

Table 5C. Field Parameters and Chemical Analyses Results for Station 3 – Gum Creek
City of Cordele, Georgia – TTL Project Number 000200601075.00

Units	Date	Local Time	pH S.U.	Dissolved Oxygen mg/L	Water Temperature °C	Specific Conductivity $\mu\text{Sm}/\text{cm}$	Turbidity NTU	Flow cfs	Sample Type 1=wet, 2=dry
	05/07/2020	09:10	5.90	5.97	18.67	173	0.18	NM	
	05/13/2020	09:25	7.20	5.35	18.11	223	0.20	NMF	2
	05/21/2020	09:10	6.57	5.66	20.31	85	27.4	NM	
	05/26/2020	09:50	6.82	5.37	23.36	270	19.2	NM	
	09/15/2020	13:05	6.62	4.23	25.42	281	10.7	NM	2
	10/08/2020	09:10	7.48	7.05	14.06	207.32	5.50	NM	
	10/15/2020	09:35	7.50	7.14	14.80	211.30	4.66	5.872	2
	10/22/2020	09:15	7.86	6.58	12.33	267.39	3.39	NM	
	10/29/2020	08:50	7.08	3.65	23.09	373	7.11	NM	

S.U. = Standard Units

mg/L = milligrams per Liter

°C = Degree Celsius

$\mu\text{Sm}/\text{cm}$ = microSiemens per centimeter

NTU = nephelometric turbidity unit

cfs = cubic feet per second

NM = Not Measured

NMF = No Measurable Flow

Table 5C. Field Parameters and Chemical Analyses Results for Station 3 – Gum Creek (continued)
City of Cordele, Georgia – TTL Project Number 000200601075.00

Units	Date	Local Time	BOD ₅ mg/L	COD mg/L	Ammonia mg/L as N	Nitrite mg/L as N	Nitrate mg/L as N	Nitrate- Nitrite mg/L as N	TKN mg/L as N	Ortho Phosphate mg/L as P	Total Phosphorus mg/L as P	Sample Type 1=wet, 2=dry
	05/07/2020	09:10	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	05/13/2020	09:25	<5.00	<10.0	<0.100	<0.250	1.55	NS	0.747	0.043	0.0222	2
	05/21/2020	09:10	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	05/26/2020	09:50	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	09/15/2020	13:05	<5.00	13.0	0.399	<0.250	0.652	NS	1.12	0.116	0.128	2
	10/08/2020	09:10	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	10/15/2020	09:35	<5.00	10.0	<0.100	<0.250	0.946	NS	<0.500	0.019	0.0232	2
	10/22/2020	09:15	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	10/29/2020	08:50	NS	NS	NS	NS	NS	NS	NS	NS	NS	

mg/L = milligrams per Liter
NS = Not Sampled

Table 5C. Field Parameters and Chemical Analyses Results for Station 3 – Gum Creek (continued)
City of Cordele, Georgia – TTL Project Number 000200601075.00

Units	Date	Local Time	TSS mg/L	Hardness mg/L as CaCO ₃	Total/Dissolved Cd µg/L	Total/Dissolved Cu µg/L	Total/Dissolved Pb µg/L	Total/Dissolved Zn µg/L	Sample Type 1=wet, 2=dry
	05/07/2020	09:10	NS	NS	NS	NS	NS	NS	
	05/13/2020	09:25	5.0	91	<1.00 / <1.00	<1.00 / <1.00	<1.00 / <1.00	5.86 / 2.29	2
	05/21/2020	09:10	NS	NS	NS	NS	NS	NS	
	05/26/2020	09:50	NS	NS	NS	NS	NS	NS	
	09/15/2020	13:05	8.0	55	<1.00 / <1.00	4.12 / 2.61	1.03 / <1.00	114 / 6.64	2
	10/08/2020	09:10	NS	NS	NS	NS	NS	NS	
	10/15/2020	09:35	<4.00	120	<1.00 / <1.00	<1.00 / <1.00	<1.00 / <1.00	4.26 / 1.95	2
	10/22/2020	09:15	NS	NS	NS	NS	NS	NS	
	10/29/2020	08:50	NS	NS	NS	NS	NS	NS	

mg/L = milligrams per Liter

µg/L = micrograms per Liter

NS = Not Sampled

Table 5D. Field Parameters and Chemical Analyses Results for Station 3A – Tributary to Gum Creek
City of Cordele, Georgia – TTL Project Number 000200601075.00

Units	Date	Local Time	pH S.U.	Dissolved Oxygen mg/L	Water Temperature °C	Specific Conductivity $\mu\text{Sm}/\text{cm}$	Turbidity NTU	Flow cfs	Sample Type 1=wet, 2=dry
	05/07/2020	09:00	5.66	5.51	17.49	316	5.95	NM	
	05/13/2020	09:05	6.59	6.13	18.37	355	0.43	NMF	2
	05/21/2020	08:55	6.77	6.51	20.87	132	18.7	NM	
	05/26/2020	09:30	6.75	5.70	23.46	369	7.38	NM	
	09/15/2020	12:10	6.61	6.12	26.54	273	12.9	NM	2
	10/08/2020	08:45	7.03	6.57	14.26	133.29	8.55	NM	
	10/15/2020	09:25	7.59	7.32	15.56	184.58	42.0	0.576	2
	10/22/2020	09:00	7.60	6.30	12.52	302.02	6.55	NM	
	10/29/2020	08:40	7.23	4.30	23.70	349	20.7	NM	

S.U. = Standard Units

mg/L = milligrams per Liter

°C = Degree Celsius

$\mu\text{Sm}/\text{cm}$ = microSiemens per centimeter

NTU = nephelometric turbidity unit

cfs = cubic feet per second

NM = Not Measured

NMF = No Measurable Flow

Table 5D. Field Parameters and Chemical Analyses Results for Station 3A – Tributary to Gum Creek (continued)
City of Cordele, Georgia – TTL Project Number 000200601075.00

Units	Date	Local Time	BOD ₅ mg/L	COD mg/L	Ammonia mg/L as N	Nitrite mg/L as N	Nitrate mg/L as N	Nitrate- Nitrite mg/L as N	TKN mg/L as N	Ortho Phosphate mg/L as P	Total Phosphorus mg/L as P	Sample Type 1=wet, 2=dry
	05/07/2020	09:00	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	05/13/2020	09:05	<5.00	<10.0	0.82	<0.250	1.12	NS	1.42	<0.0100	0.0514	2
	05/21/2020	08:55	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	05/26/2020	09:30	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	09/15/2020	12:10	<5.00	25.0	1.68	<0.250	1.95	NS	2.63	0.236	0.331	2
	10/08/2020	08:45	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	10/15/2020	09:25	<5.00	14.0	0.275	<0.250	0.542	NS	0.804	0.0100	0.0977	2
	10/22/2020	09:00	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	10/29/2020	08:40	NS	NS	NS	NS	NS	NS	NS	NS	NS	

mg/L = milligrams per Liter

NS = Not Sampled

Table 5D. Field Parameters and Chemical Analyses Results for Station 3A – Tributary to Gum Creek (continued)
City of Cordele, Georgia – TTL Project Number 000200601075.00

Units	Date	Local Time	TSS mg/L	Hardness mg/L as CaCO ₃	Total/Dissolved Cd µg/L	Total/Dissolved Cu µg/L	Total/Dissolved Pb µg/L	Total/Dissolved Zn µg/L	Sample Type 1=wet, 2=dry
	05/07/2020	09:00	NS	NS	NS	NS	NS	NS	
	05/13/2020	09:05	17.0	120	<1.00 / <1.00	2.63 / 2.01	<1.00 / <1.00	55.7 / 24.8	2
	05/21/2020	08:55	NS	NS	NS	NS	NS	NS	
	05/26/2020	09:30	NS	NS	NS	NS	NS	NS	
	09/15/2020	12:10	8.50	41	<1.00 / <1.00	2.8 / 2.82	2.32 / <1.00	11.3 / 8.18	2
	10/08/2020	08:45	NS	NS	NS	NS	NS	NS	
	10/15/2020	09:25	27.7	91	<1.00 / <1.00	2.23 / 2.39	4.03 / <1.00	32.6 / 19.1	2
	10/22/2020	09:00	NS	NS	NS	NS	NS	NS	
	10/29/2020	08:40	NS	NS	NS	NS	NS	NS	

mg/L = milligrams per Liter

µg/L = micrograms per Liter

NS = Not Sampled

Table 5E. Field Parameters and Chemical Analyses Results for Station 6 – Cedar Creek
City of Cordele, Georgia – TTL Project Number 000200601075.00

Units	Date	Local Time	pH S.U.	Dissolved Oxygen mg/L	Water Temperature °C	Specific Conductivity μSm/cm	Turbidity NTU	Flow cfs	Sample Type 1=wet, 2=dry
	05/07/2020	09:30	5.62	6.79	16.65	85	0.27	NM	
	05/13/2020	09:50	6.84	4.56	17.40	87	0.29	NMF	2
	05/21/2020	09:35	6.12	7.08	20.52	57	27.3	NM	
	05/26/2020	10:10	6.72	4.62	23.15	163	18.5	NM	
	09/15/2020*	14:20	NM	NM	NM	NM	NM	NMF	2
	10/08/2020	09:45	7.32	2.92	13.88	97.92	10.6	NM	
	10/15/2020	09:50	7.14	3.18	13.84	97.31	9.45	NMF	2
	10/22/2020*	09:40	NM	NM	NM	NM	NM	NM	
	10/29/2020	09:10	6.17	2.23	22.80	225	11.5	NM	

S.U. = Standard Units

mg/L = milligrams per Liter

°C = Degree Celsius

μSm/cm = microSiemens per centimeter

NTU = nephelometric turbidity unit

cfs = cubic feet per second

NM = Not Measured

*= Stream Dry/Stagnant; No flow

NMF = No Measurable Flow

Table 5E. Field Parameters and Chemical Analyses Results for Station 6 – Cedar Creek (continued)
City of Cordele, Georgia – TTL Project Number 000200601075.00

Units	Date	Local Time	BOD ₅ mg/L	COD mg/L	Ammonia mg/L as N	Nitrite mg/L as N	Nitrate mg/L as N	Nitrate- Nitrite mg/L as N	TKN mg/L as N	Ortho Phosphate mg/L as P	Total Phosphorus mg/L as P	Sample Type 1=wet, 2=dry
	05/07/2020	09:30	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	05/13/2020	09:50	<5.00	<10.0	<0.100	<0.250	<0.250	NS	1.18	0.0770	0.0328	2
	05/21/2020	09:35	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	05/26/2020	10:10	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	09/15/2020*	14:20	NS	NS	NS	NS	NS	NS	NS	NS	NS	2
	10/08/2020	09:45	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	10/15/2020	09:50	<5.00	11.0	<0.100	<0.250	<0.250	NS	0.553	0.0900	0.0266	2
	10/22/2020*	09:40	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	10/29/2020	09:10	NS	NS	NS	NS	NS	NS	NS	NS	NS	

mg/L = milligrams per Liter

NS = Not Sampled

*= Stream Dry/Stagnant; No flow

Table 5E. Field Parameters and Chemical Analyses Results for Station 6 – Cedar Creek (continued)
City of Cordele, Georgia – TTL Project Number 000200601075.00

Units	Date	Local Time	TSS mg/L	Hardness mg/L as CaCO ₃	Total/Dissolved Cd µg/L	Total/Dissolved Cu µg/L	Total/Dissolved Pb µg/L	Total/Dissolved Zn µg/L	Sample Type 1=wet, 2=dry
	05/07/2020	09:30	NS	NS	NS	NS	NS	NS	
	05/13/2020	09:50	8.33	27	<1.00 / <1.00	1.15 / <1.00	1.16 / <1.00	8.80 / 4.28	2
	05/21/2020	09:35	NS	NS	NS	NS	NS	NS	
	05/26/2020	10:10	NS	NS	NS	NS	NS	NS	
	09/15/2020*	14:20	NS	NS	NS	NS	NS	NS	2
	10/08/2020	09:45	NS	NS	NS	NS	NS	NS	
	10/15/2020	09:50	15.0	43	<1.00 / <1.00	<1.00 / <1.00	<1.00 / <1.00	5.24 / 4.22	2
	10/22/2020*	09:40	NS	NS	NS	NS	NS	NS	
	10/29/2020	09:10	NS	NS	NS	NS	NS	NS	

mg/L = milligrams per Liter

µg/L = micrograms per Liter

NS = Not Sampled

*= Stream Dry/Stagnant; No flow

Table 6A. Dissolved Metals Concentrations Compared to Hardness-Based In-Stream Water Quality Standards - Station 1
City of Cordele, Georgia – TTL Project Number 000200601075.00

Constituent	Sample Date	Sta 1	Hardness (mg/L)	Calculated Acute Hardness Based ISWQS (in µg/L)	Calculated Chronic Hardness Based ISWQS (in µg/L)
Dissolved Cadmium (in µg/L)	5/13/2020	<1.00	95	1.916	0.237
	9/15/2020	<1.00	21	0.441	0.083
	10/15/2020	<1.00	100	2.014	0.246
Dissolved Copper (in µg/L)	5/13/2020	<1.00	95	12.81	8.572
	9/15/2020	2.17	21	3.098	2.36
	10/15/2020	<1.00	100	13.44	8.96
Dissolved Lead (in µg/L)	5/13/2020	<1.00	95	61.07	2.38
	9/15/2020	<1.00	21	11.4	0.444
	10/15/2020	<1.00	100	64.58	2.517
Dissolved Zinc (in µg/L)	5/13/2020	4.17	95	112.2	113.1
	9/15/2020	5.08	21	31.23	31.5
	10/15/2020	1.79	100	117.2	118.1

mg/L = milligrams per Liter

ug/L = micrograms per Liter

Table 6B. Dissolved Metals Concentrations Compared to Hardness-Based In-Stream Water Quality Standards - Station 2A
City of Cordele, Georgia – TTL Project Number 000200601075.00

Constituent	Sample Date	Sta 2A	Hardness (mg/L)	Calculated Acute Hardness Based ISWQS (in µg/L)	Calculated Chronic Hardness Based ISWQS (in µg/L)
Dissolved Cadmium (in µg/L)	5/13/2020	<1.00	35	0.725	0.118
	9/15/2020	<1.00	15	0.317	0.066
	10/15/2020	<1.00	45	0.926	0.141
Dissolved Copper (in µg/L)	5/13/2020	<1.00	35	4.998	3.652
	9/15/2020	2.45	15	2.249	1.77
	10/15/2020	<1.00	45	6.333	4.527
Dissolved Lead (in µg/L)	5/13/2020	<1.00	35	20.25	0.789
	9/15/2020	<1.00	15	7.788	0.303
	10/15/2020	<1.00	45	26.81	1.045
Dissolved Zinc (in µg/L)	5/13/2020	3.88	35	48.14	48.53
	9/15/2020	7.53	15	23.48	23.67
	10/15/2020	1.67	45	59.56	60.06

mg/L = milligrams per Liter

ug/L = micrograms per Liter

* Shading indicates dissolved metal concentration exceeded a hardness-based Instream Water Quality Standard

Table 6C. Dissolved Metals Concentrations Compared to Hardness-Based In-Stream Water Quality Standards - Station 3
City of Cordele, Georgia – TTL Project Number 000200601075.00

Constituent	Sample Date	Sta 3	Hardness (mg/L)	Calculated Acute Hardness Based ISWQS (in µg/L)	Calculated Chronic Hardness Based ISWQS (in µg/L)
Dissolved Cadmium (in µg/L)	5/13/2020	<1.00	91	1.837	0.230
	9/15/2020	<1.00	55	1.126	0.162
	10/15/2020	<1.00	120	2.404	0.279
Dissolved Copper (in µg/L)	5/13/2020	<1.00	91	12.3	8.262
	9/15/2020	2.61	55	7.651	5.373
	10/15/2020	<1.00	120	15.96	10.47
Dissolved Lead (in µg/L)	5/13/2020	<1.00	91	58.27	2.271
	9/15/2020	<1.00	55	33.49	1.305
	10/15/2020	<1.00	120	78.72	3.067
Dissolved Zinc (in µg/L)	5/13/2020	2.29	91	108.2	109.1
	9/15/2020	6.64	55	70.61	71.19
	10/15/2020	1.95	120	136.8	137.9

mg/L = milligrams per Liter
ug/L = micrograms per Liter

Table 6D. Dissolved Metals Concentrations Compared to Hardness-Based In-Stream Water Quality Standards - Station 3A
City of Cordele, Georgia – TTL Project Number 000200601075.00

Constituent	Sample Date	Sta 3A	Hardness (mg/L)	Calculated Acute Hardness Based ISWQS (in µg/L)	Calculated Chronic Hardness Based ISWQS (in µg/L)
Dissolved Cadmium (in µg/L)	5/13/2020	<1.00	120	2.404	0.279
	9/15/2020	<1.00	41	0.846	0.132
	10/15/2020	<1.00	91	1.837	0.230
Dissolved Copper (in µg/L)	5/13/2020	2.01	120	15.96	10.47
	9/15/2020	2.82	41	5.801	4.18
	10/15/2020	2.39	91	12.3	8.262
Dissolved Lead (in µg/L)	5/13/2020	<1.00	120	78.72	3.067
	9/15/2020	<1.00	41	24.17	0.942
	10/15/2020	<1.00	91	58.27	2.271
Dissolved Zinc (in µg/L)	5/13/2020	24.8	120	136.8	137.9
	9/15/2020	8.18	41	55.05	55.5
	10/15/2020	19.1	91	108.2	109.1

mg/L = milligrams per Liter
ug/L = micrograms per Liter

Table 6E. Dissolved Metals Concentrations Compared to Hardness-Based In-Stream Water Quality Standards - Station 6
City of Cordele, Georgia – TTL Project Number 000200601075.00

Constituent	Sample Date	Sta 6	Hardness (mg/L)	Calculated Acute Hardness Based ISWQS (in µg/L)	Calculated Chronic Hardness Based ISWQS (in µg/L)
Dissolved Cadmium (in µg/L)	5/13/2020	<1.00	27	0.563	0.099
	9/15/2020*	NS	NS	NC	NC
	10/15/2020	<1.00	43	0.886	0.137
Dissolved Copper (in µg/L)	5/13/2020	<1.00	27	3.914	2.926
	9/15/2020*	NS	NS	NC	NC
	10/15/2020	<1.00	43	6.068	4.354
Dissolved Lead (in µg/L)	5/13/2020	<1.00	27	15.14	0.590
	9/15/2020*	NS	NS	NC	NC
	10/15/2020	<1.00	43	25.48	0.993
Dissolved Zinc (in µg/L)	5/13/2020	4.28	27	38.64	38.96
	9/15/2020*	NS	NS	NC	NC
	10/15/2020	4.22	43	57.32	57.79

mg/L = milligrams per Liter

ug/L = micrograms per Liter

NS = Not Sampled

NC = Not calculated

*= Stream Dry/Stagnant; No flow

Table 7A. Bacteriological Analysis Results for Station 1 – Gum Creek
City of Cordele, Georgia – TTL Project Number 000200601075.00

Date	E. Coli, #/100 mL	Fecal Coliform, #/100 mL
05/07/2020	180	100
05/13/2020	160	140
05/21/2020	5100 B	6700 B
05/26/2020	300	250
Geometric Mean	458	391
10/08/2020	220 Q	180
10/15/2020	170 Q	260
10/22/2020	170	160
10/29/2020	340	300
Geometric Mean	216	218

Note: Calculation of the geometric mean concentration requires at least 4 samples collected within a 30-day period with at least 24 hours between sampling events.

B - Results based upon colony counts outside the acceptable range.

Q - Sample held beyond the accepted holding time

Table 7B. Bacteriological Analysis Results for Station 2A – Tributary to Gum Creek
City of Cordele, Georgia – TTL Project Number 000200601075.00

Date	E. Coli, #/100 mL	Fecal Coliform, #/100 mL
05/07/2020	150	350
05/13/2020	260	300
05/21/2020	14000	24000
05/26/2020	800	1700
Geometric Mean	813	1439
10/08/2020	200	220
10/15/2020	340	440
10/22/2020	80	100
10/29/2020	370	220
Geometric Mean	212	215

Note: Calculation of the geometric mean concentration requires at least 4 samples collected within a 30-day period with at least 24 hours between sampling events.

Table 7C. Bacteriological Analysis Results for Station 3 – Gum Creek
City of Cordele, Georgia – TTL Project Number 000200601075.00

Date	E. Coli, #/100 mL	Fecal Coliform, #/100 mL
05/07/2020	140	100
05/13/2020	80	120
05/21/2020	1400	3600 B
05/26/2020	400	300
Geometric Mean	281	337
10/08/2020	80	160
10/15/2020	590	720
10/22/2020	280	320
10/29/2020	1500 B	2200 B
Geometric Mean	375	534

Note: Calculation of the geometric mean concentration requires at least 4 samples collected within a 30-day period with at least 24 hours between sampling events.

B - Results based upon colony counts outside the acceptable range.

Table 7D. Bacteriological Analysis Results for Station 3A – Tributary to Gum Creek
City of Cordele, Georgia – TTL Project Number 000200601075.00

Date	E. Coli, #/100 mL	Fecal Coliform, #/100 mL
05/07/2020	1500 B	1300 B
05/13/2020	340	400
05/21/2020	1500	2300
05/26/2020	1500	1600
Geometric Mean	1035	1176
10/08/2020	20	20
10/15/2020	600	760
10/22/2020	1200 B	1400 B
10/29/2020	2900 B	4100 B
Geometric Mean	452	543

Note: Calculation of the geometric mean concentration requires at least 4 samples collected within a 30-day period with at least 24 hours between sampling events.

B - Results based upon colony counts outside the acceptable range.

Table 7E. Bacteriological Analysis Results for Station 6 – Cedar Creek
City of Cordele, Georgia – TTL Project Number 000200601075.00

Date	E. Coli, #/100 mL	Fecal Coliform, #/100 mL
05/07/2020	200	140
05/13/2020	280	380
05/21/2020	2700	4000 B
05/26/2020	300	550
Geometric Mean	461	585
10/08/2020	520	620
10/15/2020	600	1000
10/22/2020	NS	NS
10/29/2020	490	560
Geometric Mean	—	—

Note: Calculation of the geometric mean concentration requires at least 4 samples collected within a 30-day period with at least 24 hours between sampling events.

B - Results based upon colony counts outside the acceptable range.

NS = Not Sampled; Location Dry

Appendices

Appendix A
City of Cordele, Georgia Watershed Protection Plan

Ritchey

Watershed Protection Plan Gum Creek Water Pollution Control Plant Service Area

Gum Creek Basin, Gully Creek Basin, Cedar Creek Basin
Middle Flint Watershed, HUC 03130006
Crisp County, Georgia

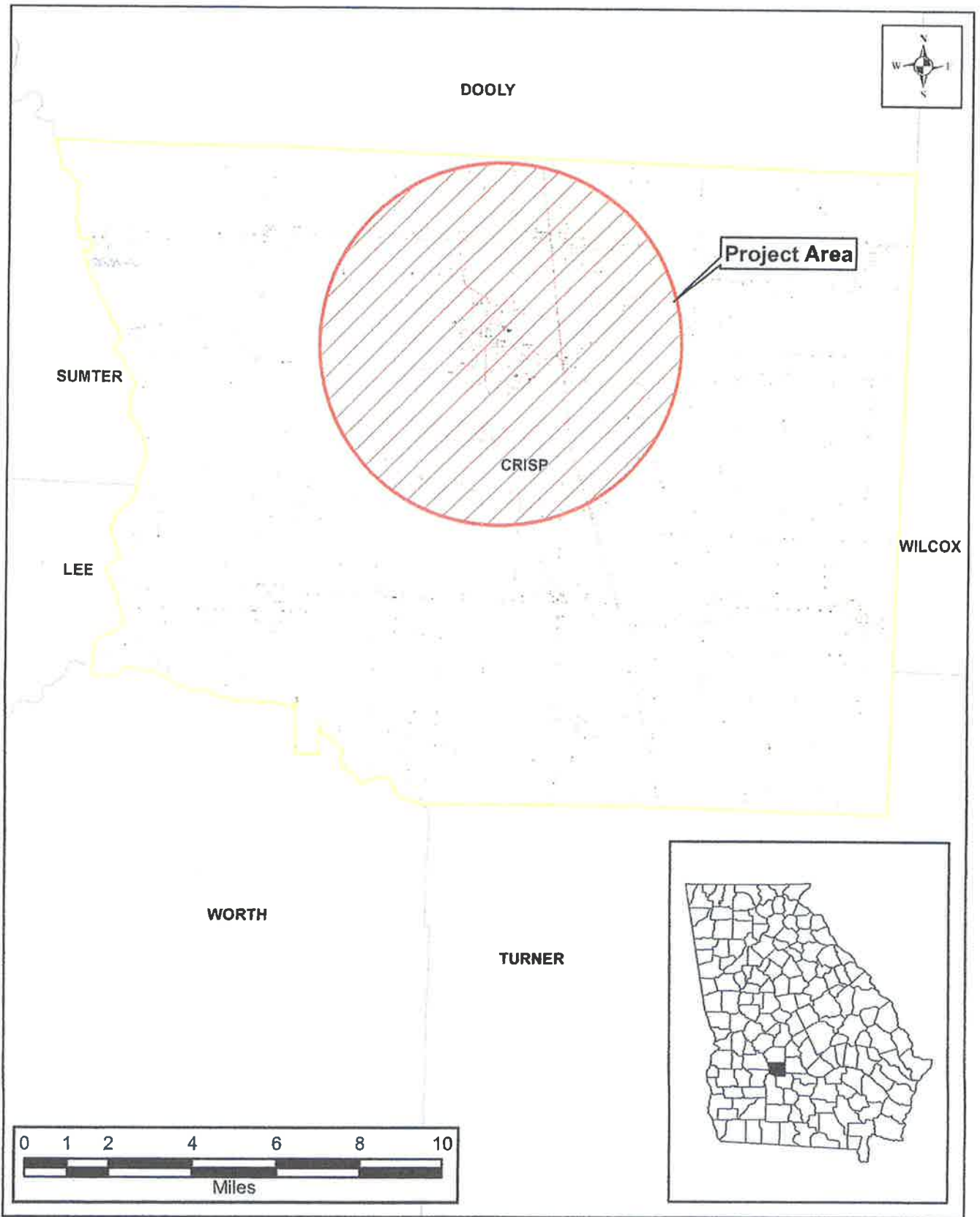
Prepared for:
City of Cordele



Prepared by:

**Ecological
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I. Introduction

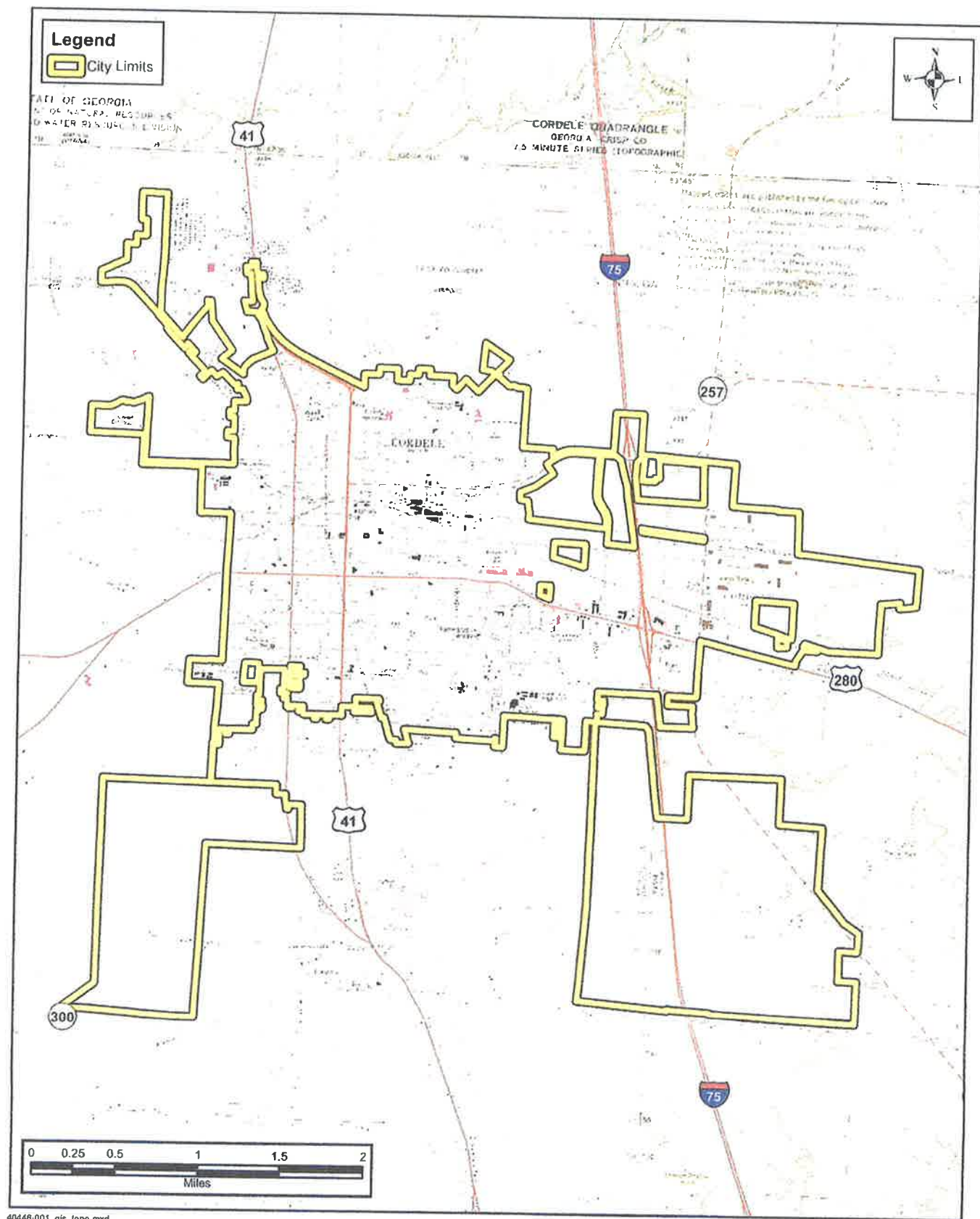
The city of Cordele is located on I-75, 140 miles south of Atlanta and 100 miles north of the Florida State Line (Figure 1). Cordele, also known as the Watermelon Capital of the World, is the county seat for Crisp County, Georgia. Water and sewage services are provided by the City of Cordele to residential, commercial and industrial customers both inside and outside of the City Limits. Wastewater treatment for the City of Cordele, including the Gum Creek, Cedar Creek, and Gulley Creek watersheds, is provided by the Gum Creek Water Pollution Control Plant (WPCP). Current regulations from the Georgia Department of Natural Resources Environmental Protection Division (EPD) governing the discharge of effluent require the City to prepare a Watershed work plan, a Watershed Assessment and Characterization, and a Watershed Management Plan in order to renew the current permit for the Gum Creek WPCP discharge. A watershed work plan was prepared by Ecological Solutions, Inc. and approved by EPD on January 6, 2005. The work plan established the sampling methodology and protocol used to gather information for this watershed assessment and characterization. A Watershed Assessment and Characterization was prepared by Ecological Solutions, Inc. and approved by EPD on February 14, 2011. This document contains the Watershed Management Plan. Located in the Middle Flint Watershed, with several sub-basins, the general characteristics of the watershed, potential sources of pollution, and current and future development all play a part in the preparation of this Watershed Management Plan.

As of the 2010 census, the city had a population of 11,506, with almost 4,314 households residing within the city limits. Although the City of Cordele is not an emerging metropolis, the wastewater treatment plant is an essential part of the development of new residential units and commercial activities to ensure that the community continues in growth and industry.

The landscape is nearly level to sloping and is dissected by many shallow streams. The City of Cordele is at an elevation of 310 feet (Figure 2). Most of the soils are well drained and have a sandy surface layer and mottled clayey subsoil. Nearly level to gently sloping soils on the uplands are extensive. Most of these soils are well drained and have smooth convex slopes. In places, poorly drained soils are in depressions and drainage ways. The poorly drained soils have a sandy surface layer and loamy subsoil. Nearly level soils on floodplains are common near the rivers and creeks. These soils are poorly drained and mainly loamy throughout. Figure 3 provides a more in-depth look at the particular soil types that characterize the area within and surrounding the City of Cordele.

Land use within the city limits is primarily residential, with a few commercial retail centers interspersed throughout the downtown area, as well as adjacent to I-75. The area surrounding the city is predominantly agricultural in nature, with large patches of segmented forest areas interspersed throughout the agricultural area (Figure 4). Deep wells have been drilled into the Ocala Limestone aquifer to provide irrigation and water for human use and consumption in this area.

The current waste water treatment plant service area includes all of the city limits of the City of Cordele and some surrounding out parcels (Figure 5a). The Gum Creek WPCP currently has a design capacity of 5 million gallons per day (mgd) with a yearly average of 3 mgd. The treatment plant has the capacity to accept an additional 2 mgd; therefore the service area can eventually expand to include new development outside the limits of the City of Cordele. Future expansions to the service area will encourage responsible growth with regards to water quality, with the connection of residential subdivisions to a sanitary sewer system instead of individually owned and maintained septic systems (Figure 5b). It is also possible to connect existing subdivisions to the proposed sanitary sewer systems thus eliminating existing individual septic systems and their contribution to poor water quality.



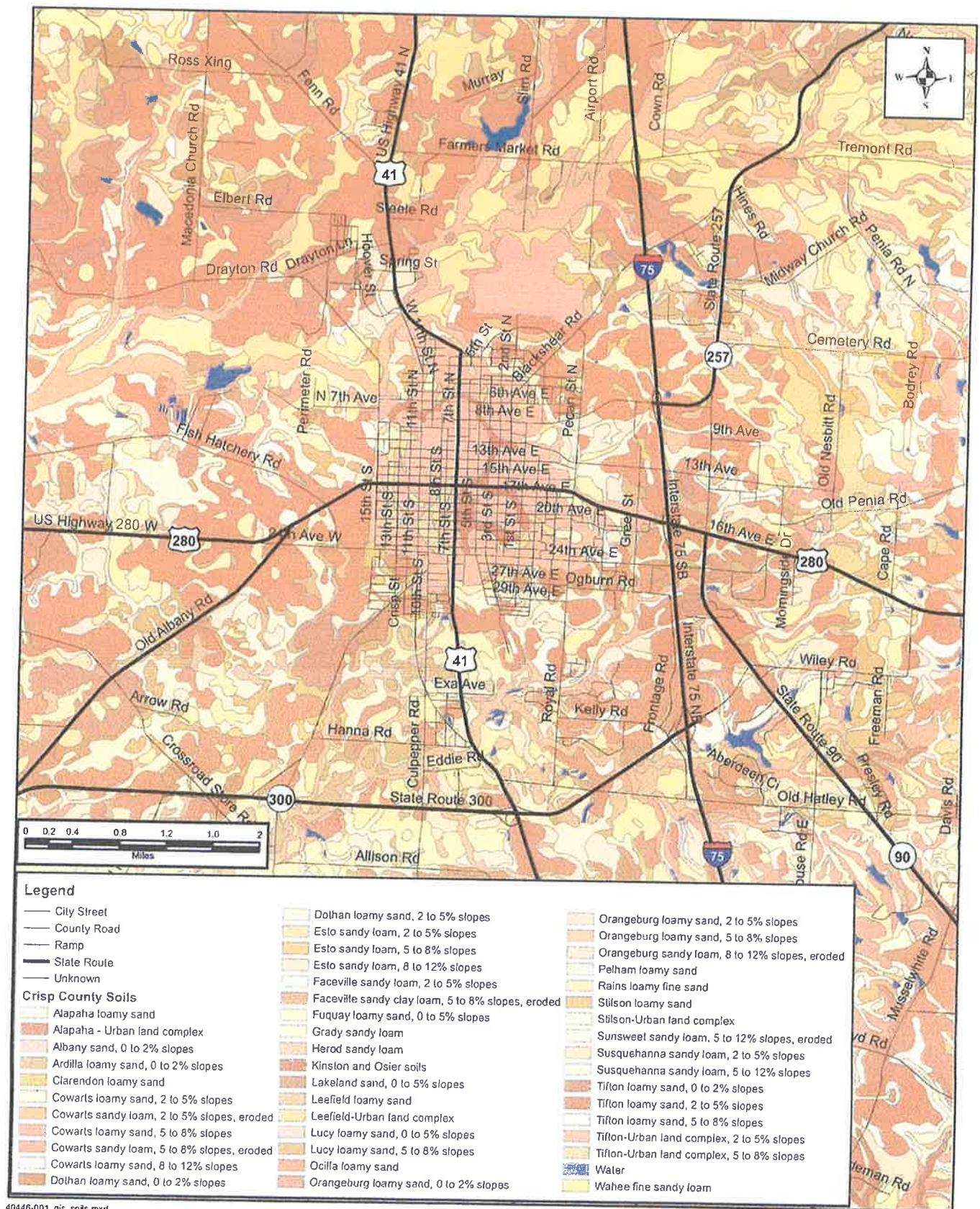
City of Cordele
 Watershed Assessment and Characterization

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Topography

Figure 2



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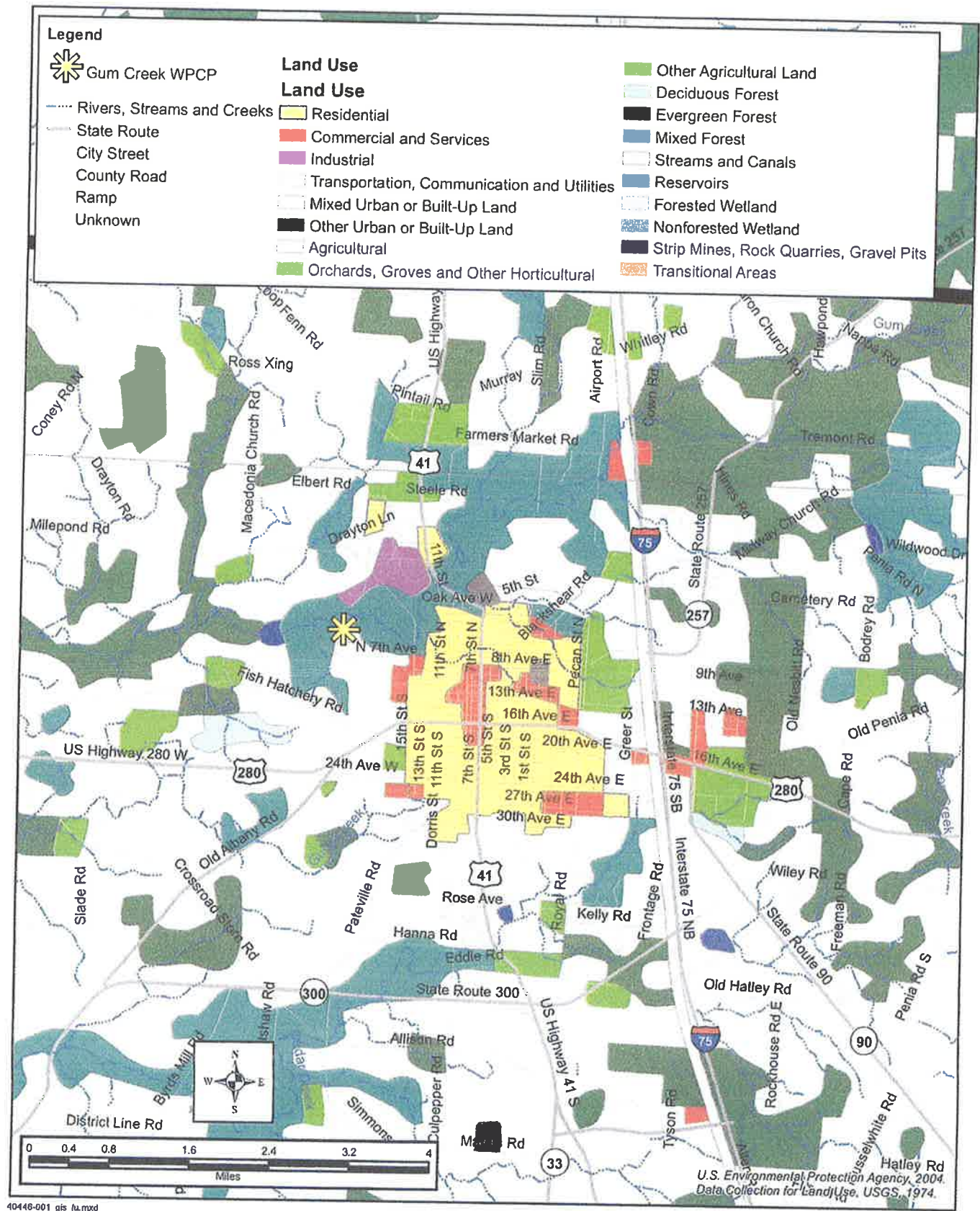
City of Cordele
Watershed Assessment and Characterization

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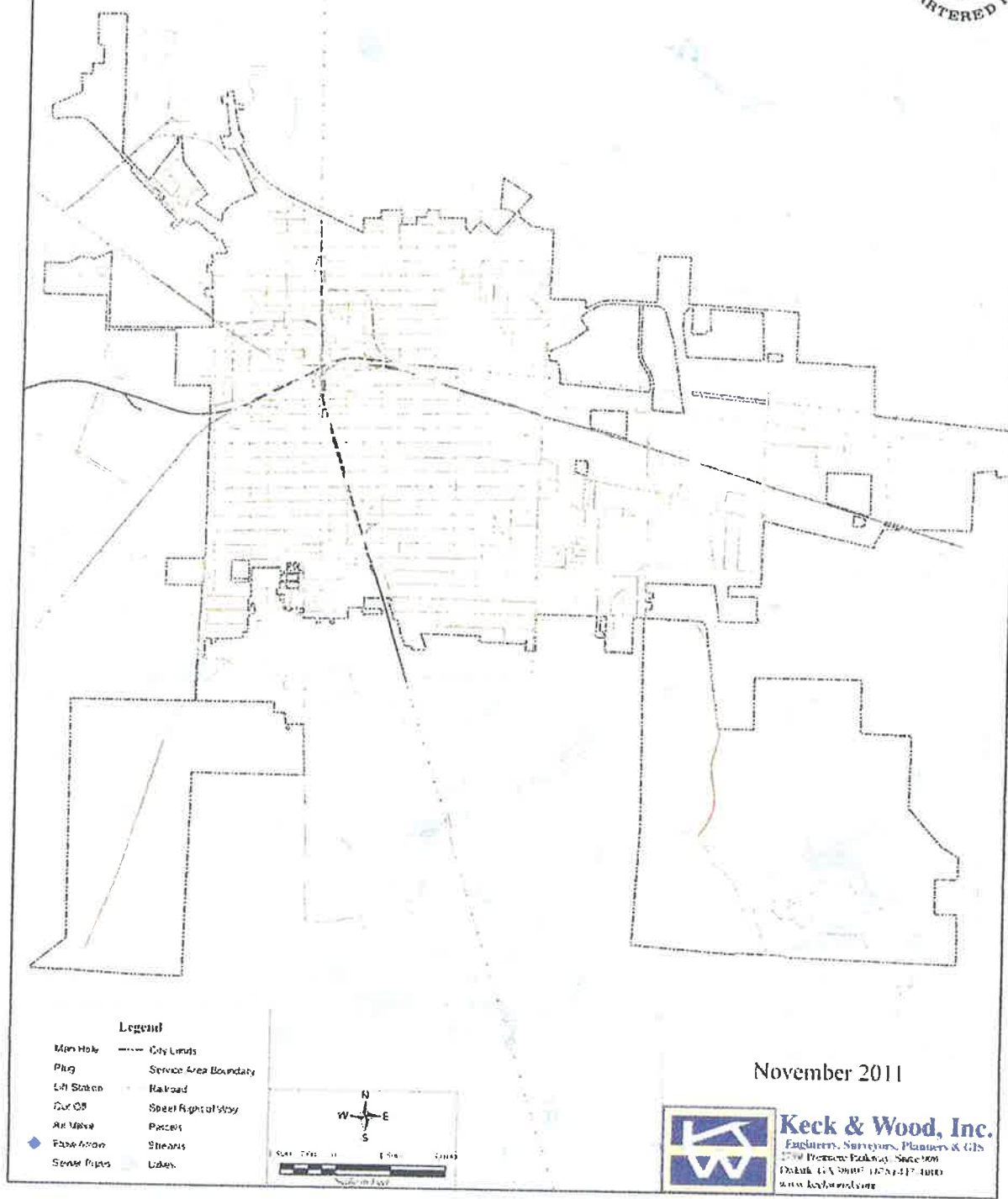
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Soils

Figure 3



EXISTING SEWER SYSTEM SERVICE AREA CITY OF CORDELE, GEORGIA



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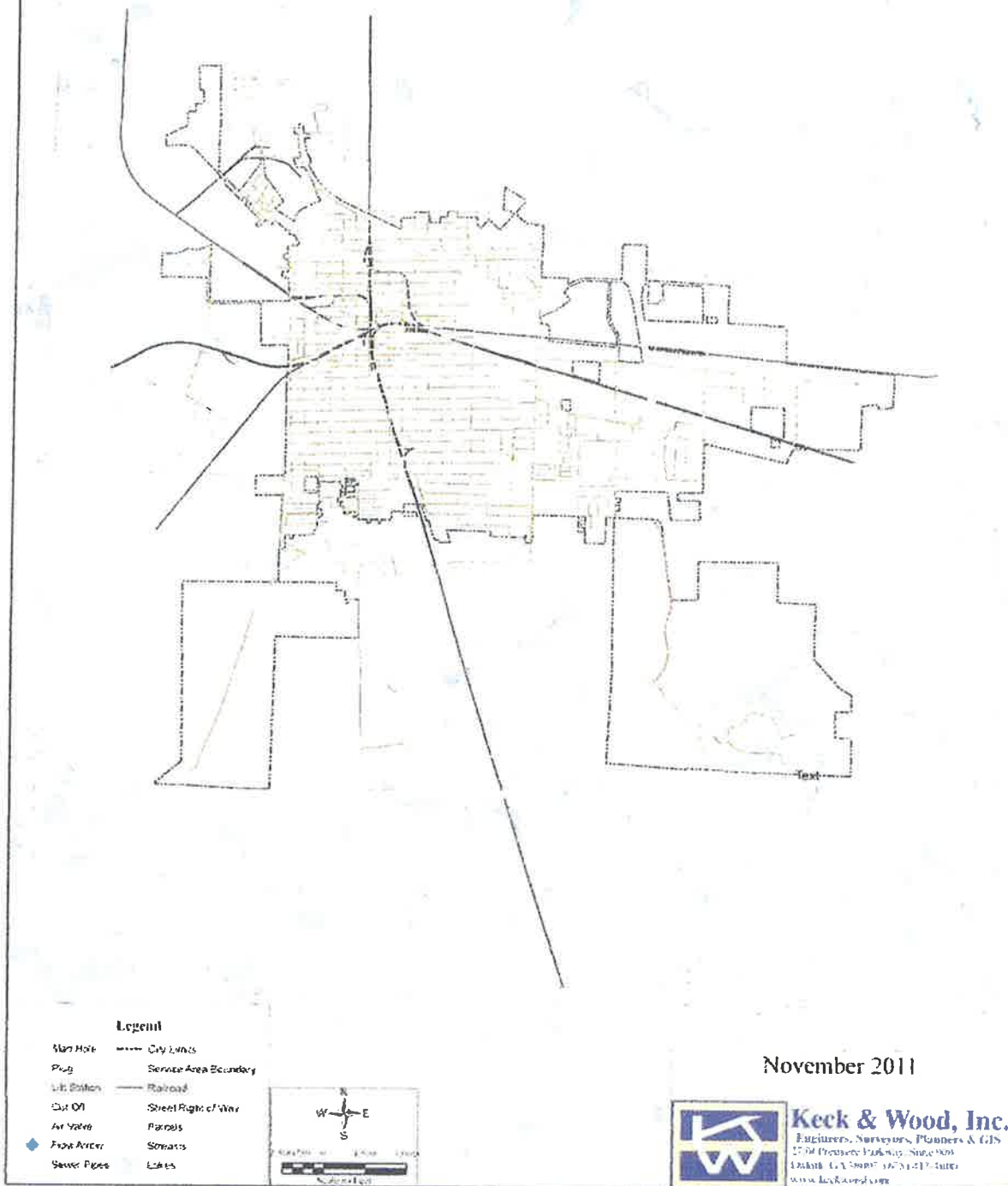


City of Cordele
Watershed Monitoring Workplan
Cordele Existing Sewer Service Area

N.T.S.
40446-001

Figure 5a

FUTURE SEWER SYSTEM SERVICE AREA CITY OF CORDELE, GEORGIA



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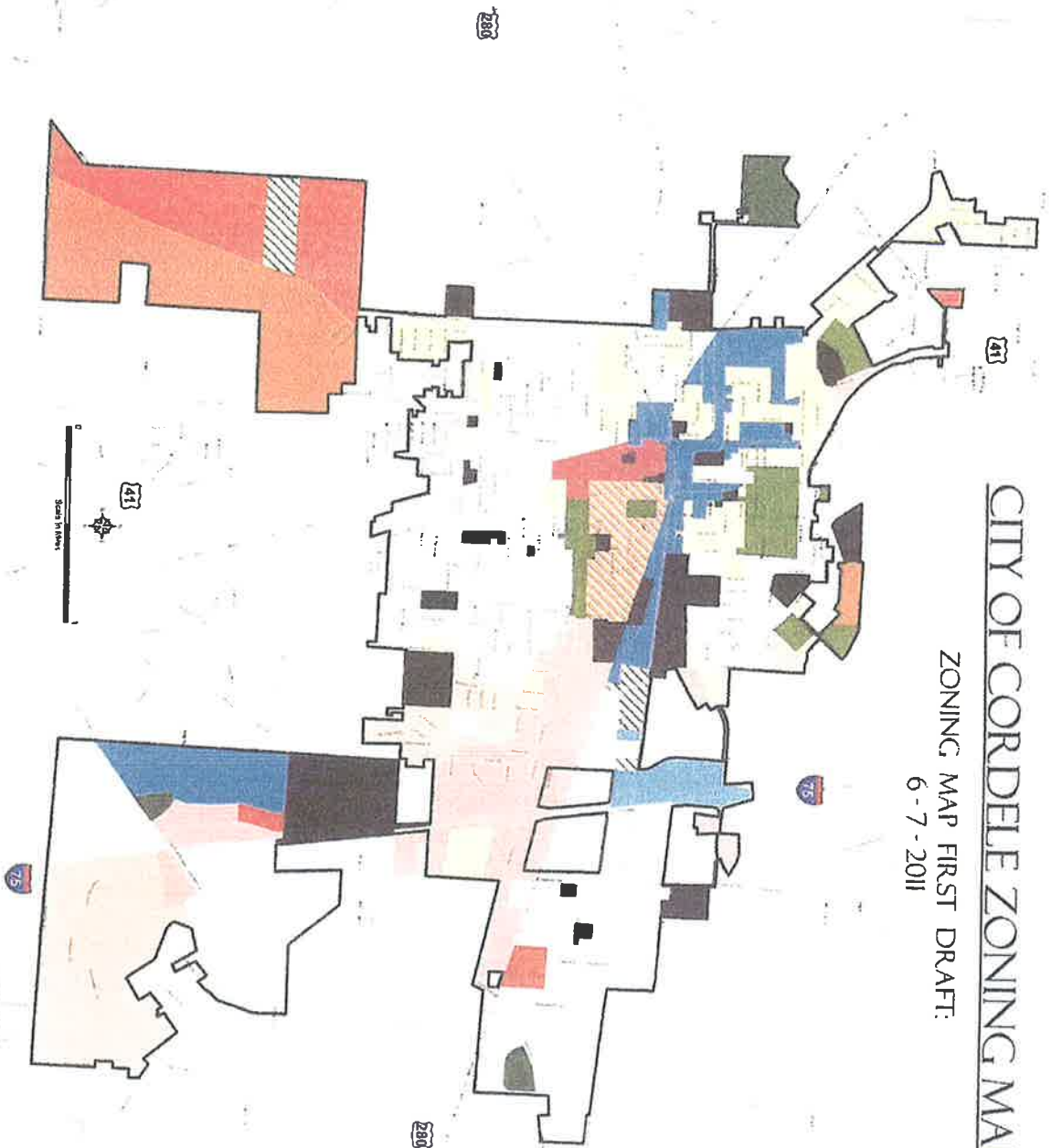
City of Cordele
Watershed Monitoring Workplan
Cordele Future Sewer Service Area

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Figure 5b

CITY OF CORDELE ZONING MAP

ZONING MAP FIRST DRAFT:
6 - 7 - 2011



- Districts**
- AI
 - CBD
 - EI
 - EW/II
 - GC
 - HC
 - HI
 - II
 - LI
 - MU
 - NC
 - OI
 - PARK
 - PDD
 - PEH
 - PW
 - R-12
 - R-4
 - R-7

PRVRC

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City of Cordele
Watershed Monitoring Workplan
Gum Creek Waste Water Treatment Plant Service Area

N.T.S.
40446-001
Figure 5c

This report will provide direction to the City for ways to protect this valuable resource for its future residents. The end result will identify areas of concern, both point (direct dischargers) and non-point sources, with feasible long term solutions to upgrade and/or maintain water quality and aquatic habitat while servicing the existing community and allowing for responsible future growth and development.

II. Watershed Characterization

It was the objective of the watershed assessment and characterization to assess and report on the existing water quality within the City of Cordele, and to assist the City with a further understanding of its water resources and the quality thereof.

The Flint River begins as a groundwater seep originating from fractured crystalline rocks that underlie the runway system at Hartsfield International Airport, located just south of downtown Atlanta. The watershed of the Flint River encompasses 8,640 square miles of Georgia's Piedmont and Coastal Plain physiographic provinces. Within its watershed the Flint River can be clearly subdivided into three unique riverine regimes based on landscape, channel characteristics, flora, and fauna. The upper part of the Flint River flows through the red hills of Georgia's Piedmont physiographic province where it has etched deeply into the crystalline rocks that underlie this region. As the river crosses the fall line near Culloden, the channel geometry changes from deeply incised to a broad, forested, swampy floodplain. This middle section of the Flint River extends from the fall line to Lake Blackshear near Cordele. Lake Blackshear and all other surface water features of concern to the City of Cordele, lie within the Middle Flint River watershed (Figure 6).

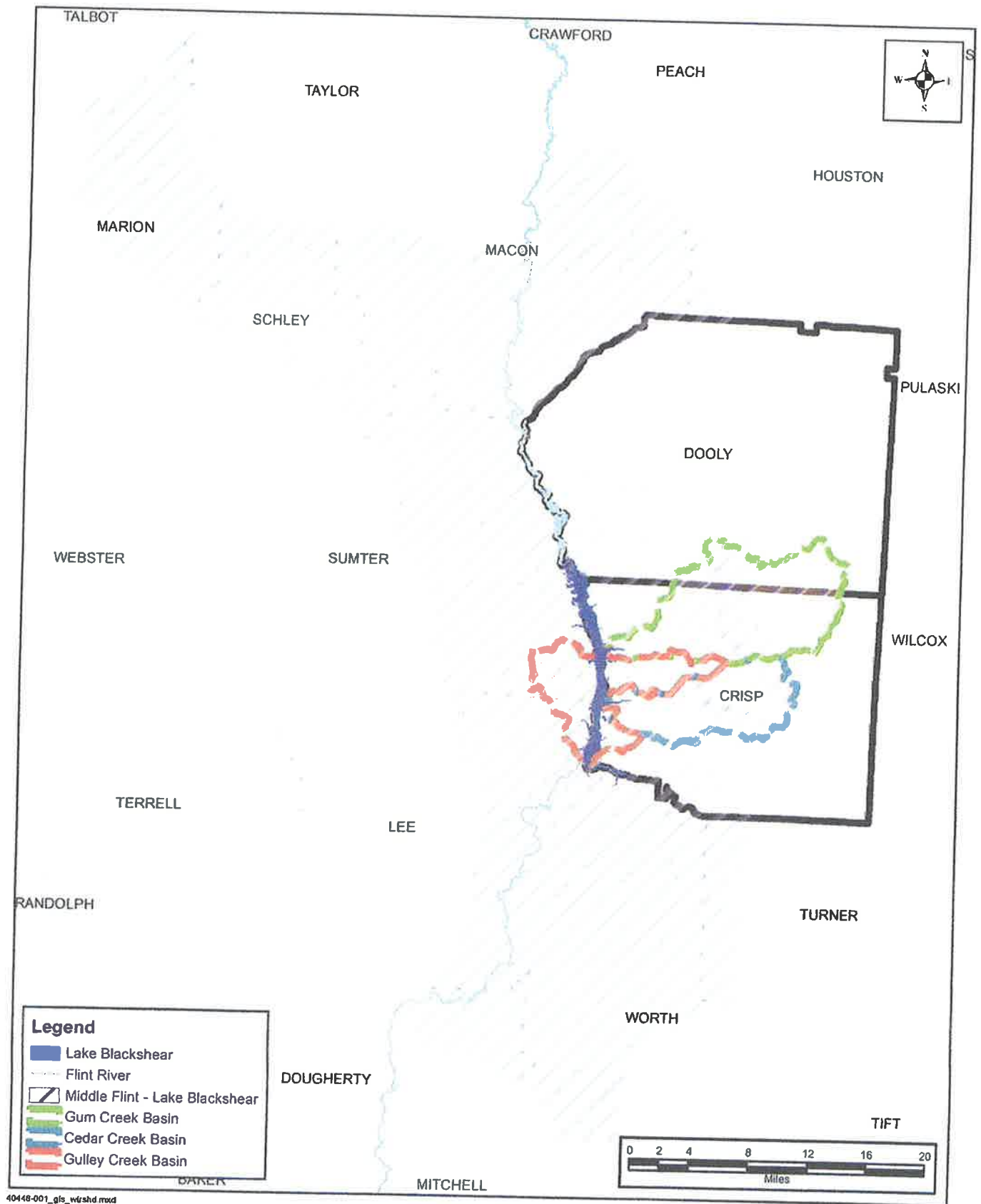
South of Lake Blackshear the river landscape again changes. In this, the lower section, the Flint River has eroded well into the limestone rocks that form the Upper Floridian aquifer in southwest Georgia. More than 600,000 Georgians make the Flint River Basin their home, relying on the river and its tributaries for their water supply. In the Coastal Plain, the aquifers that are intricately tied to the area's streams are relied upon almost exclusively for municipal, domestic, industrial, and agricultural water supplies.

The Coastal Plain section of the river is characterized by deeply incised sandy banks and broad, forested, riparian floodplains. The river is deep, wide, and slow, thus allowing the sediments transported from the Piedmont to fall to the stream bottom.

When the upstream rainfall is heavy, the Flint River overflows its banks and transports fine-grained sediment into the riparian woodlands. Over time, a vast alluvial floodplain has formed.

During normal years, annual precipitation in the Flint River Basin typically exceeds 50-52 inches. When the Flint and its tributaries overflow their banks into the riparian wetlands, changes in water quality quickly become apparent in the backwaters. In the Flint River Basin, there are approximately 43 rivers and streams listed on the 2002 303(d) list as waters not meeting designated uses. These impaired waters include roughly 325 miles of rivers and streams in the Flint River Basin.

Lake Blackshear is a hydroelectric reservoir on the Flint River located approximately 200 miles downstream from its headwaters at the Atlanta Hartsfield-Jackson Airport. It is owned by the Crisp County Power Commission and was created in 1929 by an impounding dam located near Warwick, Georgia. Lake Blackshear is the most upstream of the three reservoirs on the Flint River. The lake has a surface area of approximately 8,442 acres with a length of 15.6 miles. Its average depth is 10.5 feet, with a depth of 44.2 feet found in the old river channel at the dam fore bay. Several springs empty into the lake near the old channel providing depths of 50 to 60 feet.



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Middle Flint River Watershed

Figure 6

The lake is basically a run of the river impoundment with a mean retention time of 10.7 days. Lake level is generally maintained near full pool. A number of embayments occur where major tributary streams enter the lake.

Lake Blackshear is a popular fishing destination, with both largemouth and striped bass, crappie, blue gill and various catfish. Bass tournaments are frequently held on the lake. Lots of waterskiing and other boating activities occur during the warmer months. In the early years, after lake filling, weekend retreats sprang up. In more recent years beautiful year round homes have been established around the lake. Lake development has significantly increased the tax base of the five counties that surround the lake.

Since Lake Blackshear is the first impoundment on the Flint, all upstream nutrient and sediment loadings have the potential of serious impact on the lake. Beginning in the 1970s, both the U. S. Environmental Protection Agency (EPA) and the EPD have classified Lake Blackshear as highly eutrophic. This classification is based largely on phosphorus loading and turbidity.

III. Water Quality Assessment

The EPA has indicated that defining the water quality issues of a watershed is essential for the completion of a successful watershed management program. In order to provide the most comprehensive assessment of the water quality of the sub-basins within the Middle Flint Watershed System (HUC 03130006) that serve Cordele, the following information was researched, analyzed and reported in the watershed assessment document:

1. Historical data assessment
2. Current data assessment
3. Assessment of all 303(d) listed stream segments
4. Impacts of future growth on water quality

The collection and analysis of this information is in accordance with the EPD's *Flint River Basin Regional Water Development and Conservation Plan* (March 20, 2006).

Current Data Assessment

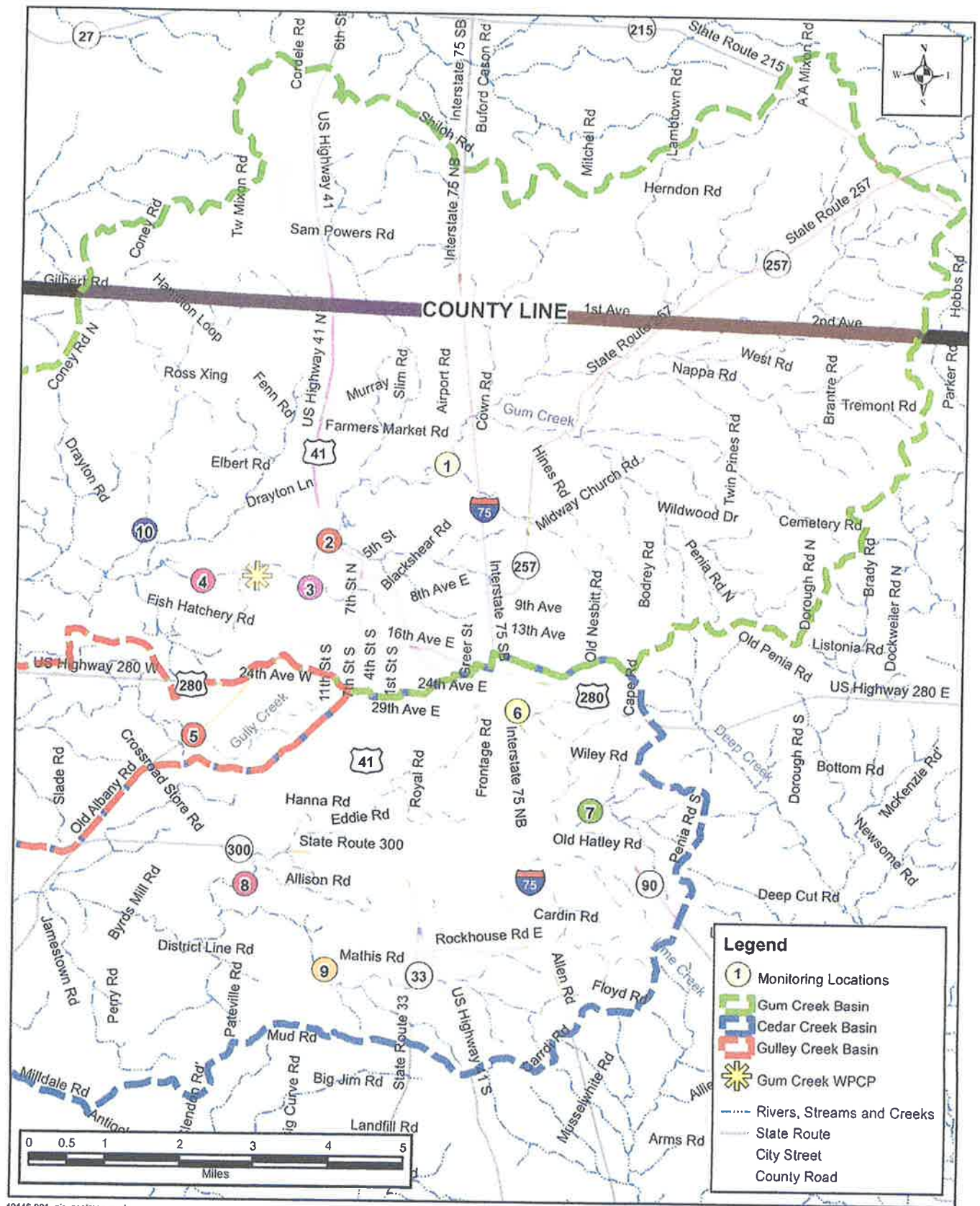
Monitoring Objectives

The stream biological and chemical monitoring program conducted in the Gum, Cedar and Gulley Creek watersheds were designed to satisfy the following objectives:

- Document existing water quality conditions in the three watersheds, based on water quality data and aquatic biota community structure.
- Relate water quality conditions to watershed land uses.
- Evaluate water quality in streams flowing through potential growth areas in the county.
- Document water quality conditions above and below the Gum Creek WPCP.

Monitoring Methodology

The primary study watershed is the Gum Creek Basin. This watershed contains six monitoring locations. Cedar Creek has five monitoring locations and Gulley Creek has one. The Gum and Cedar Creek watersheds have monitoring locations as they enter the sewer services area and one as they leave the sewer services area. The Gulley Creek sampling point is located leaving the service area. Figure 7 illustrates the locations of the monitoring points relative to the three main watersheds as well as the sub-basin watersheds associated with each monitoring location.



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City of Cordele
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Monitoring and Sub Basin
Watershed Locations

Figure 7

The three creek watersheds under study are not used as a drinking water source; however, all of the watersheds flow into Lake Blackshear, which is a recreational lake. The area surrounding the city limits of Cordele is highly agricultural, and irrigation of crops appears to be the primary use of the surface waters in the immediate area.

The Gum Creek WPCP is located on Perimeter Road to the west of Cordele. The facility is a two-stage biological advanced waste treatment plant, which provides coarse screening, flow equalization, primary sedimentation, trickling filtration, secondary aeration for ammonia-nitrogen removal, final sedimentation, disinfection and post aeration. Primary sludge is aerobically digested and dewatered on a belt press with drying beads for standby service. The design of the WPCP has the capacity to treat 5.0 MGD with an average flow of 3.0 MGD. The plant has the potential to treat another 2.0 MGD without any additions or construction.

The WPCP continues to conduct weekly monitoring for BOD₅, DO, pH, chlorine residual and temperature at locations both upstream and downstream of the wastewater discharge area, which is located downstream immediately adjacent to the treatment plant. The EPD also has data associated with the 303(d) stream listings. All existing data was used to augment the data collected during the assessment. The twelve monitoring locations are described in Table 1, along with the rationale for each location.

Table 1 - Site Selection and Rationale

Sampling Location	Location Description	Site Selection Rationale
1	Gum Creek tributary approximately 75 feet south of the intersection of GA 257 and Midway Church Road -- <i>Gum Creek Basin</i> .	Measures water quality entering the Gum Creek Basin, upstream of Interstate 75.
2	Immediately west of Interstate 75 -- <i>Gum Creek Basin</i> .	Upstream sampling location of Gum Creek Basin, measures water quality downstream of Interstate 75 and upstream of Cordele Airport.
3	Gum Creek tributary at Highway 41 bridge crossing (two 5-foot Box Culverts) -- <i>Gum Creek Basin</i> .	Measures water quality leaving the Cordele Airport, upstream of the city limits.
4	Gum Creek at the bridge located near the intersection of 6 th Avenue West and 15 th Street North -- <i>Gum Creek Basin</i> .	Upstream sampling location of the Gum Creek WPCP, locating already being sampled weekly by WPCP personnel.
5	Gum Creek at the old bridge/dam located adjacent to Fish Hatchery -- <i>Gum Creek Basin</i> .	Downstream sampling location of the Gum Creek WPCP, location already being sampled by WPCP personnel.
6	Gulley Creek at Old Albany Road, State Route 300 -- <i>Gulley Creek Basin</i> .	Measures water quality leaving the Cordele city limits.
7	Cedar Creek at State Route 90 -- <i>Cedar Creek Basin (two 10-foot Box Culverts)</i> .	Measures water quality entering the Cedar Creek Basin, upstream of Interstate 75.
8	Cedar Creek tributary at State Route 90, adjacent to mile marker #9 (directly downstream of non-paved road) -- <i>Cedar Creek Basin (two 10-foot Box Culverts)</i> .	Measures water quality entering the Cedar Creek Basin, upstream of Interstate 75.
9	Cedar Creek tributary at Old Hatley Road (0.30 miles east of State Route 300) -- <i>Cedar Creek Basin (three 10-foot Culverts)</i> .	Downstream of Interstate 75, nearest proximity to Interstate 75 feasible due to access constraints.

Sampling Location	Location Description	Site Selection Rationale
10	Cedar Creek at Pateville Road, approximately 250 feet from its intersection with Allison Road – <i>Cedar Creek Basin (six 10-foot Box Culverts).</i>	Downstream location of Cedar Creek Basin.
11	Cedar Creek tributary at Malhis Road (non-paved road), directly between Culpepper Road and Simmons Road – <i>Cedar Creek Basin (three 42-inch Round Corrugated Metal Pipes).</i>	Downstream location of Cedar Creek Basin.
12	Gum Creek tributary at Drayton Road – <i>Gum Creek Basin</i>	Downstream location of Gum Creek Basin

Water quality samples were obtained at the twelve monitoring locations for three dry and three wet sample events. The samples were tested for concentrations of several chemical constituents listed by the EPA as toxic priority pollutants pursuant to Section 307(a)(1) of the Federal Clean Water Act (as amended). Stream flow conditions are not to exceed chronic thresholds for each of these constituents under a 7-day, 10-year minimum flow (7Q10) or higher stream flow conditions. Table 2 lists the constituents the samples were tested for, as well as the detection limit and maximum threshold allowed for each.

Table 2 - Constituents, Detection Limits and Maximum Thresholds Allowed.

Constituents (mg/L)	Detection Limits (mg/L)	Maximum Chronic Threshold Allowed (mg/L)
Chemical Oxygen Demand (COD)	1.0	≥4.0
Ortho Phosphate (P)	0.02	--
Ammonia Nitrogen (N)	0.1	--
Nitrate Nitrogen (N)	0.01	--
Nitrite Nitrogen (N)	0.01	--
Total Arsenic (As)	0.03	0.15 ¹
Total Cadmium (Cd)	0.01	0.0013 ^{1,3}
Total Calcium (Ca)	1.0	--
Total Chromium (Cr)	0.01	0.042 ^{1,3}
Total Copper (Cu)	0.02	0.005 ^{1,2,3}
Total Lead (Pb)	0.015	0.0012 ^{1,2,3}
Total Magnesium (Mg)	0.05	--
Total Zinc (Zn)	0.02	0.065 ^{1,3}
Dissolved Cadmium (Cd)	0.01	0.0013 ^{1,3}
Dissolved Copper (Cu)	0.02	0.005 ^{1,2,3}
Dissolved Lead (Pb)	0.015	0.0012 ^{1,2,3}
Dissolved Zinc (Zn)	0.02	0.065 ^{1,3}

1 = The in-stream criterion is expressed in terms of the dissolved fraction in the water column. Conversion factors used to calculate dissolved criteria are found in the EPA document – National Recommended Water Quality Criteria.

2 = The in-stream criterion is lower than the EPD laboratory detection limits.

3 = The aquatic life criteria for these metals are expressed as a function of total hardness (mg/L) in a water body. Values in the table above assume a hardness of 50 mg/L CaCO₃.

-- = No maximum threshold levels available.

The maximum thresholds have not been standardized for nutrients present in watersheds, such as nitrogen, calcium, phosphorus or magnesium.

Monitoring Results

Table 3 lists the monitoring site samples that had levels exceeding the maximum thresholds for certain constituents, as well as a list of the constituents for which the sample exceeded.

Table 3 - Site Samples Resulting in Constituent Levels Exceeding the Maximum Thresholds.

Site #	Constituent	Sampling Event	Level of Sample	Maximum Threshold
1	Dissolved Oxygen	8/9/06 Dry Event 3	2.96 mg/L	≤4.0 mg/L
1	pH	Dry Event 1 1/25/06 Dry Event 3 8/9/06 Wet Event A 1/22/07 Wet Event B 1/22/07	5.93 5.78 5.40 5.62	Between 6.0 and 8.5
1	Fecal Coliform	Wet Event B 1/22/07 Wet Event C 1/23/07	1,340 #/100ml 1,640 #/100ml	Over 1,000
2	Dissolved Oxygen	Dry Event 2 5/24/06 Dry Event 3 8/9/06	2.03 mg/L 2.65 mg/L	≤4.0 mg/L
3	Dissolved Oxygen	Dry Event 3 8/9/06	2.83 mg/L	≤4.0 mg/L
3	pH	Wet Event B 11/16/06	5.93	Between 6.0 and 8.5
4	Dissolved Oxygen	Dry Event 3 8/9/06	3.68 mg/L	≤4.0 mg/L
5	Fecal Coliform	Wet Event A 11/16/06	1,191 #/100ml	Over 1,000
6	pH	Dry Event 1 1/25/06 Wet Event A 1/22/07 Wet Event B 1/22/07 Wet Event C 1/23/07	5.90 5.52 5.69 5.65	Between 6.0 and 8.5
6	Fecal Coliform	Wet Event C 1/23/07	1,015 3/100ml	Over 1,000
7	Dissolved Oxygen	Dry Event 2 5/24/06 Wet Event A 9/7/06 Wet Event B 9/8/06 Wet Event C 9/8/06	2.28 mg/L 3.33 mg/L 3.02 mg/L 3.93 mg/L	≤4.0 mg/L
7	pH	Dry Event 1 1/25/06 Wet Event C 9/8/06	5.69 5.90	Between 6.0 and 8.5
7	Fecal Coliform	Wet Event A 9/7/06	1,428 #/100ml	Over 1,000
8	Dissolved Oxygen	Dry Event 2 5/24/06 Wet Event C 9/8/06	1.90 mg/L 3.60 mg/L	≤4.0 mg/L
8	pH	Dry Event 1 1/25/06 Wet Event A 9/7/06 Wet Event B 9/8/06 Wet Event C 9/8/06	5.77 5.69 5.53 5.49	Between 6.0 and 8.5
8	Fecal Coliform	Dry Event 2 5/24/06	1,074 #/100ml	Over 1,000
9	Dissolved Oxygen	Dry Event 2 5/25/06 Wet Event A 9/7/06 Wet Event B 9/8/06	3.75 mg/L 3.56 mg/L 3.65 mg/L	≤4.0 mg/L
9	pH	Wet Event C 9/8/06	5.73	Between 6.0 and 8.5

Site #	Constituent	Sampling Event	Level of Sample	Maximum Threshold
10	Dissolved Oxygen	Dry Event 2 5/25/06 Wet Event A 9/7/06 Wet Event B 9/8/06 Wet Event C 9/8/06	3.86 mg/L 2.78 mg/L 2.49 mg/L 1.89 mg/L	≤4.0 mg/L
10	pH	Dry Event 2 5/25/06 Wet Event A 9/7/06 Wet Event B 9/8/06 Wet Event C 9/8/06	5.96 5.89 5.93 5.59	Between 6.0 and 8.5
11	Dissolved Zinc	Dry Event 1 1/26/06	0.58 mg/L	0.065 mg/L
11	pH	Dry Event 1 1/26/06 Wet Event A 1/22/06 Wet Event B 1/22/06 Wet Event C 1/23/06	5.97 5.72 5.77 5.63	Between 6.0 and 8.5
11	Fecal Coliform	Wet Event A 1/22/06	1,050 #/100ml	Over 1,000
12	Dissolved Oxygen	Dry Event 2 5/24/06 Dry Event 3 8/9/06	2.10 mg/L 2.90 mg/L	≤4.0 mg/L
12	pH	Dry Event 1 1/25/06	5.90	Between 6.0 and 8.5

The results of the water quality sampling shown on Table 3 indicate that three of the sites exceeded their threshold for metal contaminants. The sampling of the third dry event for Site #5 revealed copper and lead levels that were above the maximum threshold. Sampling of the second dry event for Site #8 resulted in lead levels exceeding the maximum threshold. The first dry event for Site #11 revealed elevated zinc and dissolved zinc levels with respect to the thresholds. While a few of the remaining monitoring locations contained contaminants as well, they fell below the maximum thresholds and therefore are not of notable concern.

Dissolved oxygen levels had a minimum, rather than a maximum, criterion (≤ 4.0 mg/L). Sites 1, 3, and 4 were below the threshold during the third dry event only. Sites 5, 6, and 11 met the criteria, while sites 2, 7 through 10, and 12 had two or more sampling events fall below the minimum criterion.

Neutral pH is 7.0. The acceptable range for streams is between 6.0 and 8.5. Sites 1, 6, 8, 10 and 11 resulted in a slightly acidic pH (fell below 6.0) in more than two instances. Site 7 had two instances of a slightly acidic pH, while sites 3, 9, and 12 had only one instance where the pH was slightly acidic. Sites 2, 4, and 5 had pH levels that continuously fell within the range criteria.

Fecal coliform levels for surface water features that are used for drinking or swimming range from 200/100 ml to 1,000/100 ml. However, since these streams are not used for any of these features, the criterion was set as a "noteworthy" value of anything over 1,000/100 ml rather than a strict criterion. Site 1 had two instances, and Sites 5 through 8 and 11 had one instance of levels exceeding the fecal coliform criterion. Sites 2 through 4, 9, 10 and 12 all resulted in acceptable fecal coliform levels based on the criterion set. In future sampling events the designated fishing use criterion will be utilized.

Site #5, the site that had a sample exceed copper and lead levels, is the site located downstream of the WPCP, which may be a possible cause for the elevated levels of these contaminants. The remaining samples that did not meet the thresholds for pH, dissolved oxygen or fecal coliform is likely due to runoff from the agricultural areas adjacent to the surface waters, as well as

contamination from direct contact of the water with livestock waste. Leaf litter fall has also been identified as a cause of depressed dissolved oxygen levels in water.

Fish sampling and benthic sampling were also conducted at each of the twelve monitoring locations. The Site #2 monitoring location was swampy in nature and not conducive to fish and benthic sampling. Therefore, the fish and benthic samples were taken approximately 1 mile downstream of the monitoring location point. The fish and benthic results were calculated by determining their Index of Biotic Integrity (IBI) as well as the Index of well-being (Iwb). Table 4 explains IBI scores and how they are categorized, and Table 5 explains Iwb scores and how they are categorized. The results of the fish and benthic sampling events, along with their IBI scores, are provided in Table 4 below.

Table 4 - Fish and Benthic Score Summaries

Site ID	Fish and Benthic Score Summaries
1	Fish: IBI is 18 (Very Poor); Iwb is 4.3 (Very Poor) - Only three species (30 individuals) collected with the majority being <i>Lepomis</i> (sunfish) species. Lack of diversity and low biomass are primary causes for low scores. One fish (3% of fish) had a tumor resulting in 4 points being deducted from the IBI score. Benthics: Score is 77 (Good) - Represents a balanced community.
2	Fish: IBI is 17 (Very Poor); Iwb is 6.5 (Poor) - Eleven species (165 individuals) collected with the majority being <i>Lepomis</i> (sunfish) species. Diversity and total species are low for this size watershed. Biomass is higher and nearly in the "Fair" category. Benthics: Score is 77 (Good) - Represents a balanced community.
3	Fish: IBI is 13 (Very Poor); Iwb is 5.8 (Very Poor) - Ten species (106 individuals) collected with the majority being <i>Lepomis</i> (sunfish) species. Diversity and total species are low for this size watershed. Biomass is very low. Benthics: Score is 108 (Very Good) - Comparable to best situation expected.
4	Fish: IBI is 30 (Poor); Iwb is 7.3 (Fair) - Twelve species (282 individuals) collected. Balance between what is there is good. The lack of additional species (primarily benthic feeders) is partially responsible for lower score. Total species and biomass are low for this size watershed. Benthics: Score is 100 (Very Good) - Comparable to best situation expected.
5	Fish: IBI is 21 (Very Poor); Iwb is 7.6 (Fair) - Ten species (311 individuals) collected with the majority (93%) being <i>Lepomis</i> (sunfish) species. The lack of additional species (primarily benthic feeders) is partially responsible for lower score. Total species and biomass are low for this size watershed. Benthics: Score is 100 (Very Good) - Comparable to best situation expected.
6	Fish: IBI is 18 (Very Poor); Iwb is 2.3 (Very Poor) - Only two species (5 individuals) collected with the majority being <i>Lepomis</i> (sunfish) species. Lack of diversity and low biomass are primary causes for low scores. Benthics: Score is 77 (Good) - Represents a balanced community.
7	No water was present in the stream channel during survey dates therefore no fish or benthic macroinvertebrates were collected. However, the surrounding habitat was evaluated and the resulting score was compared to the reference site habitat score. It scored 84% which would be considered very good.
8	No water was present in the stream channel during survey dates therefore no fish or benthic macroinvertebrates were collected. However, the surrounding habitat was evaluated and the resulting score was compared to the reference site habitat score. It scored 73% which would be considered good.
9	Fish: IBI is 13 (Very Poor); Iwb is 1.3 (Very Poor) - Only two species (7 individuals) collected. Balance between what is there is good. The lack of additional species (primarily benthic feeders) is partially responsible for low score. Total species and biomass are very low and primary causes for low scores. Benthics: Score is 115 (Very Good) - Comparable to best situation expected.

Site ID	Fish and Benthic Score Summaries
10	Fish: IBI is 13 (Very Poor); Iwb is 5.4 (Very Poor) - Seven species (103 individuals) collected with the majority being <i>Lepomis</i> (sunfish) species. Diversity and total species are low for this size watershed. Biomass is very low. Benthics: Score is 100 (Very Good) - Comparable to best situation expected.
11	Fish: IBI is 24 (Very Poor); Iwb is 6.2 (Fair) - Eight species (48 individuals) collected. Balance between what is there is good. The lack of additional species (primarily benthic feeders) is partially responsible for lower score. Benthics: Score is 85 (Very Good) - Comparable to best situation expected.
12	Fish: IBI is 18 (Very Poor); Iwb is 1.1 (Very Poor) - Only two species (15 individuals) collected with the majority being <i>Esox</i> (top carnivore) species. Lack of diversity and low biomass are primary causes for low scores. Benthics: Score is 108 (Very Good) - Comparable to best situation expected.

Fish sampling at the twelve locations resulted in a very low Index of Biotic Integrity (IBI), which translates to having poor fish diversity and populations. In contrast, the benthics score for each site listed each sub-watershed as either good or very good for supporting benthic organisms. For the two stream sampling sites that did not contain any water in the channel during the survey (Sites 7 and 8), the habitat data was used to assess the area. The habitat surrounding Site 7 was considered very good, while the habitat surrounding Site 8 was considered good. The complete data set for the fish and benthic organism sampling events are included in Appendix B of the Watershed Assessment and Characterization report.

Assessment of 303(d) Listed Stream Segment(s)

Section 303(d) of the Clean Water Act requires that all states list waters not meeting water quality standards. The EPD sets water quality standards and is responsible for listing waters that do not meet these standards in the State of Georgia. If a water body does not support or partially support its designated use (drinking, recreation, fishing, wild/scenic rivers, or coastal fishing) by violating water quality standards, it is considered "impaired" and is a candidate for a Total Maximum Daily Load (TMDL) study.

The State of Georgia assesses its water bodies for compliance with water quality standards criteria established for their designated uses as required by the Federal Clean Water Act (CWA). Assessed water bodies are placed into three broad categories, supporting their designated use, not supporting their designated use, and assessment pending depending on water quality assessment results. In addition to the three broad categories, GA EPD adopted a five-part categorization of its waters at the request of U.S. EPA in 2008. Each of the five categories corresponds to one of the three groups as described below.

Category 1 – Data indicate the waters are supporting their designated use(s).

Category 2 – A water has more than one designated use and data indicate that at least one designated use is being supported, but there is insufficient evidence to determine that all uses are being supported.

Category 3 – There is insufficient data or other information to make a determination as to whether or not the designated use(s) is being supported.

Category 4a – Data indicate that at least one designated use is not being supported, but TMDL(s) have been completed for the parameter(s) that are causing a water not to meet its use(s).

Category 4b – Data indicate that at least one designated use is not being supported, but there are actions in place (other than a TMDL) that are predicted to lead to compliance with water quality standards.

Category 4c – Data indicate that at least one designated use is not being supported, but the impairment is not caused by a pollutant.

Category 5 – Data indicate that at least one designated use is not being supported and TMDL(s) need to be completed for one or more pollutants. Waters in Category 5 make up the 303(d) list.

Waters supporting their designated use correspond to Category 1. Waters not supporting their designated use correspond to Categories 4a, 4b, 4c, and 5. Waters where the assessment for use support is pending correspond to Category 2 and 3. So far, GAEPD has not placed any waters in Category 2 or 4c.

These water bodies are found on Georgia's 305(b) list as required by that section of the CWA that defines the assessment process and are published in *Water Quality in Georgia* every two years.

Some of the 305(b) partially and not supporting water bodies are also assigned to Georgia's 303(d) list, also named after that section of the CWA. Water bodies on the 303(d) list are required to have a TMDL evaluation for the water quality constituent(s) in violation of the water quality standard. The TMDL process establishes the allowable pollutant loadings or other quantifiable parameters for a water body based on the relationship between pollutant sources and in-stream water quality conditions. This allows water quality-based controls to be developed to reduce pollution and to restore and maintain water quality.

There are currently two 303(d) listed streams within the WPCP service area. The listed segments are described in the table below:

Table 5 - Impaired Waterways within the WPCP Service Area.

Listed Segment	Location	Support	Length	Designated Use	Criteria Violated
Gum Creek	Downstream Cordele to Lake Blackshear	Not supporting	6 miles	Fishing	Biota, Fecal coliform
Gully Creek	Upstream Lake Blackshear	Not supporting	4 miles	Fishing	Dissolved Oxygen

A study sponsored by the Buckeye Cellulose Corporation in 1984 reported that nutrient loading was sufficient to classify Gum Creek as eutrophic. Gum Creek was identified in the December 1989 *Georgia Nonpoint Source Assessment Report* and the *Georgia Non-point Source Management Plan* as an agricultural stream likely to be threatened by agricultural non-point sources of pollution. A subsequent study, conducted in 1989 by Cofer, et al., for the Lake Blackshear Watershed Association, concluded that control of agricultural release of phosphorus and nitrogen is important in the watershed.

The Gum Creek Water Quality Project (1991-1999) was implemented by the EPD to address the environmental issues raised in the research referenced in the previous paragraph. The main objective of the project was to secure farmer participation in cost-shared best management practices (BMP) designed to reduce pollution and/or the potential of pollution of surface and ground waters in the project area while maintaining farmer productivity and profitability. Other objectives included: increasing landowner knowledge and understanding of agricultural pollution potentials and water quality, increasing crop production efficiency through better management of natural resources, increasing awareness among the general public of surface and groundwater contamination, and initiating a state-administered cost-share program for agricultural BMPs. Among the BMPs promoted, the ones most relevant to improving water quality are:

1. Permanent structures designed to reduce surface water contamination by acting as nutrient or pesticide sinks and settling areas for sediments;
2. Permanent structures designed to reduce sediment, pesticide and nutrient loading of surface water by run-off management; and
3. Permanent structures designed to prevent access of cattle to streams thus reducing nutrient loading from waste products and sedimentation caused by bank erosion.

The watershed that contains both Gum Creek and Gully Creek is approximately 198,000 acres in size, covers the western half of Crisp County and extends into Dooly, Sumter, Lee, Worth, and Turner Counties with predominately agricultural and forested woodland. Excluding the Flint River Watershed Basin Planning program, there is not any current or planned water quality management or sampling programs in the watershed. Other than the City of Cordele, there are no additional Phase I or Phase II stormwater treatment regulated communities or stormwater utility districts in the watershed.

The TMDL is defined as a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards. The calculation includes an allocation of that amount to the sources of pollution. A TMDL adds up all of the allowable loads of a single pollutant from all point and non-point sources (within a watershed that contributes pollution). The calculation includes a margin of safety to ensure the water will meet its uses, and must account for seasonal variation in water quality. A TMDL is also a process that can be used to formulate a plan to help clean waters and provide a means to study streams.

Waste Load Allocations (WLAs) are determined by summing "direct" and "upstream" contributions. Direct contributions are point source loads that directly discharge into the impaired segment. Upstream contributions are point source loads on an upstream segment that are transported to the impaired stream segment. Upstream segments can be the same channel or tributaries.

Load Allocations (LAs) are calculated using computer models that predict loads from nonpoint sources based on land use, existing water quality, weather data, flow, topography, soils data, and other pertinent data.

Table 6 below lists the sediment loads of impaired segments with regard to the impairment category, the current load, TMDL, WLA, LA and the percent reduction required to bring the segments within the regulatory limits.

Table 6 - TMDL, WLA, LA and Percent Reduction for Impaired Stream Segments that Affect the City of Cordele.

Listed Segment	Impairment	Current Load	WLA	LA	TMDL	Reduction
Gum Creek	Biota	26,546 tons/year	229.0 tons/year	17,511 tons/year	17,740 tons/year	33%
Gum Creek	Fecal Coliform	2.83E+12 cnts/30 days	3.78E+11 cnts/30 days	9.72E+11 cnts/30 days	1.5E+12 cnts/30 days	47%
Gully Creek	Dissolved Oxygen	107 lbs/day	None	107 lbs/day	36	67%

According to the table above, Gum Creek is listed as exceeding the TMDL for biota and fecal coliform, while Gully Creek is exceeding its current dissolved oxygen limits.

The following paragraphs provide background information for each of the impairments and descriptions of how these impairments affect the stream's listing, as well as measures that can be taken to reduce the impairment and bring the stream segments back to a healthy status.

Biota

The Biota Impacted designation indicates that studies have shown a modification of the biological community, more specifically, fish. In 1990, 1998, 1999 and 2000 the Department of Natural Resources (DNR) Wildlife Resources Division (WRD) conducted studies of fish populations. WRD used the Index of Biotic Integrity (IBI) and modified Index of Well-Being (IWB) to identify affected fish populations. The IBI and IWB values were used to classify the population as Excellent, Good, Fair, Poor, or Very Poor. Stream segments with fish populations rated as Poor or Very Poor were included in the partially supporting list.

The average general cause of low IBI scores is the lack of fish habitat due to stream sedimentation. To determine the relationship between the in-stream water quality and the source loadings, each watershed was modeled. The analysis performed to develop sediment TMDLs for the 303(d) listed watersheds utilized the Universal Soil Loss Equation (USLE). The USLE predicts the average annual soil loss caused by erosion. The USLE method considered the characteristics of the watershed including land use, soil type, ground slope, and road surface. The USLE was applied to both the 303(d) listed watersheds and those not biologically impacted to determine both the existing sediment loading rates and the sediment load reductions needed to support beneficial use. This TMDL determines the allowable sediment loads to the impaired Flint River Basin streams and is based on the hypothesis that an impaired watershed having an annual average sediment loading rate similar to the biological reference watersheds will remain stable and not be biologically impaired due to sediment. The average sediment loads of the reference watersheds in the Piedmont and Southeastern Plains ecoregions within the Chattahoochee and Flint River basins are 0.63 tons/acre/yr (ranging from 0.30 to 1.26 tons/acre/yr) and 1.10 tons/acre/yr (ranging from 0.28 to 1.84 tons/acre/yr), respectively.

Data indicate that row crops are the major source of sediment to rivers and streams in the Flint River Basin, comprising over 92% of the average annual sediment load. However, since 1950, there has been a 57% reduction in farmland. With the reduction in farmland, there has also been a decrease in the amount of soil erosion. This suggests that the sedimentation observed in the impaired stream segments may be legacy sediment resulting from past land use practices. It is believed that if sediment loads are maintained at acceptable levels, streams will repair themselves over time.

Management practices that may be used to help reduce and/or maintain the average annual sediment loads include:

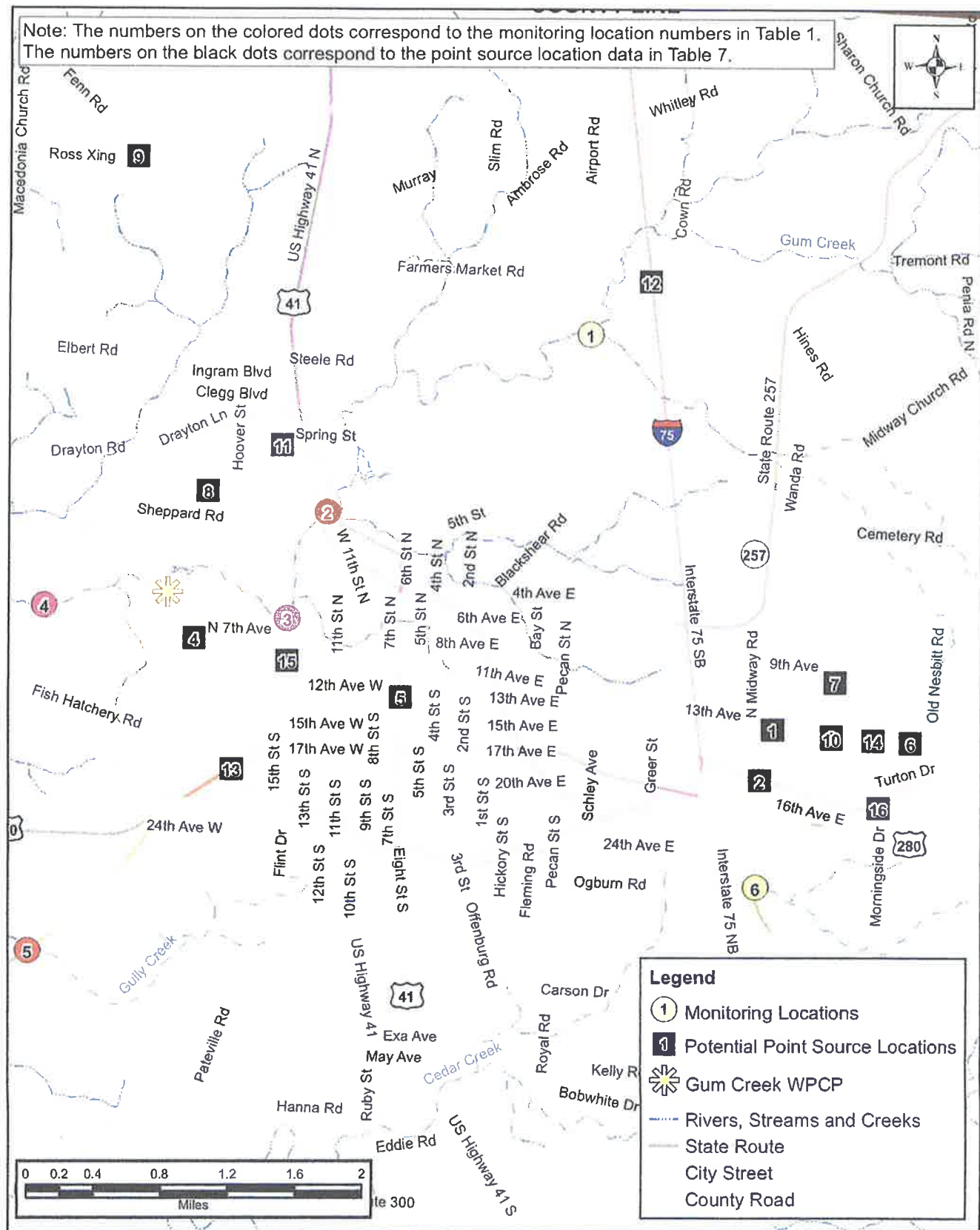
- Compliance with NPDES permit limits and requirements
- Adoption of NRCS Conservation Practices
- Application of Best Management Practices (BMPs) appropriate to agricultural or urban land uses, whichever applies

Fecal Coliform

The State of Georgia has identified twenty-eight (28) stream segments located in the Flint River Basin as water quality limited due to fecal coliform. A stream is placed on the partial support list if more than 10% of the samples exceed the fecal coliform criteria and on the not support list if more than 25% of the samples exceed the standard. Water quality samples collected within a 30-day period that have a geometric mean in excess of 200 counts per 100 milliliters during the period May through October, or in excess of 1000 counts per 100 milliliters during the period November through April are in violation of the bacteria water quality standard. In addition, a

single sample in excess of 4000 counts per 100 milliliters during the period November through April can also provide a basis for adding a stream segment to the 303(d) listing. The water use classifications of all of the impacted streams are Fishing, Recreation, and Drinking Water.

An important part of the TMDL analysis is the identification of potential source categories. Sources are broadly classified as either point or nonpoint sources. A point source is defined as a discernable, confined, and discrete conveyance from which pollutants are or may be discharged to surface waters. Figure 8 displays fifteen point source locations, according to the EPD, in and around Cordele. The locations and names of these point sources are also identified in Table 7.



40446-001_gis_ptsrc.mxd

City of Cordele
Watershed Assessment and Characterization

40446-001

Ecological
Solutions

Potential Point Source Locations

Figure 8

Table 7 - Locations of Point Source Facilities in and Around the City of Cordele.

Point Source Number	Facility Name	Facility Address
1	ADM Alliance Nutrition.	2201 E. 13 th Avenue
2	Continental Grain Company Inc.	101 N. Harris Street
3	Gum Creek WPCP	801 Perimeter Road
4	Crisp County Power Commission	201 S. 7 th Street
5	Drexel Chemical Company	3001 E. 13 th Avenue
6	EBAA Iron Inc., Cordele Division	2508 E. 9 th Avenue
7	Griffin Lumber Company	1603 Drayton Road
8	Helena Chemical Company	434 Fenn Road
9	Marvair	156 Seedling Drive
10	Norbord Georgia Inc.	964 US Highway 280 West
11	Southern States Fertilizer Plant	408 N. 15 th Street

Nonpoint sources are diffuse, and generally, but not always, involve accumulation of fecal coliform bacteria on land surfaces that wash off as a result of storm events. Some examples of potential nonpoint sources that will be evaluated are leaking sanitary sewer lines, overflowing sanitary sewer lines, failing septic systems, and agricultural animals in rural parts of the watershed.

The process of developing fecal coliform TMDLs for the Flint River Basin listed segments includes determination of the following:

- The current critical fecal coliform load to the stream under current conditions;
- The TMDL for similar conditions under which the current load was determined; and
- The percent reduction in the current critical fecal coliform load necessary to achieve the TMDL.

The calculation of the fecal coliform load at any point in a stream requires the fecal coliform concentration and stream flow. The availability of water quality and flow data varies considerably among the listed segments. Two different approaches were used depending on data availability: Loading Curve Approach and Equivalent Site Approach.

The amount of fecal coliform delivered to a stream is difficult to determine. However, by requiring and monitoring the implementation of these management practices, their effects will improve stream water quality, and represent a beneficial measure of TMDL implementation.

Dissolved Oxygen

Water quality data collected by the US Geological Survey (USGS) in 2000 and historical data indicate that eight water bodies in the Flint River Basin did not achieve water quality standards for dissolved oxygen (DO). These water bodies were included in the state's 2002-303(d) list.

Stream flows during the period of the low DOs for these segments were at, or below, the minimum 7-day average flow that occurs once in 10 years on the average (7Q10). This is consistent with the 3-year drought experienced in Georgia from 1998 to 2000. Since the observed DO concentrations were driven by low flows and high temperatures, occurring over several summer months, a steady state modeling approach was adopted as appropriate for DO TMDL analysis.

The applicable dissolved oxygen water quality standards for waters in the Flint River Basin are as follows:

Numeric – GAEPD. A daily average of 5.0 mg/L and no less than 4.0 mg/L at all times for waters supporting warm water species of fish. 391-3-6-.03 (c)(1). (GAEPD, 2002)

Natural Water Quality – GAEPD. It is recognized that certain natural waters of the State may have a quality that will not be within the general or specific requirements contained herein. This is especially the case for the criteria for dissolved oxygen, temperature, pH and fecal coliform. NPDES permits and Best Management Practices will be the primary mechanisms for ensuring that the discharges will not create a harmful situation. 391-3-6-.03 (7). (GAEPD, 2000)

Natural Water Quality – EPA. Where natural conditions alone create dissolved oxygen concentrations less than 110 percent of the applicable criteria means or minima or both, the minimum acceptable concentration is 90 percent of the natural concentration. (USEPA, 1986).

Due to naturally occurring low dissolved oxygen in the listed segments, the EPA natural water quality policy was appropriate to support the proposed allocations. That is, if a model result showed a natural dissolved oxygen count less than 5.0 mg/L, the model result would define the natural DO standard to be applied. In this case, the standard would become 90 percent of the computed natural DO.

Both point sources and nonpoint sources contribute to impairments in dissolved oxygen levels of streams. The listed segment of Gulley Creek, however, is impaired due to nonpoint sources.

In 2000, many streams in the basin were dry or had ponded areas and stagnant pools as a result of a 3-year drought in Georgia. Due to the low levels of rainfall during the summer months of 2000, the critical time period, stormwater did not contribute any wash off of materials into the streams. Any constituents that may have washed off of disturbed land surfaces in previous months or years have either: (1) already flushed out of the system along with the water column flow; or, (2) a portion may have settled out to become a part of the stream channel bottom. In this manner, the historic wash off of settleable material could accumulate and exert an additional sediment oxygen demand attributable to man's land disturbing activities. The constituents of concern from surface wash off include the fraction of ammonia and BOD₅ that become an integral part of channel bottom sediments and thus become a potential source of sediment oxygen demand.

In addition to nonpoint sources of sediment oxygen demand associated with man's land disturbing activities, most of the streams in the Flint River Basin receive significant natural contributions of oxygen demanding organic materials from local wetlands and forested stream corridors. The following sources of naturally occurring organic materials have been identified:

- Adjacent wetlands and swamps with organically rich bottom sediments; and,
- Direct leaf litterfall onto water surfaces and adjacent floodplains from overhanging trees and vegetation

Leaf litterfall is a major contributor to the amount of dissolved organic matter in the stream water column and the amount of sediment oxygen demand being exerted. Many streams in southern Georgia are also referred to as "blackwater" streams because of highly colored humic substances leached from surrounding marshes and swamps. In addition, low dissolved oxygen in blackwater

streams is very common in the summer months when the temperatures are high and the flows are low. The oxygen demanding effects of leaf litter fall were reflected in two ways: (1) by lowering the DO saturation of water entering the channel from adjacent swampy areas caused by decaying vegetation; and, (2) by increasing sediment oxygen demand (SOD) associated with vegetation decaying on stream channel bottoms.

The TMDL Implementation Plan that the EPD is currently developing will outline an appropriate water quality sampling program for the listed streams in the Flint River Basin. The monitoring program will be developed to help identify the various oxygen demanding sources. The sampling program will be used to verify the 303(d) stream segment listings. This will be especially valuable for those segments where no data or old data resulted in the listing.

The EPD is the lead agency for implementing the State's Nonpoint Source Management Program. Regulatory responsibilities that have a bearing on nonpoint source pollution include establishing water quality standards and use classifications, assessing and reporting water quality conditions, and regulating land-use activities, which may affect water quality. Georgia is working with local governments, agricultural, and forestry agencies such as the National Resources Conservation Service, the Georgia Soil and Water Conservation Commission, and the Georgia Forestry Commission to foster the implementation of BMPs that address nonpoint source pollution. In addition, public education efforts are being targeted to individual stakeholders to provide information regarding the use of BMPs to protect water quality.

Impacts of Future Growth

Continued growth in population is expected in the Flint River Basin. This growth will place additional demands on water resources and require corresponding responses in management. More people means more water use (drinking water, industrial consumption, irrigation), more stormwater runoff (from impervious surfaces of new houses, roads, industries, businesses, and parking lots), and more contamination (sediment, nutrients, organic material, pesticides, herbicides, and other toxics).

While the Upper Flint Basin appears to be growing, the HUC 10 watershed (0313000606) within the Middle Flint, which contains Gum Creek, Cedar Creek and Gulley Creek, is primarily rural and, with few exceptions, is not experiencing growth or development pressures. Due to the highly agricultural nature of the area, continued cooperation of area farmers will be necessary to keep BMPs active and in use to reduce contaminant levels in adjacent and nearby streams.

An increase in impervious surfaces will cause higher flow and more sedimentation and nutrient loading into the water sources in the area during rain events. Impervious surfaces will also allow for different types of contaminants to be present in the water that was not present before, such as oil and gasoline components. Fecal coliform levels will likely improve with the eventual development of agricultural areas; agricultural runoff would decrease, and the development of sewage systems to accommodate the new developments will be established to treat wastewater before it enters area streams. Within the last three years two subdivisions (Omar Heights & Meadow Park) have been added to the City's sewer system. There were many failing septic systems in both of these neighborhoods.

IV. Legal Authority

Cordele City Hall 501 N. 7th Street Cordele, Georgia 31015-4366 (229) 273-3102 (229) 276-2907 - Fax Edward Beach City Manager, Director of Community and Economic Development, Chief Codes Official, City Planner (229) 276-2906 edwardbeach@cityofcordele.com	Public Works, Director Steve Fulford 808 E. 11th Avenue Cordele, Georgia 31015 (229) 276-2980 (229) 276-2539 - Fax stevefulford@cityofcordele.com Nelson Barrett Stormwater Technician (229) 276-2993 (229) 276-2539
Utilities Department Debbie Wright (229) 273-2829 (229) 276-2545 - Fax debbiewright@cityofcordele.com	Public Works Superintendent Cemeteries and Parks Jessie Mercer 808 E. 11th Avenue Cordele, Georgia 31015 (229) 276-2980 (229) 276-2539

V. Codes and Regulation Evaluation

Comprehensive Plan

The Draft 2009-2029 Greater Crisp County Comprehensive plan inclusive of the City of Arabi and the City of Cordele will serve as a planning, growth and development guide for the County as well as the inclusive cities. One of the areas identified for potential rapid growth is the I-75/GA. 300 interchange located just south of Cordele in the Cedar Creek basin. Cordele's policy requiring annexation for utility service extension will assist in controlling development of this area of anticipated growth. Cordele has successfully administered the city's development guidelines for many years and with strengthened regulations will continue to do so.

In the environmental protection section, it identifies that both Crisp County and the City of Cordele have adopted flood damage prevention ordinances and participate in the Georgia Forestry Commission's Tree City program with ordinances restricting the removal of trees. Stormwater best management practices are enforced by both the City of Cordele and Crisp County. Identified in the plan is the need within the City for improvements to sidewalks, curb/gutter, and stormwater flow.

The plan states that "New development should be designed to minimize the amount of land consumed, and open space should be set aside from development for use as public parks or as greenbelts/wildlife corridors. Compact development ordinances are a way of encouraging this type of open space preservation". The City does not currently have a green space plan. The City's zoning ordinance requires a minimum 5 percent of the gross land area in a planned unit development be set aside a recreation/open space.

Stormwater Management Ordinance

The City of Cordele "Stormwater Management Ordinance 2006" became effective June 30, 2007. The ordinance protects, maintains, and enhances the public health, safety, environment and general welfare by establishing minimum requirements and procedures to control the adverse effects of increased post development stormwater runoff and nonpoint source pollution associated with new development and redevelopment. It establishes decision-making process surrounding land-development activities to protect the integrity of the watershed and preserve the health of water resources. The ordinance requires that new development and redevelopment maintain the predevelopment hydrologic response in their post development state as nearly as practicable in order to reduce flooding, stream bank erosion, nonpoint source pollution, and maintain the integrity of stream channels and aquatic habitats. It establishes minimum post development stormwater management standards and design criteria for the regulation and control of stormwater runoff quality and quantity. It establishes design and application criteria for the construction and use of structural stormwater control facilities that can be used to meet the minimum post development stormwater management standards. It encourages the use of nonstructural stormwater management and stormwater better site design practices, such as the preservation of green space and other conservation areas, to the maximum extent practicable. The ordinance establishes provisions for the long-term responsibility for and maintenance of structural stormwater control facilities and nonstructural stormwater management practices to ensure that they continue to function as designed, are maintained, and pose no threat to public safety. A recent amendment adopted on February 19, 2008 provides for the City to accept ownership of stormwater holding ponds through a fee simple warranty deed. This allows the City to provide maintenance, inspection, and repair of the facilities as needed.

In 2003 the Stormwater Department was created under the direction of the Federal Government (EPA) in compliance with the Clean Water Act of 1972. The goals of this department include:

- Enforce State and Federal Regulations regarding Stormwater, Illicit Discharges and the Clean Water Act.
- Implement actions to detect and eliminate stormwater pollution and illicit discharge.
- Implement and enforce established Best Management Practices (BMP's).
- Promote and provide efficient employee training.
- Provide public education and awareness.
- Devise and implement plans to prevent flooding.
- Create public involvement.
- Disseminate information.
- Maintain wetlands.
- Maintain construction site stormwater runoff control.
- Reduce Pre- and Post-Construction Erosion and Sedimentation.
- Develop strategies for new and post-construction stormwater management.
- Develop and implement a maintenance plan for stormwater structures.
- Maintain legal channels of complaints, investigations, hearings and corrective action of violations of the Clean Water Act

Information concerning the reporting of violations, basic stormwater information, tips for preventing pollution, contractor information, stormwater quizzes, and disposal locations for a variety of pollutants is located on the department's web site (<http://www.cityofcordele.com/departments/sw/index.html>).

Soil Erosion and Sedimentation Control

The "City of Cordele 2011 Soil Erosion and Sedimentation Control Ordinance" was adopted on April 19, 2011. The ordinance complies and references the Georgia Surface Mining Act of 1968, O.C.G.A. § 12-4-70 et seq. and the Erosion and Sedimentation Act of 1975, O.C.G.A. §12-7-1 et seq. The ordinance requires that land disturbing activities within the City limits prevent sedimentation from leaving the site and entering State Waters. Through the use of best management practices, training, certifications, and inspections, the ordinance protects the waterways and natural resources. Violation limits and procedures adhere to federal, state, and local regulations concerning the NPDES permitting system and erosion and sedimentation regulations.

Flood Damage Prevention

The City of Cordele adopted the Flood Damage Prevention ordinance on December 7, 1993. It is the purpose of this ordinance to promote the public health, safety and general welfare and to minimize public and private losses due to flood conditions. Several provisions provide water quality benefits such as:

1. Restrict and prohibit uses which are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities;
2. Control the alteration of natural floodplains, stream channels, and natural protective barriers which are involved in the accommodation of flood waters;
3. Control filling, grading, dredging and other development which may increase erosion or flood damage.

The protection of the floodplains serves not only the function flood protection but also as nutrient sinks that improve water quality input into streams.

VI. Inventory of Sources

A detailed inventory of point and non-point contaminant sources has not been completed at the drafting of this document. However, a desk top and windshield survey identified several known sources of the primary contaminant of concern in the Gum Creek, Gully Creek, and Cedar Creek Watersheds. Fecal coliform contamination of surface waters can occur from known sources of leaking sewer lines, stormwater runoff from agricultural fields, failing or un-maintained septic systems, livestock yards, and pet and animal waste. In most urbanized watersheds a significant contributing source is often suspected to be originating from pet waste and residential lawn runoff. Rural watersheds with a significant agricultural presence often contribute to fecal coliform contamination from feed lot and livestock runoff. As identified in the State of Georgia's TMDL Implementation Plan for Fecal Coliform in the Gum Creek watershed, based on general information two sources of consideration are residential subdivisions and septic tank servicing. An additional source may be the presence of healthy deer and feral hog populations within and surrounding the watersheds. Several of the sites were located in marshy or backwater type areas where populations of waterfowl were observed. In one location (Station 2) it appeared to be a local carcass dump spot for hunters. Several deer carcasses were observed in the stream over the sampling season. Waterfowl, feral hogs, and the presence of deer in the area may contribute to high fecal coliform levels.

Contributors to the presence of low dissolved oxygen include thermal pollution and high organic material input to the streams. During field investigations and sampling, several of the sampling locations were dry or demonstrating such low flow that sampling could not be conducted. The very shallow slowly moving waters often demonstrate higher water temperatures and subsequently low dissolved oxygen. Several areas associated with sampling locations possessed heavy organic ground cover within the flood plain. These organic materials distributed into the stream consume oxygen in their decomposition processes. The decomposition process associated with elevated water temperature further compounds the depletion of dissolved oxygen. A number of the sites in all three watersheds were observed to have backwater, marshy, and in some cases tannic waters. The combination of heavy organic material that exists in marshy conditions combined with low flow high temperature conditions can lead to severely depleted dissolved oxygen conditions.

Sediment contributing sources in the watersheds may arise from construction sites, unpaved roads, eroded agricultural ditches and stream banks, road way runoff, and legacy sediment transport. Through the City's Stormwater and Land Development Department, continued enforcement of existing ordinances will seek to identify and remediate any development related contributing sources. The City currently provides street and curb debris maintenance within its Street Department resources.

The reduced pH condition at nine of the sampling locations is believed to be a combination of organic decomposition producing carbonic acid as a byproduct and the use of agricultural fertilizers. The pH in nine of the sampling locations was slightly below the acceptable limit of 6. This slight reduction could also be the result of natural process associated with the vegetation in the marshy areas. Several of the streams passed through cypress and cedar stands which create tannic water conditions with lower pH. Further investigation into point source contributors is needed.

The location of potential point sources within the three watersheds were generated using EPD and United States EPA databases for National Pollutant Discharge Elimination System (NPDES)

permits, Resource Conservation Recovery Act (RCRA) sites, and the toxic releases inventory. There are seventeen potential industrial point sources within the watersheds based on latitude and longitude data associated with the databases. Twelve of the potential sources are listed on the EPA's Toxic Release Inventory, four facilities are covered by Industrial NPDES permits, one has an NPDES wastewater discharge permit and four are classified as Hazardous waste sites. Potential pollutants associated with these industries, in addition to those pollutants normally associated with wastewater discharge, include: manganese, sulfuric acid, styrene, arsenic, chromium, and copper. The 2000 Census reports that there were 960,447 pounds of toxic substances released by industries in Crisp County in 2002. Of those toxic substances, 951,926 pounds were on site, 8,522 pounds were offsite and 826,627 pounds were point source air releases. Point source sites are listed in the table below.

Table 8 - Locations of Point Source Facilities In and Around the City of Cordele and Potential Source.

Facility	Address of Facility	Toxic Release Inventory	Hazardous Waste	Wastewater Discharge	NPDES Industrial	Superfund Site
ADM Alliance Nutrition	2201 E. 13th Ave.	Yes				
Continental Grain Co. Inc.	101 N. Harris St.	Yes				
Cordele Water Pollution Control Plant	801 Perimeter Rd.			Yes	Yes	
Crisp County Power Commission	201 S. 7th Street				Yes	
Drexel Chemical Co.	HWY 280 E. Cape Rd.	Yes	Yes*			Yes
EBAA Iron Inc. Cordele Division	2508 E. 9th Ave.	Yes				
Griffin Lumber Co.	1603 Drayton Rd.	Yes				
Helena Chemical Co.	434 Fenn Rd.	Yes	Yes*			
Marvair	156 Seedling Dr.	Yes	Yes		Yes	
Norbord Georgia Incorporated	964 US Hwy. 280 W.	Yes	Yes		Yes	
Southern States Fertilizer Plant	408 15th Street N.	Yes				
Golden Foundry	402 George Mathews Dr.	Yes				

* Hazardous Waste Large Quantity Generators

VII. Management Practices

Because the major factors impeding the water quality in all three watersheds are believed to be primarily associated with natural or agricultural practices, a combination of structural and non-structural best management practices are needed to improve water quality. The best management practices recommended within this document focus on the removal or filtration of stormwater for the removal of both organic material and bacteria. Through the removal of the additional organic material and filtration of bacteria it is believed that water quality conditions will improve. Non-structural management practices focus on education, awareness, increased buffer widths, and detection.

Structural Best Management Practices

Wet Detention Ponds

Wet detention ponds are designed to retain stormwater and treat it. Runoff is held in the pond and treated until it is displaced by runoff from the next rainfall event. The process of settling removes sediments and particulates along with organic matter, and some metals. Biological uptake from aquatic plants can assist in the removal of some metals and nutrients. The use of a forebay within the pond increases the particulate and sediment removal from the stormwater as it enters the pond. The addition of aquatic plants within the forebay or along a full pool littoral shelf aids in filtering sediment and particulate matter as well as reducing flow velocities.

Stormwater Wetlands

Stormwater Wetlands provide several water quality improvement benefits. The wetlands through the process of sedimentation and filtration remove particulates, organic matter, metals, soil-bound phosphorus, and soil-bound pathogens. In the shallower areas of stormwater wetlands, the drying conditions and sunlight exposure between storm events, helps to remove bacterial pathogens. Forebay's can be added to the inflow area of the wetland for easier maintenance. Deeper areas of the stormwater wetlands provide fish habitat and mosquito control through biological controls. The vegetation provides both an aesthetic and functional value.

Bioretention Cells

Bioretention cells are short term detention areas that provide removal of pollutants through absorption, microbial action, plant uptake, sedimentation, and filtration. Water in Bioretention Cells, unlike detention ponds or basins; usually draw down water over a 24 hour period following a rainfall event. Bioretention cells usually combine under drains overlain with a porous medium comprised primarily of sand. The area above the sand medium is landscaped and mulched. The cells are typically located in areas where the ground water is at a minimum 2 feet below the soil surface. This type of BMP works well associated with commercial, industrial, or institutional properties. They are suitable for urban runoff and require minimal space for installation. Often these structures can be incorporated into parking lot and property border islands.

Water Quality Swales

Water Quality Swales are open dry vegetated channels that conduct stormwater runoff and filter the runoff through a designed soil medium before discharging into a storm system or under drain. These swales can often be used in place of typical pipe and concrete stormwater conveyances. The limitation of this structure is its watershed area treatment capabilities. Watershed to the swales should be limited to not greater than 5 acres.

Non-Structural Management Practices

There are a number of non-structural management practices that the City can implement in addition to existing practices and/or implement as new practices to reduce pollutant loads within the three watersheds. The practices are described below.

Land Acquisition and Conservation

Additional land acquisition and conservation development set asides in sensitive areas around waterways will provide a much needed buffer between anthropogenic pollutant sources and the streams. Conservation of land resources may take the form of restrictive covenants, conservation easements, private landowner donations, public sector stewardship and simple purchases. The Georgia Greenspace Program provides resources to assist cities and counties in preserving greenspace which can be used for natural resource protection.

Riparian Buffers and Greenways

Several areas observed during the initial assessment were noted as having minimal buffers. The presence of buffers between both agricultural and urban pollutant sources and streams is of vital importance to watershed health. These buffers and corridors provide excellent particulate filtration and nutrient sink for stormwater runoff prior to entering streams. Buffers and greenways provide shade which reduces water temperature and provides needed habitat for native animals. These areas provide both an aesthetic and performance function to the community. In agricultural areas the buffers are especially beneficial in reducing livestock access to streams and reducing concentration of nutrients from fertilizer and waste runoff.

Watershed Stewardship Programs

The City and County are already involved in and or cooperate with many Stewardship programs including Keep Crisp Beautiful, Adopt-A-Stream, and the Lake Blackshear Watershed Association. These programs have been supported by the City on their Stormwater Department Website. These programs should be encouraged in the community and supported where possible with City resources. Resources that could be potentially provided include notification of program activities on the website, access to garbage collection facilities during cleanup activities, meeting facilities and reduce or no cost to the groups, technical support from City staff or personnel, and continued acknowledgement of beneficial activities in local media.

Pet Waste Management Programs

One method for reducing the contribution of pet waste to stormwater contamination is the implementation of pet waste management programs. The programs seek to educate the public about the effects of pet waste on water resources as well as provide collection stations and disposal resources. Collection stations and information can be provided in parks and recreational areas frequented by pets and their owners. Providing information in the form of pamphlets, posters, and educational material to boarding facilities, veterinarians, groomers, and kennels disseminates information to the professional and public community about proper ways of handling and disposing of waste to prevent water resource contamination.

Continued Coordination with Stakeholder Groups

Previous implementation plans by the State have demonstrated the valuable resource that Stakeholder Groups can play in reducing pollutant loading to water resources. This resource is extremely valuable in working with agricultural enterprise. Farmers and ranchers in past implementation plans were willing to install and implement economically and environmentally sound best management practices. These groups and personnel also provide an excellent source of

information about potential pollutant sources and remediation ideas if provided a means to provide the information.

VIII. Funding Opportunities

Several methods of funding stormwater improvement projects are available. These methods include taxing, special assessments, borrow, issuing bonds, public and private donations, user fees, special funds, grants, state programs, and federal program funds. Further investigation into the development of a Stormwater Utility by the City may be warranted to provide continual upgrades and maintenance of the growing number of structures and resources that the City is managing. Other fund resources include:

- EPA Environmental Education Grants
- EPA Section 319(h) Grants
- EPA Five Star Restoration Program
- EPA Target Watersheds Grant Program
- EPA continuing Program Grant
- EPA Project Grants
- EPA Water Quality Cooperative Agreements
- USACE 206 Aquatic Ecosystem Restoration Program
- SPLOST (Special Purpose Local Option Sales Tax)
- Clean Water State Revolving Fund Program
- Resource Conservation and Development Program

IX. Long Term Monitoring Plan

Monitoring Objectives

The monitoring program to be conducted in the Gum, Cedar and Gulley Creek watersheds is designed to satisfy the following objectives:

- Document continued water quality conditions in the three watersheds, based on water quality data and aquatic biota community structure.
- Document water quality conditions and improvements to baseline watershed conditions.
- Evaluate water quality in streams flowing through potential growth areas in the county.
- Identify streams or conditions within the watershed that require attention

Monitoring Methodology

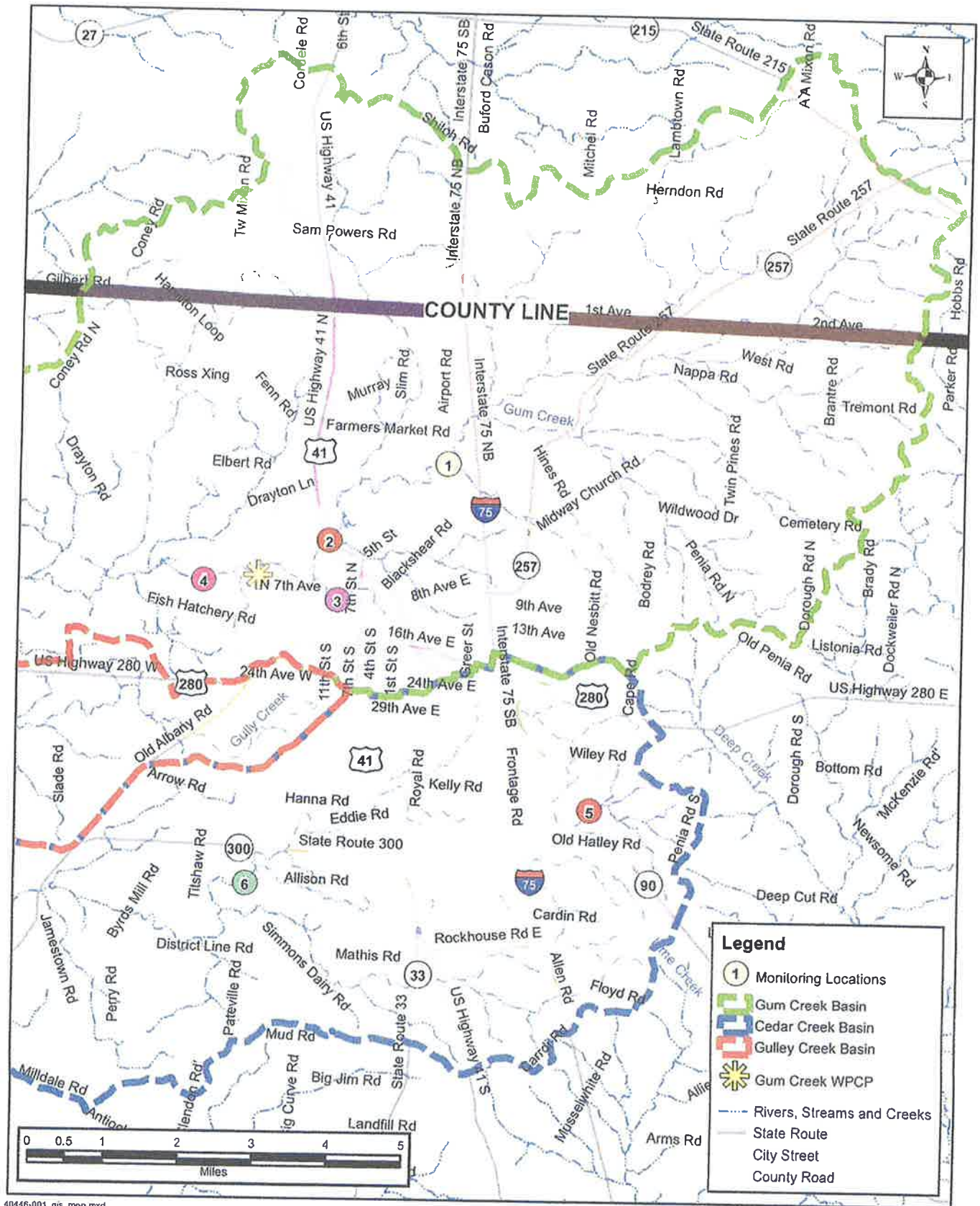
The continued monitoring of the Gum, Cedar and Gulley Creek watersheds will be the responsibility of the City of Cordele or a designated vendor/consultant to be determined. The primary monitoring watershed is the Gum Creek Basin. This watershed will contain four monitoring locations with the original sampling locations 1 and 12 being removed. Locations 1 and 12 are being removed at the recommendation of EPD since they only receive drainage from a small area upstream of the Cordele service area. Cedar Creek will have two monitoring locations with original sampling location 7, 9, and 11, being removed. Location 9 is being removed since location 10 is located immediately downstream of 9 and encompasses slightly more watershed area. Locations 7 and 11 are being removed at the recommendation of EPD since they only receive drainage from a small area upstream of the Cordele service area. Station 6, of the original assessment plan, will be removed at the recommendation of EPD, from the Gulley Creek watershed since it drains a very small area of the Cordele service area. The Gum Creek watershed has monitoring locations as Gum Creek enters the sewer services area and one as it

leaves the sewer services area. Figure 9 illustrates the locations of the monitoring points relative to the three main watersheds as well as the sub-basin watersheds associated with each monitoring location.

The WPCP has been conducting weekly monitoring for BOD₅, DO, pH, chlorine residual and temperature at locations both upstream and downstream of the wastewater discharge area, which is located downstream immediately adjacent to the treatment plant. All existing and ongoing data collection by the WPCP will be used to augment the data collected during monitoring of the other sites. The six monitoring locations are described in Table 9, along with the rationale for each location.

Table 9 – Monitoring Stations and Rationale

Sampling Location	Location Description	Site Selection Rationale
1	Immediately west of Interstate 75 – <i>Gum Creek Basin.</i>	Upstream sampling location of Gum Creek Basin, measures water quality downstream of Interstate 75 and upstream of Cordele Airport.
2	Gum Creek tributary at Highway 41 bridge crossing (two 5-foot Box Culverts) – <i>Gum Creek Basin.</i>	Measures water quality leaving the Cordele Airport, upstream of the city limits.
3	Gum Creek at the bridge located at the intersection of 6 th Avenue – <i>Gum Creek Basin.</i>	Upstream sampling location of the Gum Creek WPCP, location already being sampled weekly by WPCP personnel.
4	Gum Creek at the old bridge/dam located adjacent to Fish Hatchery – <i>Gum Creek Basin.</i>	Downstream sampling location of the Gum Creek WPCP, location already being sampled by WPCP personnel.
5	Cedar Creek tributary at State Route 90, adjacent to mile marker #9 (directly downstream of non-paved road) – <i>Cedar Creek Basin (two 10-foot Box Culverts).</i>	Measures water quality entering the Cedar Creek Basin, upstream of Interstate 75.
6	Cedar Creek at Pateville Road, approximately 250 feet from its intersection with Allison Road – <i>Cedar Creek Basin (six 10-foot Box Culverts).</i>	Downstream location of Cedar Creek Basin.



City of Cordele
Watershed Assessment and Characterization

40446-001

Ecological
Solutions

Monitoring and Sub Basin
Watershed Locations

Figure 9

Analyses will be conducted according to approved test procedures set forth in 40 CFR Part 136. Stream flow conditions are not to exceed chronic thresholds for each of these constituents under a 7-day, 10-year minimum flow (7Q10) or higher stream flow conditions. The following is a list of the constituents the samples will be tested for at each station.

- Temperature (water and air)
- pH
- Dissolved Oxygen
- Specific Conductance
- Turbidity
- Biological Oxygen Demand (BOD5) ✓
- Chemical Oxygen Demand (COD) ✓
- Total Suspended Solids (TSS) ✓
- Phosphorus (total and ortho) ✓
- Nitrogen (TKN, Ammonia, NO₂/NO₃) ✓
- Metals (Cd, Cu, Pb, Zn), total and dissolved
- Hardness
- Fecal Coliform
- E. coli
- Estimated flow

Monitoring Schedule

Water quality monitoring will be conducted annually at the six established monitoring locations for three dry and one wet sample events each year of monitoring. A wet event occurs when rainfall has accumulated to one inch. A sample must be taken at one inch, at peak flow conditions, and when the flow returns to normal. A dry event is sampled when no rain has fallen within 72 hours. All samples will be taken at mid-stream location unless safety concerns prevent access. In that case, samples will be taken as close to mid-stream as is safely possible. A minimum of two fecal coliform geometric means will be calculated for the period from May to October. Each geometric mean would consist of at least four samples collected within a 30-day period at intervals not less than 24 hours. The samples will be collected on a regular schedule, regardless of the weather. E. coli will be sampled in the same manner.

Biological Monitoring will be conducted every two years. The monitoring will be conducted for comparison with the established baseline Index of Biotic Integrity (IBI) developed during the Watershed Assessment. Bioassessments for the Watershed Protection Plan long-term monitoring should be conducted using the most recent SOPs which are periodically updated. Currently, benthic macroinvertebrate samples will be assessed using procedures specified in the March 2007 Standard Operating Procedures (SOP) for the Macroinvertebrate Biological Assessment of Wadeable Streams in Georgia.

Grab 1

2 ft/s

G RAB 2

4 ft/s

X. Implementation Costs

The Watershed Protection Plan requires that the City implement a stormwater management program, perform long-term monitoring, and provide annual reporting to EPD. The City of Cordele will implement the Watershed Protection Plan with resources from the general City budget and storm water utility fees. The table below includes the estimated annual costs to conduct the long-term monitoring, as well as those to develop, initiate, and maintain the structural and nonstructural BMPs.

Project / Activity	Funding Amount	Funding Source	Responsible Party
Program Administration			
Director of Utilities, Treatment and Control	\$50,000	Local	City
Technicians (2)	\$35,000 ea.	Local	City
Stormwater Group	\$70,000	Local	City
<i>Long Term Monitoring</i>			
Water Quality Monitoring	\$41,500	Local	City
Biological Monitoring	\$35,000	Local	City
Annual Report Development and Submittal	\$10,000	Local	City Manager
Non Structural			
Pursue funding for enhancements to water and wastewater systems	\$1M+	CDBG, One-Georgia, GEFA, SPLOST, Local	City Manager
Continue maintaining GIS maps and databases for water, wastewater, and gas systems	Staff Time	Local	Community Development
Identify funding sources for stormwater infrastructure planning and development	Staff Time	Local	City Manager
Evaluate Malcolm, Sanders, and Gum Creek corridors as elements in combined storm water management and recreation use	\$20,000	Local	City / Public Works
Prepare and adopt environmental protection ordinances for wetlands and groundwater recharge areas	\$1,000	Local	City / Admin
Maintain land use databases for GIS and purchase new equipment	\$16,000	Local	City / CD
Prepare brochure describing City departments and contacts within departments to aid citizens and prospective businesses in understanding services provided	\$5,000	Local	City / Admin
Structural			
Sanitary Sewer Rehabilitation	\$600,000		
Water and Sewer Department within Public Works	\$200,000		
Utilities, Treatment and Control Department	\$350,000		
Codes Enforcement Department – Erosion	\$35,000		

XI. Implementation Schedule

The table below provides a schedule for implementation of the various control included in this plan.

Watershed Protection Plan Task Listing	Commencement Date	Completion Date / Ongoing
Long Term Water Quality Monitoring	2014	Ongoing Annual
Biological Assessment	2014	Ongoing Biannual
Public Education	2002	Ongoing
Drainage System O&M	Ongoing	Ongoing
Stream Walks	2000	Ongoing
Environmental Protection Ordinance for Wetlands and Groundwater Recharge Areas	2011	Ongoing
Maintain Land Use Databases for GIS	2010	Ongoing
Hire City Planner	2004	Ongoing
Annual Data to EPD	2014	Ongoing Annual

XII. Annual Reporting Requirements

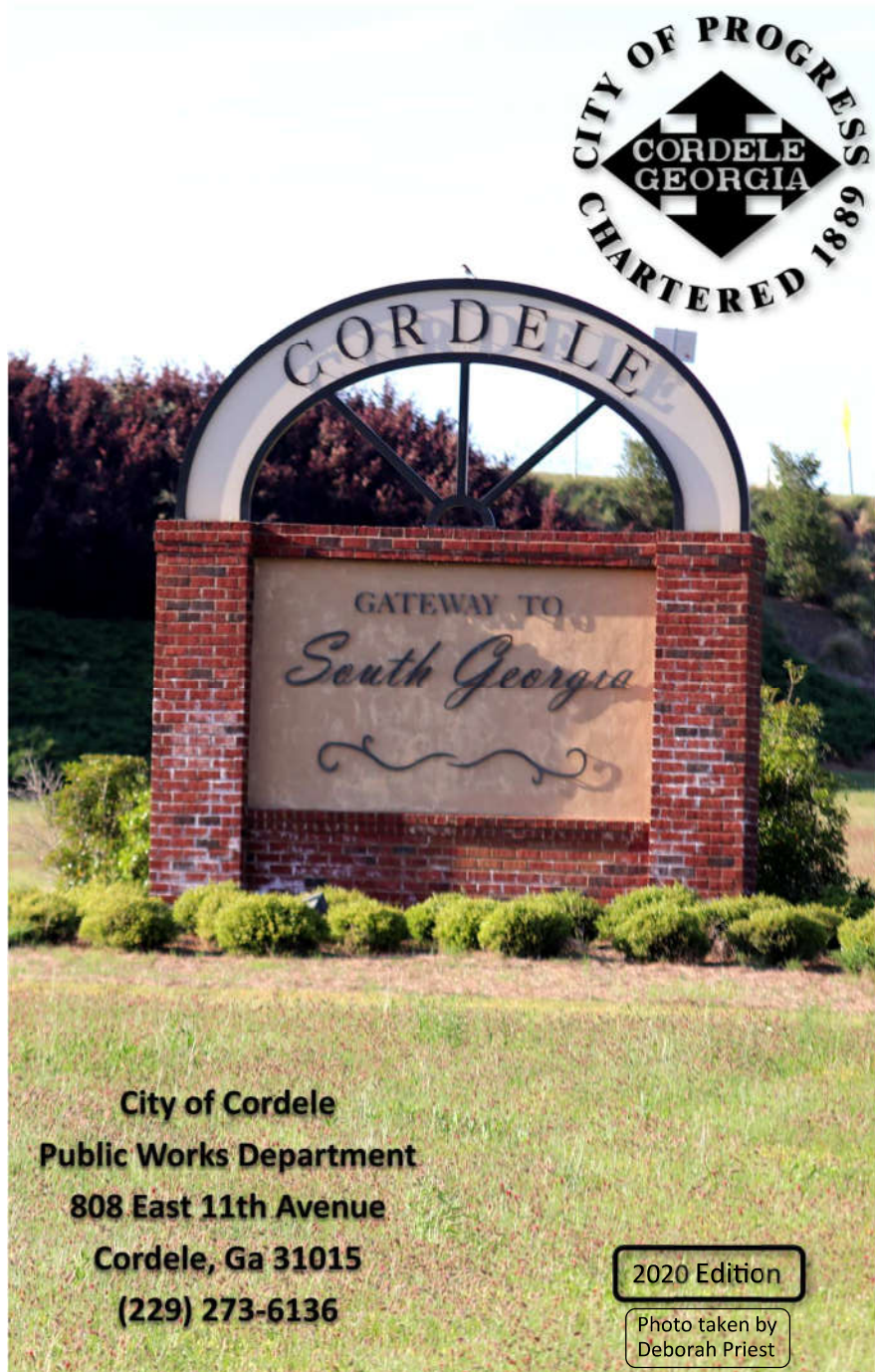
Once the Watershed Protection Plan is approved by EPD, the City of Cordele will submit to the State the following information by June 30th of each year:

- a. Annual certification of WPP implementation
- b. Electronic submittal that includes:
 - Long-term trend water quality monitoring data using EPD's Excel template, available on GAEPD's website;
 - Long-term habitat and biological monitoring data;
 - Copies of all field data sheets, laboratory taxa lists, macroinvertebrate multimetric spreadsheets and fish IBI metric calculations; and
 - GIS coverages of the City's jurisdictional limits, service area and subwatershed delineations, unless already submitted;
 - Photographs of sample sites
- c. Progress Report that includes:
 - Discussion of the monitoring data and results;
 - An evaluation of what the data shows in terms of water quality, the health of the biological communities, and any trends that are being shown by the data;
 - Specific actions or BMPs that have been implemented; and,
 - Summary of any changes and/or revisions to the WPP, if necessary.

XIII. Conclusion and Next Steps

While the City of Cordele in association with Crisp County have taken steps to assess and improve water quality within the watersheds of Gum Creek, Cedar Creek, and Gulley Creek, further management practices and assessments are needed to improve water quality constituents to within acceptable levels. A combined effort of the public community and government resources will be necessary to effect improvement within the watersheds. Further investigation into the validity of the natural resources of some of the pollutants is warranted and necessary to isolate their effect on the water quality. While rehabilitation efforts may not completely alleviate high bacterial, low dissolved oxygen, low pH, and sedimentation, they will most likely result in significant reduction in pathogen and contaminant loads. In order to quantify water quality improvement within the watersheds, six of the locations sampled during the initial assessment will continue to be sampled. Chemical and in-situ constituents will be monitored annually, while biological sampling will be conducted every other year.

Appendix B
Public Outreach Documentation



The Cordele Storm Water Management Program & You

City of Cordele
Public Works Department
808 East 11th Avenue
Cordele, Ga 31015
(229) 276-6136



What is the Storm Water Management Program (SWMP)?

Simply put, the SWMP is a collection of “plan-of-action” items to help keep our community and State waters clean. The SWMP covers six main topic areas:

- ◇ Public Education and Outreach
- ◇ Public Involvement and Participation
- ◇ Illicit Discharge Detection and Elimination
- ◇ Construction Site Stormwater Runoff Control
- ◇ Post Construction Stormwater Management
- ◇ Pollution Prevention and Good Housekeeping Measures

Within each of these areas are items that help inform the public and help maintain a clean, safe, and properly functioning stormwater infrastructure.

What is an Illicit Discharge?

An Illicit Discharge into the stormwater system basically means placing any substance into the system that may be toxic to human, animal, or plant life. It could also include something that is flammable, explosive, or corrosive. In short, any discharge that adversely affects our public water (ditches, streams, lakes, rivers, etc.).

Illicit or illegal discharges may include but are not limited to the following:

- ◆ Dumping auto fluids (oils, antifreeze, etc.)
- ◆ Chemicals
- ◆ Garbage
- ◆ Paint
- ◆ Cleaning Fluids
- ◆ Untreated animal waste
- ◆ Commercial car wash wastewater
- ◆ Contaminated foundation drains
- ◆ Wash water from commercial and industrial activities
- ◆ Sanitary sewer discharges
- ◆ Septic tank discharges
- ◆ Washing machine discharges
- ◆ Chlorinated backwash
- ◆ Drained swimming pool water that has not been de-chlorinated

Did you know?

Storm drains are typically **NOT** treated! They flow **DIRECTLY** into streams or rivers!

Why worry about what goes in the storm drain?

You may not realize it, but water that goes into the storm drains are not treated. The maze of pipework and ditches that flow throughout the City ultimately is discharged to a point that flows back to a creek, stream, lake, or river. Unfortunately, not only does the storm water go into this pipe system, but also anything else that is washed into it. This can include leaves, natural debris, household garbage, as well as oil and chemicals from cars and trucks. These items pollute the waters that we swim in, fish in, and boat on. The chemicals and contamination can be ingested by fish and other aquatic life.

Not only does it contaminate the water, but debris entering the storm drain can stop the proper flow of water. Raking or “blowing” leaves into the drain is not only illegal, it poses a potentially dangerous situation. The storm system is designed to take water away quickly during a rain storm. If leaves and other debris are in the pipes, or on the storm grates, blockages could occur. This could cause localized flooding making it dangerous for pedestrians and motorists alike!

In order to combat these potentially dangerous situations, the City of Cordele has a dedicated team that regularly checks and cleans the drains throughout the City.

Want more information?

Visit us online at

www.cordeleengineering.com



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

Cover Page

Part 1. General Information:

1. Permittee Name: City of Cordele
2. Mailing Address: 808 East 11th Avenue, Cordele, Georgia 31015
3. Contact Person: Steve Fulford, Public Works Director
4. E-Mail Address: stevefulford@cityofcordele.com
5. Telephone Number: 229-276-2981
6. Reporting Year (January 1–December 31): 2020

Part 2. Status of Storm Water Management Program:

1. Has your storm water management program to comply with the 2017 NPDES Permit been approved? Yes ☒ No ☐
2. If yes, provide the approval date: August 6, 2018
3. If no, provide the date of the last submittal: Click here to enter text.

Part 3. Certification Statement:

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.

Signature: _____

Printed Name: Steve Fulford

Title: Public Works Director Date: Jan 19, 2021

Public Education and Outreach
Minimum Control Measure
(Table 4.2.1)

1. **BMP # 1**
2. **BMP Title:** Brochure Distribution
3. **Provide the measurable goal from SWMP:** Number of brochures distributed at meetings, presentation, City Hall, and similar public places on an annual basis.
 - A. Did you comply with the measurable goal? Yes ☒ No ☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes ☒ No ☐
 - B. If not, please explain why: [Click here to enter text.](#)
5. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: Brochure distribution
 - B. Date(s) for any BMP activities completed during this reporting period: 2020
 - C. Did you comply with the implementation schedule in the SWMP? Yes ☒ No ☐
 - D. If not, please explain why: [Click here to enter text.](#)
6. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes ☒ No ☐
 - B. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue ☒ Revise ☐
 - C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes ☐ No ☒
 - D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 2**
2. **BMP Title:** Municipal Website
3. **Provide the measurable goal from SWMP:** A site counter will be used to monitor the number of visitors to the stormwater section specifically. The number of visitors to the page as of December 31st (or the last working day of the year) will be used for the total number. Counters can be reset to 0 for the next reporting period. If the counter cannot be reset, then the previous year's total count will be deducted from the count of the next reporting year's total for the adjusted total value.
 - A. Did you comply with the measurable goal? Yes☒ No☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes☒ No☐
 - B. If not, please explain why: [Click here to enter text.](#)
5. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: Website updates
 - B. Date(s) for any BMP activities completed during this reporting period: 2020
 - C. Did you comply with the implementation schedule in the SWMP? Yes☒ No☐
 - D. If not, please explain why: [Click here to enter text.](#)
6. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes☒ No☐
 - B. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue☒ Revise☐
 - C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes☐ No☒
 - D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 3**
2. **BMP Title:** Presentation on Stormwater Issues
3. **Provide the measurable goal from SWMP:** At least one presentation will be presented annually.
 - C. Did you comply with the measurable goal? Yes☒ No☐
 - D. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Documentation**
 - C. Did you attach documentation of the BMP activities completed during the reporting period? Yes☒ No☐
 - D. If not, please explain why: [Click here to enter text.](#)
5. **Implementation Schedule**
 - E. BMP activities completed during this reporting period: Presentation on SWMP
 - F. Date(s) for any BMP activities completed during this reporting period: 9/23/2020
 - G. Did you comply with the implementation schedule in the SWMP? Yes☒ No☐
 - H. If not, please explain why: [Click here to enter text.](#)
6. **BMP Effectiveness**
 - E. Do you consider this BMP to be effective? Yes☒ No☐
 - F. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue☒ Revise☐
 - G. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes☐ No☒
 - H. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 4**
2. **BMP Title:** Utility Bill Insert
3. **Provide the measurable goal from SWMP:** A brief message will be included on a City of Cordele Utility Bill at least once annually, but at most monthly.
 - E. Did you comply with the measurable goal? Yes☒ No☐
 - F. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Documentation**
 - E. Did you attach documentation of the BMP activities completed during the reporting period? Yes☒ No☐
 - F. If not, please explain why: [Click here to enter text.](#)
5. **Implementation Schedule**
 - I. BMP activities completed during this reporting period: Note attached to utility bill of every resident.
 - J. Date(s) for any BMP activities completed during this reporting period: 07/22/2020
 - K. Did you comply with the implementation schedule in the SWMP? Yes☒ No☐
 - L. If not, please explain why: [Click here to enter text.](#)
6. **BMP Effectiveness**
 - I. Do you consider this BMP to be effective? Yes☒ No☐
 - J. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue☒ Revise☐
 - K. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes☐ No☒
 - L. If yes, please explain: [Click here to enter text.](#)

Note: You must complete a BMP annual report page for any additional Public Education BMPs contained in your SWMP. Permittees with a population greater than 10,000 at the time of this permit issuance must complete four (4) BMPs.

Public Involvement/ Participation
Minimum Control Measure
(Table 4.2.2)

1. **BMP # 1**
2. **BMP Title:** Stormwater Technical Advisory Committee (SWTAC)
3. **Provide the measurable goal from SWMP:** The SWTAC will meet annually, as needed, for both advisory and appeals
 - A. Did you comply with the measurable goal? Yes☒ No☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes☒ No☐
 - B. If not, please explain why: [Click here to enter text.](#)
5. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: SWTAC Meeting
 - B. Date(s) for any BMP activities completed during this reporting period: 9/23/2020
 - C. Did you comply with the implementation schedule in the SWMP? Yes☒ No☐
 - D. If not, please explain why: [Click here to enter text.](#)
6. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes☒ No☐
 - B. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue☒ Revise☐
 - C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes☐ No☒
 - D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 2**
2. **BMP Title:** Great American Cleanup
3. **Provide the measurable goal from SWMP:** Activities to allow for volunteer involvement, and a record of the activities undertaken, and man-hours contributed.
 - A. Did you comply with the measurable goal? Yes ☐ No ☒
 - B. If not, explain why you did not comply with the measurable goal: Due to the impacts of Covid-19, and this activity being coordinated with the Chamber of Commerce, we did not manage to get this accomplished this year.
4. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes ☐ No ☒
 - B. If not, please explain why: There was no documentation to attach since we didn't have this event.
5. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: None were completed this year.
 - B. Date(s) for any BMP activities completed during this reporting period:
 - C. Did you comply with the implementation schedule in the SWMP? Yes ☐ No ☒
 - D. If not, please explain why: Due to Covid-19, we were unable to get this done.
6. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes ☒ No ☐
 - B. Do you plan to continue with implementation of this BMP or revise it from the SWMP? Continue ☒ Revise ☐
 - C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes ☐ No ☒
 - D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 3**
2. **BMP Title:** Rivers Alive
3. **Provide the measurable goal from SWMP:** Activities that allow for volunteer involvement, and a record of the activities undertaken, and man-hours contributed.
 - G. Did you comply with the measurable goal? Yes ☐ No ☒
 - H. If not, explain why you did not comply with the measurable goal: Again, due to Covid-19 we were unable to get this done.
4. **Documentation**
 - G. Did you attach documentation of the BMP activities completed during the reporting period? Yes ☐ No ☒
 - H. If not, please explain why: No documentation was obtained because we didn't have this event.
5. **Implementation Schedule**
 - M. BMP activities completed during this reporting period: [Click here to enter text.](#)
 - N. Date(s) for any BMP activities completed during this reporting period: [Click here to enter text.](#)
 - O. Did you comply with the implementation schedule in the SWMP? Yes ☒ No ☒
 - P. If not, please explain why: Due to Covid-19, we were unable to have this event or replace with other public outreach.
6. **BMP Effectiveness**
 - M. Do you consider this BMP to be effective? Yes ☒ No ☐
 - N. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue ☒ Revise ☐
 - O. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes ☐ No ☒
 - P. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 4**
2. **BMP Title:** Gum Creek Bridge Cleanup
3. **Provide the measurable goal from SWMP:** Activities that allow for volunteer involvement, and a record of the activities undertaken, and man-hours contributed.
 - I. Did you comply with the measurable goal? Yes☒ No☐
 - J. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Documentation**
 - I. Did you attach documentation of the BMP activities completed during the reporting period? Yes☒ No☐
 - J. If not, please explain why: [Click here to enter text.](#)
5. **Implementation Schedule**
 - Q. BMP activities completed during this reporting period: At the beginning of the year there was a cleanup on Greer Street in Cordele that has been used in place of the Gum Creek Bridge Cleanup. Due to Covid-19 we were unable to organize other events the rest of the year.
 - R. Date(s) for any BMP activities completed during this reporting period: 2/29/2020
 - S. Did you comply with the implementation schedule in the SWMP? Yes☒ No☐
 - T. If not, please explain why: [Click here to enter text.](#)
6. **BMP Effectiveness**
 - Q. Do you consider this BMP to be effective? Yes☒ No☐
 - R. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue☒ Revise☐
 - S. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes☐ No☒
 - T. If yes, please explain: [Click here to enter text.](#)

Note: You must complete a BMP annual report page for any additional Public Education BMPs contained in your SWMP. Permittees with a population greater than 10,000 at the time of this permit issuance must complete four (4) BMPs.

Illicit Discharge Detection and Elimination
Minimum Control Measure
(Table 4.2.3)

1. **BMP # 1 (Table 4.2.3, BMP #1)**
2. **BMP Title: Legal Authority**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will adopt or revise its Ordinance and Regulation, and if necessary, modify the ordinance during the reporting period. If the ordinance is revised during the reporting period, the City will submit a copy of the ordinance with the Annual Report
 - A. Did you comply with the measurable goal? Yes☒ No☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Ordinance Status**
 - A. Did you adopt or revise the ordinance during the reporting period? Yes☐ No☒
 - B. If yes, provide the date of adoption: [Click here to enter text.](#)
 - C. If the ordinance was adopted or revised during the reporting period, is a copy of the adopted ordinance attached? Yes☐ No☐
 - D. If the ordinance was adopted or revised during the reporting period and a copy is not attached, explain why: [Click here to enter text.](#)
5. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: Ordinance Review
 - B. Date(s) for any BMP activities completed during this reporting period: 2020
 - C. Did you comply with the implementation schedule in the SWMP? Yes☒ No☐
 - D. If not, please explain why: [Click here to enter text.](#)
6. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes☒ No☐
 - B. Do you plan to continue with implementation of this BMP or revise it from the SWMP? Continue☒ Revise☐

C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes ☐ No ☒

D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 2 (Table 4.2.3, BMP #2)**
2. **BMP Title: Outfall Map and Inventory**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will update the inventory and map showing any outfalls added during the reporting period
 - A. Did you comply with the measurable goal? Yes☒ No☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Outfall Inventory**
 - A. Provide the number of outfalls added or deleted from the inventory during the reporting period:
Number added:4
Number deleted: 0
 - B. Provide the total number of outfalls identified to date: 193
 - C. Is the outfall mapping completed? Yes☐ No☒

If not, explain the reason why, and provide the status of the mapping: This is still being worked on. Due to Covid-19 we have not been able to finish this list. There has been some progress made for mapping. This is our top priority for 2021
 - D. If not, provide the projected completion date: 12/31/2021
5. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes☒ No☐
 - B. If not, please explain why: [Click here to enter text.](#)
6. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: Review of outfall map and revisions as needed
 - B. Date(s) for any BMP activities completed during this reporting period: 2020
 - C. Did you comply with the implementation schedule in the SWMP? Yes☒ No☐
 - D. If not, please explain why: [Click here to enter text.](#)

7. **BMP Effectiveness**

- A. Do you consider this BMP to be effective? Yes ☒ No ☐
- B. Do you plan to continue with implementation of this BMP or revise it in the SWMP?
Continue ☒ Revise ☐
- C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes ☐ No ☒
- D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 3 (Table 4.2.3, BMP #3)**
2. **BMP Title: IDDE Plan**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will conduct dry weather screening inspections so that 100% of the outfalls are inspected during the permit period, with a minimum of at least one annually. The City will document any illicit discharge found and perform any detection activities and enforcement actions taken to eliminate illicit discharges.

A. Did you comply with the measurable goal? Yes ☐ No ☐

B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)

4. **IDDE Plan Status**

A. Provide the number of outfalls inspected during the reporting period:

B. What percentage of the total number of outfalls were inspected during the reporting period?

C. Provide the status of the outfall screening from 2018-2022:

Year	Total Number of Outfalls	Number of Outfalls Screened	% Screened
2018	189	5	3%
2019	189	39	20%
2020	193	8	5%
2021			
2022			

D. Did you conduct any stream walks as part of your IDDE program?

Yes ☐ No ☒

1. If yes, provide the total number of stream miles within your jurisdiction: [Click here to enter text.](#)

2. Provide the number of stream miles walked during the reporting period: [Click here to enter text.](#)

3. What percentage of the total number of stream miles were walked during the reporting period? [Click here to enter text.](#)

E. Did you conduct stream walks for a reason other than IDDE? Yes ☐ No ☒

1. If yes, explain the reason: [Click here to enter text.](#)
2. Provide the number of stream miles walked during the reporting period: [Click here to enter text.](#)

5. **Documentation**

A. Did you attach documentation of the BMP activities completed during the reporting period? Yes ☒ No ☐

B. If not, please explain why: [Click here to enter text.](#)

6. **Implementation Schedule**

A. BMP activities completed during this reporting period: Dry weather screening

B. Date(s) for any BMP activities completed during this reporting period:

C. Did you comply with the implementation schedule in the SWMP? Yes ☒ No ☐

D. If not, please explain why: [Click here to enter text.](#)

7. **BMP Effectiveness**

A. Do you consider this BMP to be effective? Yes ☒ No ☐

B. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue ☒ Revise ☐

C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes ☐ No ☒

D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 4 (Table 4.2.3, BMP #4)**
2. **BMP Title: Education**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will continue to implement a program to educate the public, businesses, and government employees about the hazards of illicit discharges.
 - A. Did you comply with the measurable goal? Yes☒ No☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes☒ No☐
 - B. If not, please explain why: [Click here to enter text.](#)
5. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: A presentation was provided for IDDE to City employees.
 - B. Date(s) for any BMP activities completed during this reporting period: 9/23/2020
 - C. Did you comply with the implementation schedule in the SWMP? Yes☒ No☐
 - D. If not, please explain why: [Click here to enter text.](#)
6. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes☒ No☐
 - B. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue☒ Revise☐
 - C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes☐ No☒
 - D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 5 (Table 4.2.3, BMP #5)**
2. **BMP Title: Complaint Response**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will document each illicit discharge related complaint received during the reporting period.
 - A. Did you comply with the measurable goal? Yes☒ No☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes☒ No☐
 - B. If not, please explain why: [Click here to enter text.](#)
5. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: IDDE Documentation
 - B. Date(s) for any BMP activities completed during this reporting period: 2020
 - C. Did you comply with the implementation schedule in the SWMP? Yes☒ No☐
 - D. If not, please explain why: [Click here to enter text.](#)
6. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes☒ No☐
 - B. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue☒ Revise☐
 - C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes☐ No☒
 - D. If yes, please explain: [Click here to enter text.](#)

Note: You must complete a BMP annual report page for any additional Illicit Discharge Detection and Elimination BMPs contained in your SWMP.

Construction Site Storm Water Runoff Control
Minimum Control Measure
(Table 4.2.4)

1. **BMP # 1 (Table 4.2.4, BMP #1)**
2. **BMP Title: Legal Authority**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will evaluate Erosion & Sediment Ordinance and if necessary, modify during the reporting period
 - A. Did you comply with the measurable goal? Yes☒ No☐
 - B. If not, explain why you did not comply with the measurable goal: Click here to enter text.
4. **Ordinance Status**
 - A. Is the construction waste requirement addressed in either your E&S or litter ordinance? Yes☒ No☐
 - B. If yes, which one? E&S
 - C. Did you adopt or revise the ordinance during the reporting period? Yes☐ No☒
 - D. If you are a Local Issuing Authority, you must revise your E&S Ordinance to comply with the latest revisions to the E&S Act (2015). The ordinance revision was to be completed by December 31, 2016. Have you completed the ordinance revisions? Yes☒ No☐
 - E. If yes, provide the date of adoption: 2016 / revised 2017
 - F. If the ordinance was adopted or revised during the reporting period, is a copy of the adopted ordinance attached? Yes☐ No☒
 - G. If the ordinance was adopted or revised during the reporting period and a copy is not attached, explain why: Click here to enter text.
5. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: Click here to enter text.
 - B. Date(s) for any BMP activities completed during this reporting period: 2020

C. Did you comply with the implementation schedule in the SWMP? Yes ☒ No ☐

D. If not, please explain why: [Click here to enter text.](#)

6. BMP Effectiveness

A. Do you consider this BMP to be effective? Yes ☒ No ☐

B. Do you plan to continue with implementation of this BMP or revise it in the SWMP?
Continue ☒ Revise ☐

C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes ☐ No ☒

D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 2 (Table 4.2.4, BMP #2)**
2. **BMP Title: Site Plan Review Procedures**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will review all site plans submitted for a Land Disturbing Activity permit for sites with disturbed area of 1.0 acre or greater.
 - A. Did you comply with the measurable goal? Yes ☒ No ☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Site Plan Review Status**
 - A. Are you a Local Issuing Authority? Yes ☒ No ☐
 1. If yes, provide the following information for the reporting period:
Number of plans received: 6
Number of plans reviewed: 6
Number of plans approved: 6
Number of plans denied: 0
5. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes ☒ No ☐
 - B. If not, please explain why: [Click here to enter text.](#)
6. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: Site Plan reviews
 - B. Date(s) for any BMP activities completed during this reporting period: 2020
 - C. Did you comply with the implementation schedule in the SWMP? Yes ☒ No ☐
 - D. If not, please explain why: [Click here to enter text.](#)
7. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes ☒ No ☐

- B. Do you plan to continue with implementation of this BMP or revise it in the SWMP?
Continue ☒ Revise ☐
- C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes ☐ No ☒
- D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 3 (Table 4.2.4, BMP #3)**
2. **BMP Title: Inspection Program**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will inspect each construction site a minimum of three times: following installation of initial BMP's, during active construction, and after final stabilization.
 - A. Did you comply with the measurable goal? Yes ☒ No ☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? ☒ Yes ☐ No
 - B. If not, please explain why: [Click here to enter text.](#)
5. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: Site Inspections
 - B. Date(s) for any BMP activities completed during this reporting period: 2020
 - C. Did you comply with the implementation schedule in the SWMP? Yes ☒ No ☐
 - D. If not, please explain why: [Click here to enter text.](#)
6. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes ☒ No ☐
 - B. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue ☒ Revise ☐
 - C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes ☐ No ☒
 - D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 4 (Table 4.2.4, BMP #4)**
2. **BMP Title: Enforcement Procedures**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will respond and document the number of violations during the reporting period
 - A. Did you comply with the measurable goal? Yes☒ No☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes☐ No☒
 - B. If not, please explain why: There were no violations
5. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: Permit Enforcement
 - B. Date(s) for any BMP activities completed during this reporting period: 2020
 - C. Did you comply with the implementation schedule in the SWMP? Yes☒ No☐
 - D. If not, please explain why: [Click here to enter text.](#)
6. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes☒ No☐
 - B. Do you plan to continue with implementation of this BMP or revise it in the SWMP?
Continue☒ Revise☐
 - C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes☐ No☒
 - D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 5 (Table 4.2.4, BMP #5)**
2. **BMP Title: Complaint Response**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will respond and document all of the E&S complaints received during the reporting period.
 - A. Did you comply with the measurable goal? Yes☒ No☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes☐ No☒
 - B. If not, please explain why: There were no complaints in 2020
5. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: Response to complaints
 - B. Date(s) for any BMP activities completed during this reporting period: 2020
 - C. Did you comply with the implementation schedule in the SWMP? Yes☒ No☐
 - D. If not, please explain why: [Click here to enter text.](#)
6. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes☒ No☐
 - B. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue☒ Revise☐
 - C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes☐ No☒
 - D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 6 (Table 4.2.4, BMP #6)**
2. **BMP Title: Certification**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will ensure that the MS4 staff involved with construction activities are trained and certified in accordance with the rules adopted by the Georgia Soil and Water Conservation Commission.

A. Did you comply with the measurable goal? Yes ☒ No ☐

B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Documentation**

A. Did you attach documentation of the BMP activities completed during the reporting period? Yes ☒ No ☐

B. If not, please explain why: [Click here to enter text.](#)
5. **Implementation Schedule**

A. BMP activities completed during this reporting period: Staff certifications

B. Date(s) for any BMP activities completed during this reporting period: 2020

C. Did you comply with the implementation schedule in the SWMP? Yes ☒ No ☐

D. If not, please explain why: [Click here to enter text.](#)
6. **BMP Effectiveness**

A. Do you consider this BMP to be effective? Yes ☒ No ☐

B. Do you plan to continue with implementation of this BMP or revise it in the SWMP?
Continue ☒ Revise ☐

C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes ☐ No ☒

D. If yes, please explain: [Click here to enter text.](#)

Note: You must complete a BMP annual report page for any additional Construction Site Management BMPs contained in your SWMP.

Post- Construction Storm Water Management
in New Development and Redevelopment
Minimum Control Measure
(Table 4.2.5)

1. **BMP # 1 (Table 4.2.5, BMP #1)**
2. **BMP Title: Legal Authority**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will evaluate the existing stormwater ordinance, and if necessary, modify the ordinance during the reporting period.
 - A. Did you comply with the measurable goal? Yes☒ No☐
 - B. If not, explain why you did not comply with the measurable goal: Click here to enter text.
4. **Ordinance Status**
 - A. Did you adopt or revise the ordinance during the reporting period? Yes☐ No☒
 - B. If yes, provide the date of adoption: Click here to enter text.
 - C. Does the ordinance require development in accordance with the Georgia Stormwater Management Manual (GSMM), a local design manual, and/or the Coastal Stormwater Supplement? Yes☒ No☐
 - D. Does the ordinance adopt the performance standards in the 2016 GSMM?
Yes☒ No☐
 - E. The adoption of the performance standards in the 2016 GSMM was required by January 2, 2017. If the adoption has not occurred by this deadline date, explain why and provide the projected completion date: Click here to enter text.
 - F. If the ordinance was adopted or revised during the reporting period, is a copy of the adopted ordinance attached? Yes☐ No☐
 - G. If the ordinance was adopted or revised during the reporting period and a copy is not attached, explain why: Click here to enter text.
5. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: Ordinance review
 - B. Date(s) for any BMP activities completed during this reporting period: 2020

C. Did you comply with the implementation schedule in the SWMP? Yes ☒ No ☐

D. If not, please explain why: [Click here to enter text.](#)

6. **BMP Effectiveness**

A. Do you consider this BMP to be effective? Yes ☒ No ☐

B. Do you plan to continue with implementation of this BMP or revise it in the SWMP?
Continue ☒ Revise ☐

C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes ☐ No ☒

D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 2 (Table 4.2.5, BMP #2)**
2. **BMP Title:** Inventory
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will update the inventory to include structures added during the reporting period.
 - A. Did you comply with the measurable goal? Yes ☒ No ☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Inventory Status**
 - A. Provide information on the number of structures inventoried during the reporting period:
 1. Number of publicly-owned post-construction structures added: 0
 2. Number of privately-owned post-construction structures added: 0
 - B. Provide information on the number of structures identified to date:
 1. Total number of publicly-owned post-construction structures: 7
 2. Total number of privately-owned post-construction structures: 28
5. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes ☒ No ☐
 - B. If not, please explain why: [Click here to enter text.](#)
6. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: Inventory Review / Update
 - B. Date(s) for any BMP activities completed during this reporting period: 2020
 - C. Did you comply with the implementation schedule in the SWMP? Yes ☒ No ☐
 - D. If not, please explain why: [Click here to enter text.](#)
7. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes ☒ No ☐

- B. Do you plan to continue with implementation of this BMP or revise it in the SWMP?
Continue ☒ Revise ☐
- C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes ☐ No ☒
- D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 3 (Table 4.2.5, BMP #3)**
2. **BMP Title: Inspection Program**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** Inspect all post construction structures during the 5-year permit period, but not less than one annually.
 - A. Did you comply with the measurable goal? Yes ☒ No ☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Provide the status of inspections performed between 2018-2022:**

Publicly-Owned Post-Construction Structures

Year	Total Number Post Construction Structures	Number Post Construction Structures Inspected	% Inspected
2018	28	0	0%
2019	28	6	21%
2020	28	5	18%
2021			
2022			

Privately-Owned Post-Construction Structures

Year	Total Number Post Construction Structures	Number Post Construction Structures Inspected	% Inspected
2018	7	6	86%
2019	7	0	0%
2020	7	0	0%
2021			
2022			

5. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes ☒ No ☐
 - B. If not, please explain why: [Click here to enter text.](#)
6. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: Pond Inspections

B. Date(s) for any BMP activities completed during this reporting period: 11/13/2020

C. Did you comply with the implementation schedule in the SWMP? Yes ☒ No ☐

D. If not, please explain why: [Click here to enter text.](#)

7. BMP Effectiveness

A. Do you consider this BMP to be effective? Yes ☒ No ☐

B. Do you plan to continue with implementation of this BMP or revise it in the SWMP?
Continue ☒ Revise ☐

C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes ☐ No ☒

D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 4 (Table 4.2.5, BMP #4)**
2. **BMP Title: Maintenance Program**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will document maintenance, as needed, on both public and private ponds to ensure proper function during the reporting period.
 - A. Did you comply with the measurable goal? Yes ☒ No ☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period?:
 1. Maintenance of permittee-owned structures: Yes ☒ No ☐
 2. Maintenance conducted by permittee on privately-owned structures or publicly-owned by other entities: Yes ☐ No ☐ NA ☒
 3. Summary list of maintenance agreements: Yes ☐ No ☒
 - B. If not, please explain why: [Click here to enter text.](#)
5. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: Pond Maintenance
 - B. Date(s) for any BMP activities completed during this reporting period: 2020 (see documentation for specific dates)
 - C. Did you comply with the implementation schedule in the SWMP? Yes ☒ No ☐
 - D. If not, please explain why: [Click here to enter text.](#)
6. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes ☒ No ☐
 - B. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue ☒ Revise ☐
 - C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes ☐ No ☒

D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 5 (Table 4.2.5, BMP #5)**
2. **BMP Title: GI/LID Structure Inventory**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will document each GI/LID structure constructed during the reporting period.
 - A. Did you comply with the measurable goal? Yes ☒ No ☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes ☐ No ☒
 - B. If not, please explain why: No structures were built during the reporting period
5. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: None
 - B. Date(s) for any BMP activities completed during this reporting period: N/A
 - C. Did you comply with the implementation schedule in the SWMP? Yes ☒ No ☐
 - D. If not, please explain why: [Click here to enter text.](#)
6. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes ☒ No ☐
 - B. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue ☒ Revise ☐
 - C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes ☐ No ☒
 - D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 6 (Table 4.2.5, BMP #6)**
2. **BMP Title: GI/LID Program**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will evaluate the ordinance to ensure they allow the use of GI/LID practices
 - A. Did you comply with the measurable goal? Yes ☒ No ☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Program Development**
 - A. Has the GI/LID Program development been completed? Yes ☒ No ☐
5. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes ☐ No ☒
 - B. If not, please explain why: No changes were made to this ordinance
6. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: Ordinance Review
 - B. Date(s) for any BMP activities completed during this reporting period: 2020
 - C. Did you comply with the implementation schedule in the SWMP? Yes ☒ No ☐
 - D. If not, please explain why: [Click here to enter text.](#)
7. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes ☒ No ☐
 - B. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue ☒ Revise ☐
 - C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes ☐ No ☒
 - D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 7 (Table 4.2.5, BMP #7)**
2. **BMP Title: GI/LID Inspection and Maintenance Program**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will inspect all City maintained GI/LID Structures that have been constructed so that 100% are inspected within the 5-year permit period, but no less than one annually, if any structures exist.
 - A. Did you comply with the measurable goal? Yes ☒ No ☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes ☐ No ☒
 - B. If not, please explain why: As of December 31, 2020, there are no GI/LID Structures in the City.
5. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: None
 - B. Date(s) for any BMP activities completed during this reporting period: N/A
 - C. Did you comply with the implementation schedule in the SWMP? Yes ☒ No ☐
 - D. If not, please explain why: [Click here to enter text.](#)
6. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes ☒ No ☐
 - B. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue ☒ Revise ☐
 - C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes ☐ No ☒
 - D. If yes, please explain: [Click here to enter text.](#)

GI/LID Ordinance Review (Section 4.2.5.3)

(Only complete this section if the MS4 population >10,000 on December 6, 2017)

1. You are required to continue to review and revise, where necessary, building codes, ordinances, and other regulations to ensure they do not prohibit or impede the use of GI/LID practices. Was an evaluation of the MS4's ordinances, codes, and regulations conducted during the reporting period? Yes ☒ No ☐
2. If an evaluation was completed during the reporting period, is documentation of the activity attached to this annual report? Yes ☐ No ☒ NA ☐
3. Based on the results of the evaluation, did the MS4 determine that revisions to the ordinances, codes, and regulations were necessary? Yes ☐ No ☒ NA ☐
4. If revisions to the document(s) were required, provide the name of the document(s) and the date(s) of adoption: Click here to enter text.
5. If revisions have not yet been completed, provide the status of the document revisions and a projected completion date: Click here to enter text.

Pollution Prevention/ Good Housekeeping
for Municipal Operations
Minimum Control Measure
(Table 4.2.6)

1. **BMP # 1 (Table 4.2.6, BMP #1)**
2. **BMP Title: MS4 Control Structure Inventory and Map**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will update the inventory as new structures are added during the reporting period.
 - A. Did you comply with the measurable goal? Yes ☒ No ☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Inventory and Map Status**
 - A. Provide the number of structures inventoried and mapped during the reporting period:
 1. Number of catch basins added: 37
 2. Number of ditches added (state if miles or linear feet): 0
 3. Number of publicly-owned detention/retention ponds added: 0
 4. Number of storm drain lines added (state if miles or linear feet): .4 miles
 - B. Provide the number of structures inventoried and mapped to date:
 1. Total number of catch basins: 1977
 2. Total number of ditches (state if miles or linear feet): 23.35
 3. Total number of publicly-owned detention/retention ponds: 7
 4. Total number of storm drain lines (state if miles or linear feet): 87.9
5. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes ☒ No ☐
 - B. If not, please explain why: [Click here to enter text.](#)
6. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: Ongoing update of inventory
 - B. Date(s) for any BMP activities completed during this reporting period: 2020
 - C. Did you comply with the implementation schedule in the SWMP? Yes ☒ No ☐

D. If not, please explain why: [Click here to enter text.](#)

7. **BMP Effectiveness**

A. Do you consider this BMP to be effective? Yes ☒ No ☐

B. Do you plan to continue with implementation of this BMP or revise it in the SWMP?
Continue ☒ Revise ☐

C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes ☐ No ☒

D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 2 (Table 4.2.6, BMP #2)**
2. **BMP Title: MS4 Inspection Program**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will inspect 100% of the MS4 control structures during the 5 year permit period.
 - A. Did you comply with the measurable goal? Yes ☒ No ☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. Provide the status of inspections performed between 2018-2022:

Catch Basins

Year	Total Number Catch Basins	Number Catch Basins Inspected	% Inspected
2018	1940	716	37%
2019	1940	385	20%
2020	1977	1491	75%
2021			
2022			

Pipes

Year	Total Pipes Number or Length (specify ft. or miles)	Number of Pipes or Length Inspected (specify ft. or miles)	% Inspected
2018	87.5 mi.	5.98 mi	7%
2019	87.5 mi.	3.4 mi.	4%
2020	87.9 mi.	29.2 mi.	33%
2021			
2022			

Ditches

Year	Total Ditches Number or Length (specify ft. or miles)	Number of Ditches or Length Inspected (specify ft. or miles)	% Inspected
2018	23.35 mi.	15 mi. *(est)*	65%
2019	23.35 mi.	15 mi. *(est)*	65%
2020	23.35 mi.	15 mi. *(est)*	65%
2021			
2022			

Publicly-Owned Detention/Retention Ponds

Year	Total Number Structures	Number Structures Inspected	% Inspected
2018	7	7	100%
2019	7	0	0%
2020	7	0	0%
2021			
2022			

5. Documentation

A. Did you attach documentation of the BMP activities completed during the reporting period? Yes☒ No☐

B. If not, please explain why: [Click here to enter text.](#)

6. Implementation Schedule

A. BMP activities completed during this reporting period: System Inspection

B. Date(s) for any BMP activities completed during this reporting period: 2020

C. Did you comply with the implementation schedule in the SWMP? Yes☒ No☐

D. If not, please explain why: [Click here to enter text.](#)

7. BMP Effectiveness

A. Do you consider this BMP to be effective? Yes☒ No☐

B. Do you plan to continue with implementation of this BMP or revise it in the SWMP?
Continue☒ Revise☐

C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes☐ No☒

D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 3 (Table 4.2.6, BMP #3)**
2. **BMP Title: MS4 Maintenance Program**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will perform maintenance, as needed, on MS4 control structures and document activities during the reporting period.
 - A. Did you comply with the measurable goal? Yes☒ No☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes☒ No☐
 - B. If not, please explain why: [Click here to enter text.](#)
5. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: MS4 system maintenance
 - B. Date(s) for any BMP activities completed during this reporting period: 2020
 - C. Did you comply with the implementation schedule in the SWMP? Yes☒ No☐
 - D. If not, please explain why: [Click here to enter text.](#)
6. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes☒ No☐
 - B. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue☒ Revise☐
 - C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes☐ No☒
 - D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 4 (Table 4.2.6, BMP #4)**
2. **BMP Title: Street and Parking Lot Cleaning**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will sweep at a minimum 300 miles of streets during the reporting period. The city will track the final disposal location and the amount of debris disposed. This information will be reported in the Annual Report.
 - A. Did you comply with the measurable goal? Yes ☐ No ☒
 - B. If not, explain why you did not comply with the measurable goal: Unfortunately, the Street Sweeper the City owns was down a lot of the year. Covid-19 had an impact on this as well. The City has already purchased another sweeper that should be more reliable then the one used for the year of 2020.
4. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes ☒ No ☐
 - B. If not, please explain why: [Click here to enter text.](#)
5. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: Street Sweeping activities
 - B. Date(s) for any BMP activities completed during this reporting period: See documentation
 - C. Did you comply with the implementation schedule in the SWMP? Yes ☐ No ☒
 - D. If not, please explain why: Unfortunately, the Street Sweeper the City owns was down a lot of the year. Covid-19 had an impact on this as well. The City has already purchased another sweeper that should be more reliable then the one used for the year of 2020.
6. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes ☒ No ☐
 - B. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue ☒ Revise ☐
 - C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes ☐ No ☒
 - D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 5 (Table 4.2.6, BMP #5)**
2. **BMP Title: Employee Training**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will provide at least one educational opportunity to City employees within the reporting period.
 - A. Did you comply with the measurable goal? Yes☒ No☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes☒ No☐
 - B. If not, please explain why: [Click here to enter text.](#)
5. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: Presentation to City employees over SWMP.
 - B. Date(s) for any BMP activities completed during this reporting period: 9/23/2020
 - C. Did you comply with the implementation schedule in the SWMP? Yes☒ No☐
 - D. If not, please explain why: [Click here to enter text.](#)
6. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes☒ No☐
 - B. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue☒ Revise☐
 - C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes☐ No☒
 - D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 6 (Table 4.2.6, BMP #6)**
2. **BMP Title: Waste Disposal**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will follow the “Waste Disposal Procedures” when debris is removed from the MS4 during the reporting period.
 - A. Did you comply with the measurable goal? Yes☒ No☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes☒ No☐
 - B. If not, please explain why: [Click here to enter text.](#)
5. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: Debris and Waste disposal from MS4
 - B. Date(s) for any BMP activities completed during this reporting period: 2020
 - C. Did you comply with the implementation schedule in the SWMP? Yes☒ No☐
 - D. If not, please explain why: [Click here to enter text.](#)
6. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes☒ No☐
 - B. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue☒ Revise☐
 - C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes☐ No☒
 - D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 7 (Table 4.2.6, BMP #7)**
2. **BMP Title: New Flood Management Projects**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will document the plans reviewed where flood management projects were considered for water quality during the reporting period.
 - A. Did you comply with the measurable goal? Yes☒ No☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes☐ No☒
 - B. If not, please explain why: No flood management projects were reviewed because there were no flood management projects.
5. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: None
 - B. Date(s) for any BMP activities completed during this reporting period: N/A
 - C. Did you comply with the implementation schedule in the SWMP? Yes☒ No☐
 - D. If not, please explain why: [Click here to enter text.](#)
6. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes☒ No☐
 - B. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue☒ Revise☐
 - C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes☐ No☒
 - D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 8 (Table 4.2.6, BMP #8)**
2. **BMP Title: Existing Flood Management Projects**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will assess 100% of the existing publicly owned flood management projects during the 5-year permit period.
 - A. Did you comply with the measurable goal? Yes☒ No☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes☐ No☒
 - B. If not, please explain why: There are no active flood management projects in place.
5. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: None
 - B. Date(s) for any BMP activities completed during this reporting period: N/A
 - C. Did you comply with the implementation schedule in the SWMP? Yes☒ No☐
 - D. If not, please explain why: [Click here to enter text.](#)
6. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes☒ No☐
 - B. Do you plan to continue with implementation of this BMP or revise it in the SWMP? Continue☒ Revise☐
 - C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes☐ No☒
 - D. If yes, please explain: [Click here to enter text.](#)

1. **BMP # 9 (Table 4.2.6, BMP #9)**
2. **BMP Title: Municipal Facilities**
3. **Provide the measurable goal from the Permit and/or approved SWMP:** The City will inspect all facilities within the 5-year period.
 - A. Did you comply with the measurable goal? Yes☒ No☐
 - B. If not, explain why you did not comply with the measurable goal: [Click here to enter text.](#)
4. **Inventory and Inspection**
 - A. Inventory
 1. Was an inventory of municipal facilities with the potential to cause pollution updated during the reporting period? Yes☒ No☐
 2. A copy of the inventory must be submitted with the annual report. Is the inventory attached? Yes☒ No☐
 3. If the inventory is not attached, explain why: [Click here to enter text.](#)
 - B. Inspection
 1. Provide the total number of municipal facilities on the inventory: 5
 2. Provide the number of municipal facilities inspected during the reporting period: 1
5. **Documentation**
 - A. Did you attach documentation of the BMP activities completed during the reporting period? Yes☒ No☐
 - B. If not, please explain why
6. **Implementation Schedule**
 - A. BMP activities completed during this reporting period: Facility Inspections
 - B. Date(s) for any BMP activities completed during this reporting period: 12/09/2020
 - C. Did you comply with the implementation schedule in the SWMP? Yes☒ No☐
 - D. If not, please explain why: [Click here to enter text.](#)
7. **BMP Effectiveness**
 - A. Do you consider this BMP to be effective? Yes☒ No☐

B. Do you plan to continue with implementation of this BMP or revise it in the SWMP?
Continue☒ Revise☐

C. Do you plan to revise the BMP description, implementation schedule, or measurable goal for this BMP? Yes☐ No☒

D. If yes, please explain: [Click here to enter text.](#)

Note: You must complete a BMP annual report page for any additional Pollution Prevention/Good Housekeeping BMPs contained in your SWMP.

Enforcement Response Plan
Section 4.3

1. You were required to develop an Enforcement Response Plan (ERP) and submit the document to EPD. Have you completed ERP development? Yes ☒ No ☐
2. If yes, provide the date of submittal to EPD: 11/12/2015
3. If no, explain the reason for the delay and provide the status of the ERP development: Click here to enter text.

Impaired Waters
Section 4.4

1. You are required to develop either an Impaired Waters Plan (population <10,000) or a Monitoring and Implementation Plan (population >10,000). Check which one you are required to develop:

☒ Impaired Waters Plan
☐ Monitoring and Implementation Plan
2. For existing permittees, you were required to submit the relevant Plan to EPD by February 15, 2015. For new permittees (designated on March 7, 2014), you were required to submit the relevant Plan by February 15, 2018. Have you completed development of the Plan?
Yes☒ No☐
3. If yes, provide the date of submittal to EPD: 6/29/2016
4. If no, provide the status of the Plan development: [Click here to enter text.](#)
5. You are required to check the latest 305(b)/303(d) list to determine if newly listed waters are within your jurisdiction. Have you reviewed this list? Yes☒ No☐
6. If newly listed waters have been identified, you must revise your Plan. If a Plan revision is required, provide the status and the projected date for submittal to EPD: [Click here to enter text.](#)

Sharing Responsibility

Section 4.5

1. Are you sharing responsibility for implementation of any part of the SWMP with another entity? Yes ☐ No ☒
2. If yes, provide the name of the entity: [Click here to enter text.](#)
3. Are you performing tasks for another entity? Yes ☐ No ☒
4. Is another entity is performing tasks on your behalf? Yes ☐ No ☒
5. If you answered “Yes” to either question #3 or #4, describe what tasks are being performed by which entity: [Click here to enter text.](#)
6. You must provide a copy of a signed intergovernmental agreement. Was an agreement included with the SWMP? Yes ☐ No ☐

Appendix C

Photographs

City of Cordele Watershed Assessment Report
Photograph Log
TTL Project No.: 000200601075.00
Photographs Taken: 10/08/2020



10/8/2020 8:07 AM

Photograph 1 : View of Station 1. Photograph taken from bridge crossing facing upstream.



10/8/2020 8:08 AM

Photograph 2 : View of Station 1. Photograph taken from bridge crossing facing upstream.

City of Cordele Watershed Assessment Report
Photograph Log
TTL Project No.: 000200601075.00
Photographs Taken: 10/08/2020



10/8/2020 8:08 AM

Photograph 3 : View of Station 1. Photograph taken from bridge crossing facing downstream.



10/8/2020 8:09 AM

Photograph 4 : View of Station 1. Photograph taken from bridge crossing facing downstream.

City of Cordele Watershed Assessment Report
Photograph Log
TTL Project No.: 000200601075.00
Photographs Taken: 10/08/2020



10/8/2020 8:30 AM

Photograph 5 : View of Station 2A. Photograph taken from bridge crossing facing upstream.



10/8/2020 8:31 AM

Photograph 6 : View of Station 2A. Photograph taken from bridge crossing facing downstream.

City of Cordele Watershed Assessment Report
Photograph Log
TTL Project No.: 000200601075.00
Photographs Taken: 10/08/2020



10/8/2020 8:49 AM

Photograph 7 : View of Station 3A. Photograph taken at bridge crossing facing upstream.



10/8/2020 8:49 AM

Photograph 8 : View of Station 3A. Photograph taken from bridge crossing facing downstream.

City of Cordele Watershed Assessment Report
Photograph Log
TTL Project No.: 000200601075.00
Photographs Taken: 10/08/2020



10/8/2020 9:12 AM

Photograph 9 : View of Station 3. Photograph taken at bridge crossing facing upstream.



10/8/2020 9:12 AM

Photograph 10: View of Station 3. Photograph taken at bridge crossing facing downstream.

City of Cordele Watershed Assessment Report
Photograph Log
TTL Project No.: 000200601075.00
Photographs Taken: 10/08/2020



10/8/2020 9:46 AM

Photograph 11: View of Station 6. Photograph taken facing upstream.



10/8/2020 9:47 AM

Photograph 12: View of Station 6. Photograph taken facing downstream.

Appendix D
Biological Assessment Data

Table 1 Fish Species, Relative Abundance, and IBI Classification Variables
City of Cordele Watershed
Sampled October 13, 2014

Common Name	Scientific Name	WQT	FG	SC	Location 1		Location 3	
					Number	%	Number	%
Sunfish and Bass	Centrarchidae							
Green Sun Fish	Lepomis cyanellus		GE	SF	7	27	16	36
Flier	Centrarchus macropterus		IN	SF	1	4		
Largemouth Bass	Micropterus salmoides		CR	CENT	1	4		
Bluegill	Lepomis macrochirus		IN	SF	7	27	12	27
Red Breast Sun Fish	Lepomis auritus		IN	SF			1	2
Pike	Esocidae							
Chain Pickerel	Esox niger		CR		4	15	2	4
Livebearer	Poeciliidae							
Mosquitofish	Gambusia holbrooki		OM		1	4	1	2
Pirate Perch	Percidaw							
Pirate Perch	Aphredoderus sayanus		IN		5	19	8	18
Minnow	Cyprinidae							
Bluntnose Minnow	Pimephales notatus						5	11
Total Number Species					7		7	
Total Number/Percentage					26	100	45	100

WQT - Water Quality Tolerance: **HWI** = headwater intolerant; **INT** = intolerant

FG - Feeding Guild: **CR** = top carnivore; **GE** = generalist; **HB** = herbivore; **IC** = insectivorous cyprinid; **IN** = insectivore/invertivore

SC - Species Category: **BI** = benthic insectivore species; **CENT** = centrarchid species; **RBS** = round-bodied sucker species; **SF** = sunfish species;

SMM = subterminal mountr minnow species

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Table 2 Index of Biotic Integrity
Fish Sampling Score Update per the 2020 GA WRD Scoring Criteria
City of Cordeld Watershed
Sampling Conducted October 13, 2014

	IBI Metrics	Location 1		Location 3	
		Sampling Result	IBI Score	Sampling Result	IBI Score
Metric 1	Number of native species	7	0.0	7	0.0
Metric 2	Number of benthic invertivore species	0	1.0	0	1.0
Metric 3a	Number of native sunfish species	-	-	-	-
Metric 3b	Number of native centrarchid species	4	3.0	3	1
Metric 4	Number of native insectivorous cyprinid species	0	0.0	0	0.0
Metric 5	Number of native round-bodied sucker species	0	1.0	0	1.0
Metric 6a	Number of sensitive species	-	-	-	-
Metric 6b	Number of intolerant species	0	1.0	0	1.0
Metric 7(1)	Eveness		1.0		1.0
Metric 8	% of individuals as <i>Lepomis</i> speceis	54	1.0	64	1.0
Metric 9	% of individuals as insectivorous cyprinids	0	1.0	0	1.0
Metric 10a	% of individuals as generalist feeders and Herbivores	-	-	-	-
Metric 10b	% of individuals as as top carnivores	19.5	1.0	4	3.0
Metric 11	% of individuals as benthic fluvial specialists	0	1.0	0	1.0
Metric 12	Number of individuals per 200 meters	14	1.0	32	1.0
Metric 13	% of individuals with external anamolies	0	0.0	0	0.0
Total IBI Score			12		12

a - used at sites with an upstream basin area < 15 square miles

b - used at sites with an upstream drainage basin area >15 square miles

1 - if less that 100 individuals collected Eveness value = 1

2- if greater than 100 individuals collected Eveness value = $[H/\ln(S)] \times 100$

Where H = Shannon-Wiener diversity index & S = total number of species collected.

The Shannon-Wiener diversity index is calculated by:

$(ni/N) \ln(ni/N)$; Where ni = number of individuals of a species & N = total number of individuals in the sample

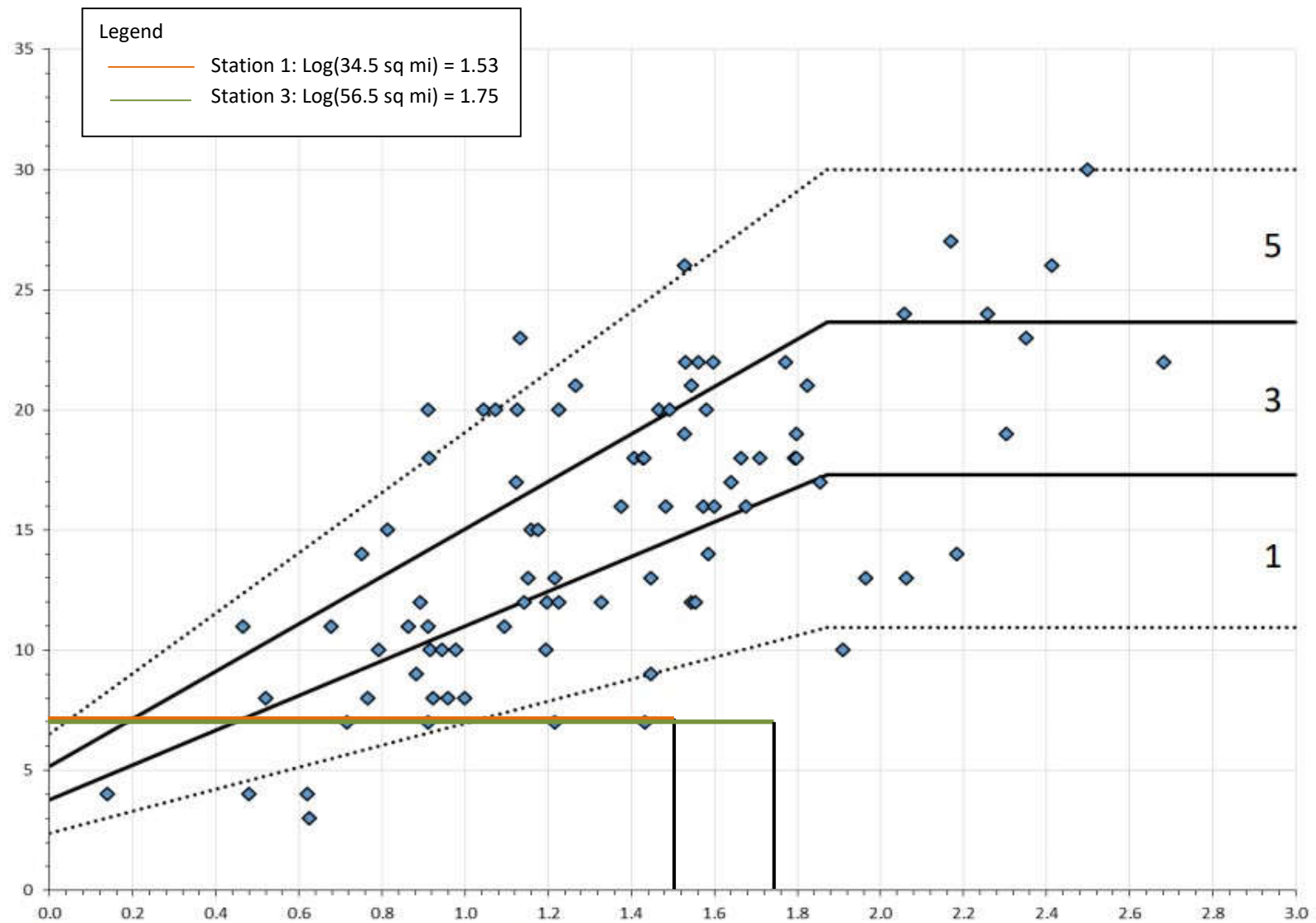
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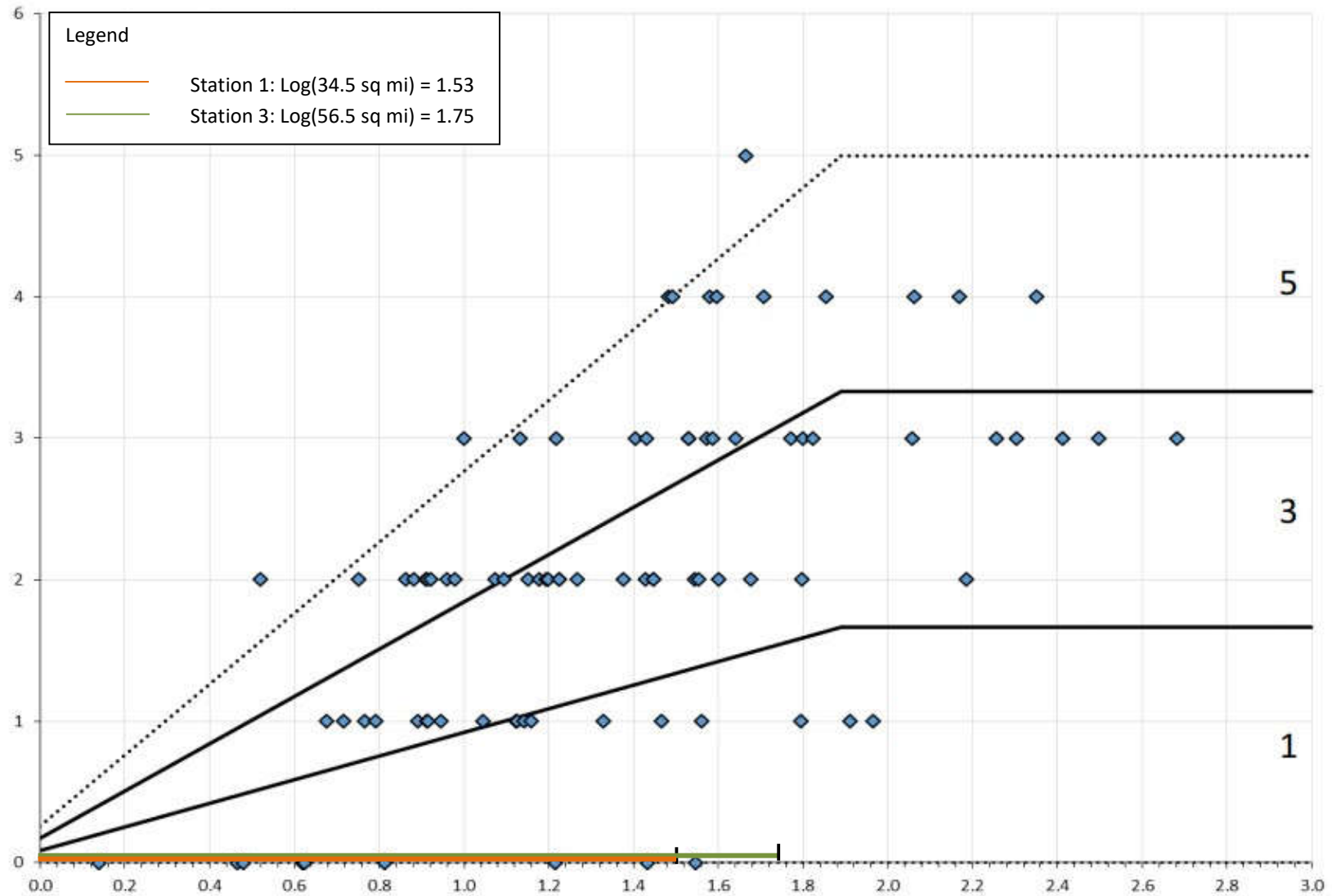
MSR Graphs

City of Cordele - 2014 Fish Sampling Score Update per the 2020 GA WRD Scoring Criteria



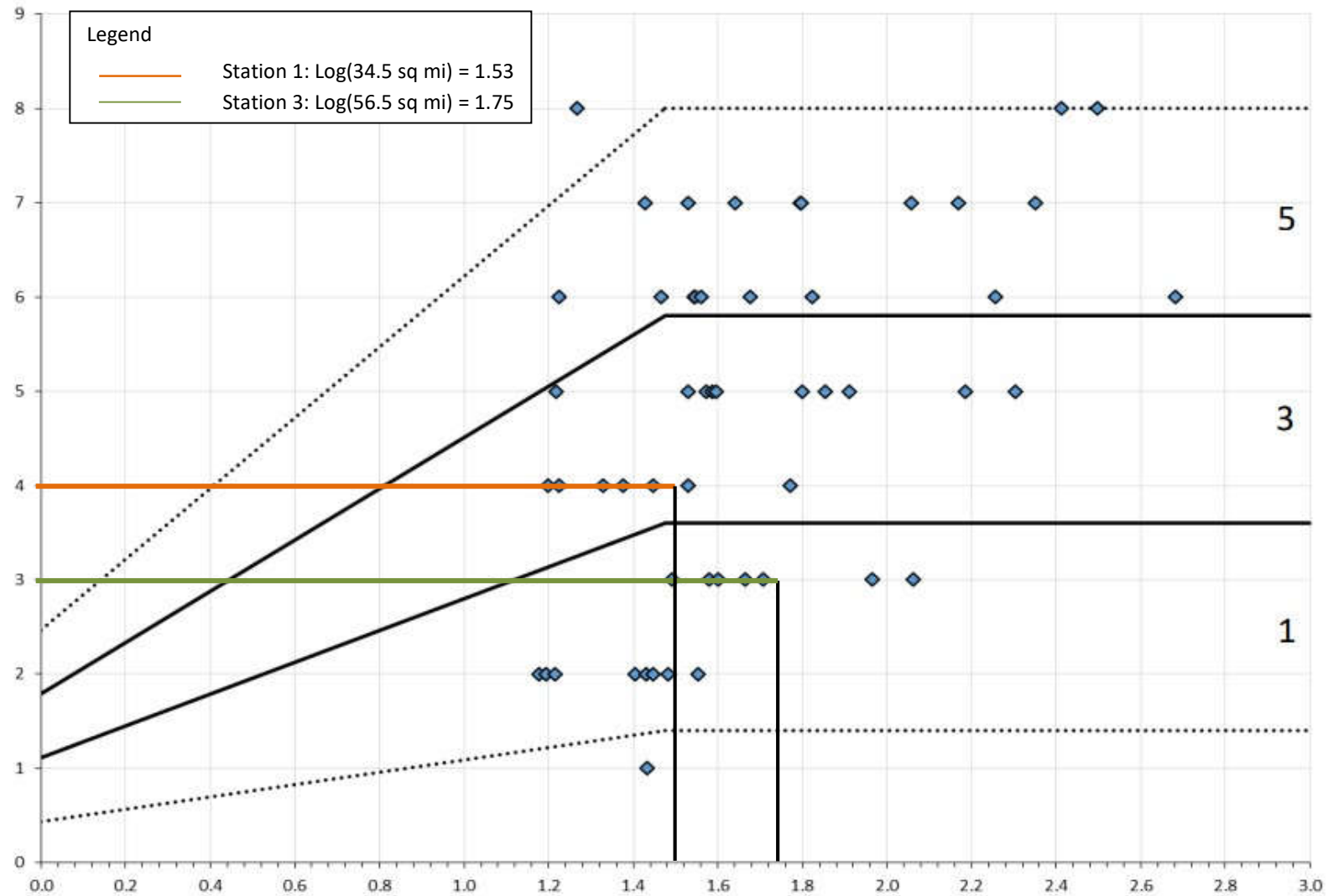
ACFI – SEP. Total number of native species in the Southeastern Plains ecoregion of the Apalachicola drainage basin plotted against the log (base 10) transformed value of the drainage basin area (square miles).

City of Cordele - 2014 Fish Sampling Score Update per the 2020 GA WRD Scoring Criteria



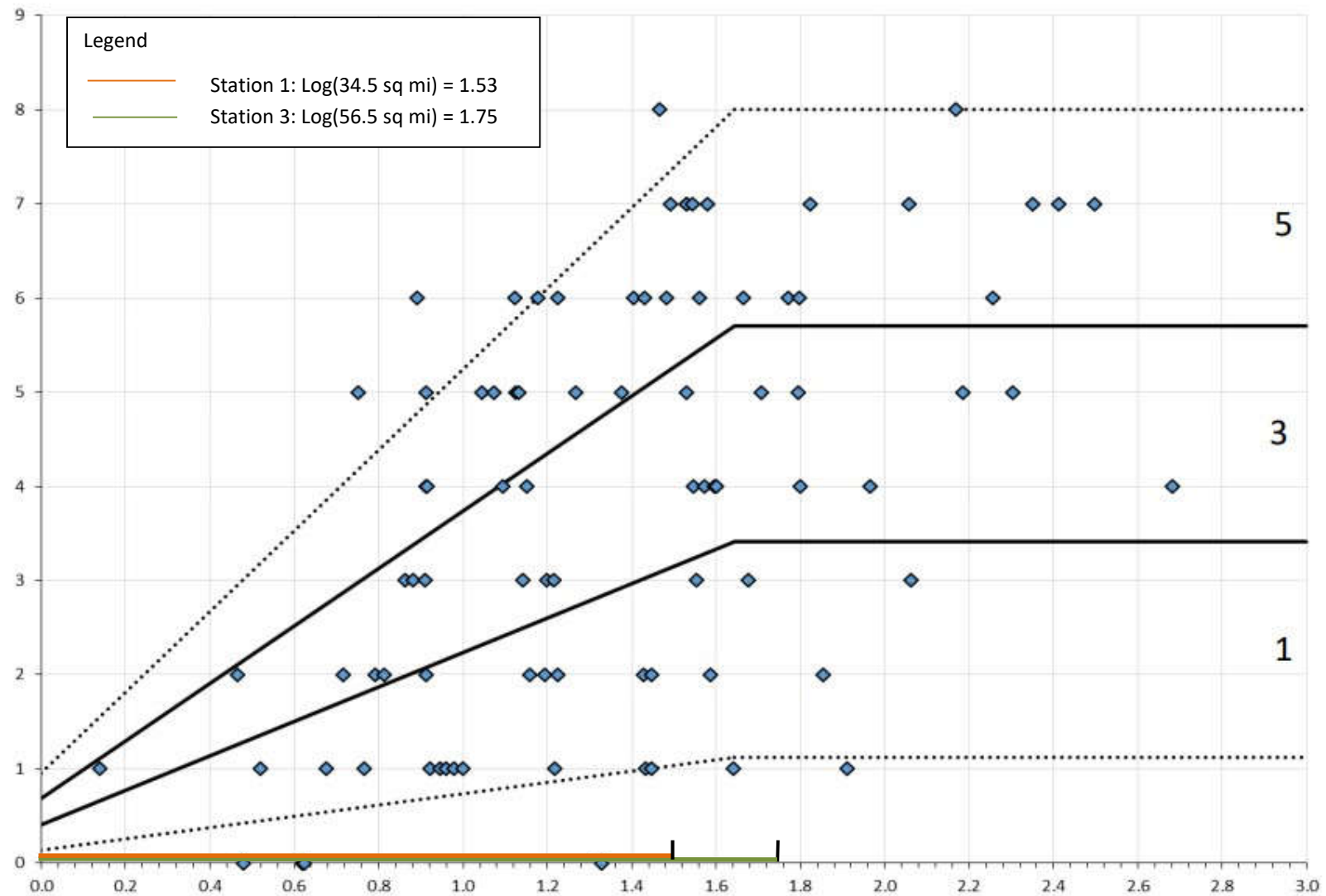
ACF2 – SEP. Number of benthic invertivore species in the Southeastern Plains ecoregion of the Apalachicola drainage basin plotted against the log (base 10) transformed value of the drainage basin area (square miles).

City of Cordele - 2014 Fish Sampling Score Update per the 2020 GA WRD Scoring Criteria

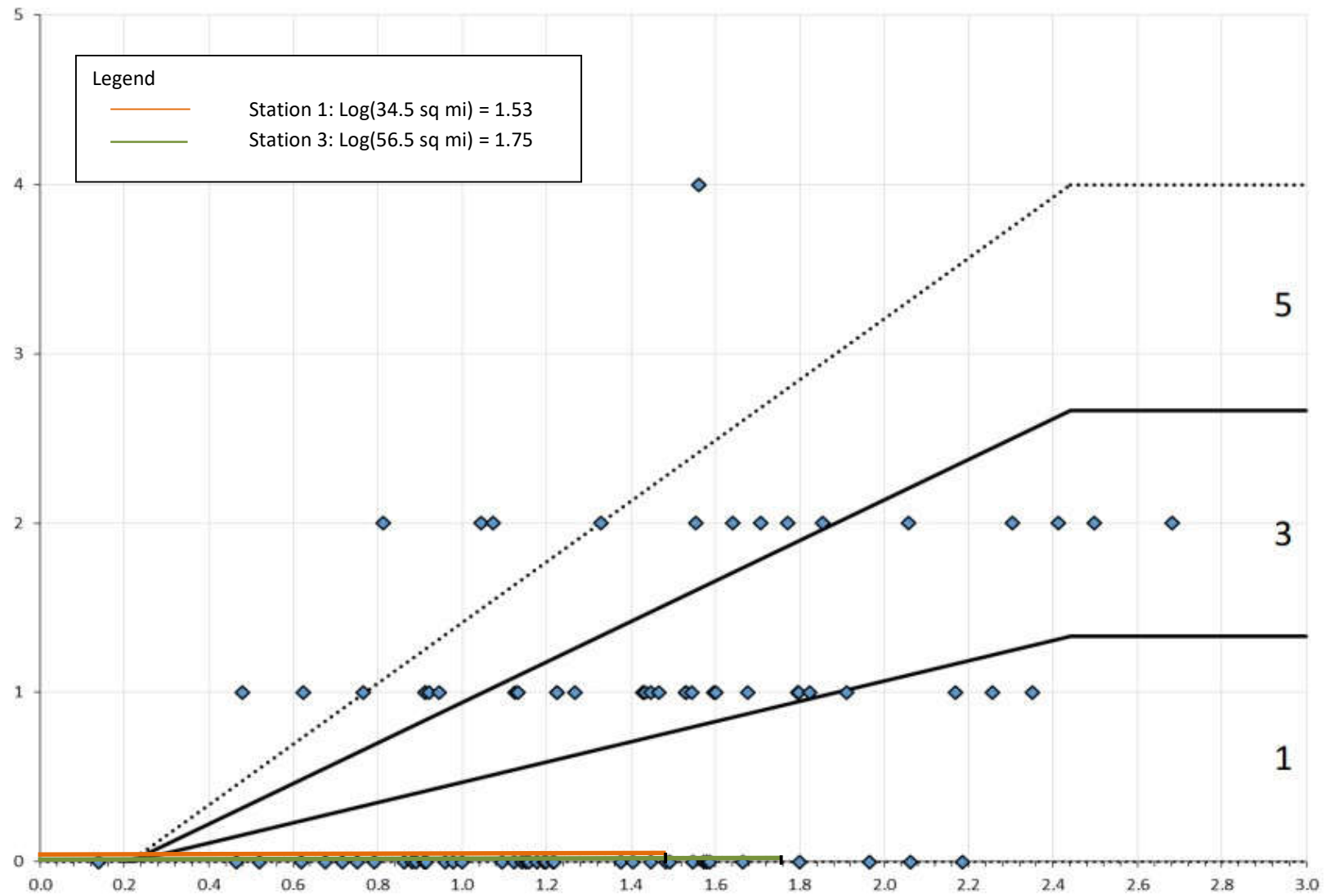


ACF3b – SEP. Number of native centrarchid species in the Southeastern Plains ecoregion of the Apalachicola drainage basin plotted against the log (base 10) transformed value of the drainage basin area (square miles).

City of Cordele - 2014 Fish Sampling Score Update per the 2020 GA WRD Scoring Criteria

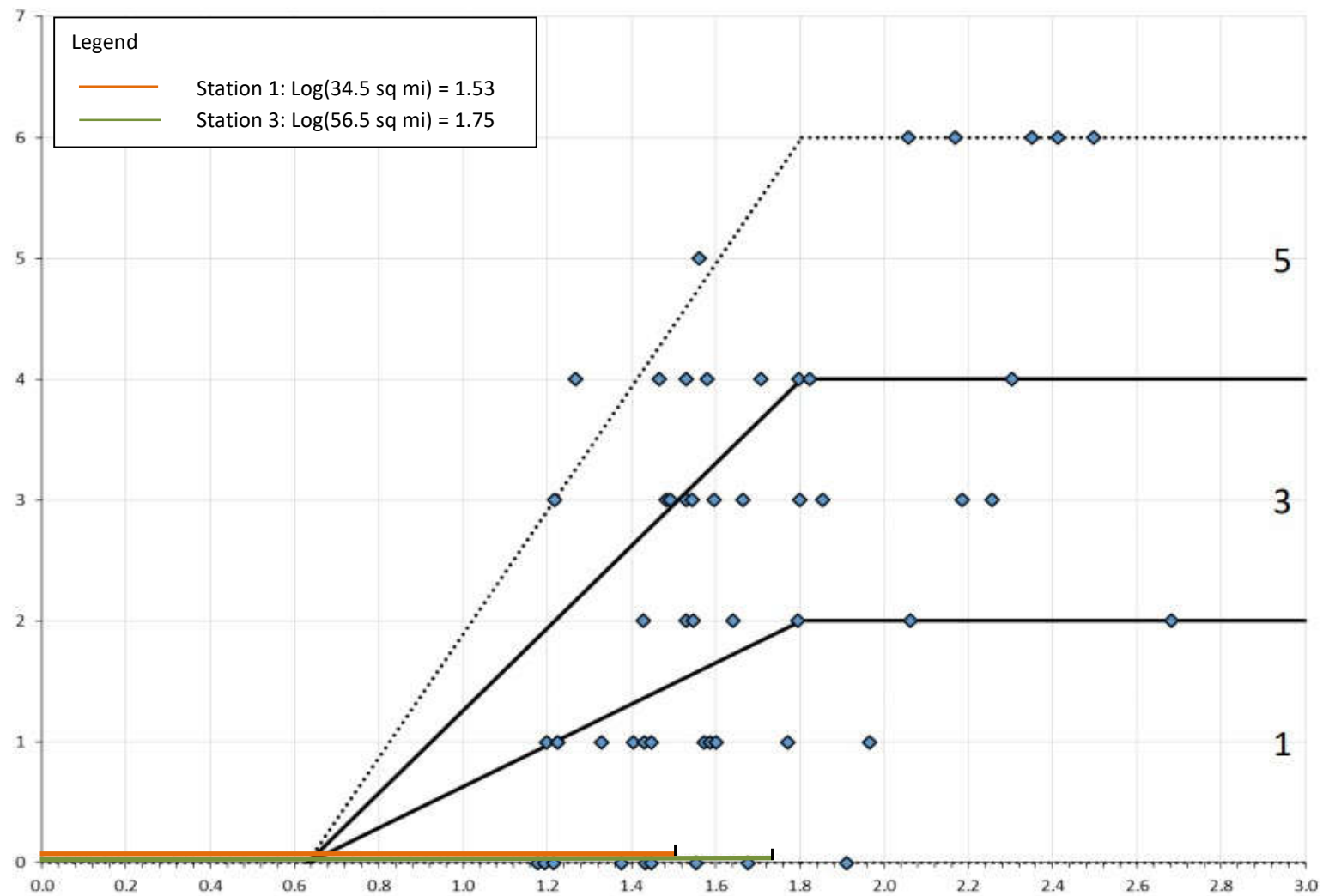


ACF4 – SEP. Number of native insectivorous cyprinid species in the Southeastern Plains ecoregion of the Apalachicola drainage basin plotted against the log (base 10) transformed value of the drainage basin area (square miles).



ACF5 – SEP. Number of native round-bodied-sucker species in the Southeastern Plains ecoregion of the Apalachicola drainage basin plotted against the log (base 10) transformed value of the drainage basin area (square miles).

City of Cordele - 2014 Fish Sampling Score Update per the 2020 GA WRD Scoring Criteria



ACF6b – SEP. Number of species ranked as intolerants in the Southeastern Plains ecoregion of the Apalachicola drainage basin plotted against the log (base 10) transformed value of the drainage basin area (square miles).

Table 1 Fish Species, Relative Abundance, and IBI Classification Variables
City of Cordele Watershed
Sampled September 24, 2019

Common Name	Scientific Name	WQT	FG	SC	Station 3		Station 3A	
					Number	%	Number	%
Sunfish and Bass	Centrarchidae							
Green Sun Fish	Lepomis cyanellus		IN	SF	7	50.0	3	60.0
Black Crappie	Pomoxis nigromaculatus		CR	CENT	2	14.3		
Catfish	Ictaluridae							
Yellow Bullhead	Ameiurus natalis		GE		1	7.1	0	0.0
	Poeciliidae							
Mosquitofish	Gambusia sp.		IN		3	21.4	0	0.0
	Cyprinidae							
Common Shiner	Luxilus cornutus		IC		1	7	2	40
Total Number Species					5	--	2	--
Total Number/Percentage					14	100	5	100

WQT - Water Quality Tolerance: **HWI** = headwater intolerant; **INT** = intolerant

FG - Feeding Guild: **CR** = top carnivore; **GE** = generalist; **HB** = herbivore; **IC** = insectivorous cyprinid; **IN** = insectivore/invertivore

SC - Species Category: **BI** = benthic insectivore species; **CENT** = centrarchid species; **RBS** = round-bodied sucker species; **SF** = sunfish species;
SMM = subterminal mouth minnow species

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Table 2 Index of Biotic Integrity
Fish Sampling Score Update per the 2020 GA WRD Scoring Criteria
City of Cordele Watershed
Sampling Conducted September 24, 2019

	IBI Metrics	Station 3		Station 3A	
		Sampling Result	IBI Score	Sampling Result	IBI Score
Metric 1	Number of native species	5	0.0	2	0.0
Metric 2	Number of benthic invertivore species	0	1.0	0	1.0
Metric 3a	Number of native sunfish species	-	-	1	1.0
Metric 3b	Number of native centrarchid species	2	1.0	-	-
Metric 4	Number of native insectivorous cyprinid species	1	0.0	1	3.0
Metric 5	Number of native round-bodied sucker species	0	1.0	0	1.0
Metric 6a	Number of sensitive species	-	-	0	1.0
Metric 6b	Number of intolerant species	0	1.0	-	-
Metric 7(1)	Eveness	<100	1.0	<100	1.0
Metric 8	% of individuals as <i>Lepomis</i> speceis	50%	1.0	60%	1.0
Metric 9	% of individuals as insectivorous cyprinids	7%	1.0	40%	3.0
Metric 10a	% of individuals as generalist feeders and Herbivores	-	-	0%	5.0
Metric 10b	% of individuals as as top carnivores	14%	3.0	-	-
Metric 11	% of individuals as benthic fluvial specialists	0	1.0	0	1.0
Metric 12	Number of individuals per 200 meters	8	1.0	4	1.0
Metric 13	% of individuals with external anamolies	0	0.0	0	0.0
Total IBI Score			12.0		19.0

a - used at sites with an upstream basin area < 15 square miles

b - used at sites with an upstream drainage basin area >15 square miles

1 - if less that 100 individuals collected Eveness value = 1

2- if greater than 100 individuals collected Eveness value = $[H/\ln(S)] \times 100$

Where H = Shannon-Wiener diversity index & S = total number of species collected.

The Shannon-Wiener diversity index is calculated by:

$(ni/N) \ln(ni/N)$; Where ni = number of individuals of a species & N = total number of individuals in the sample

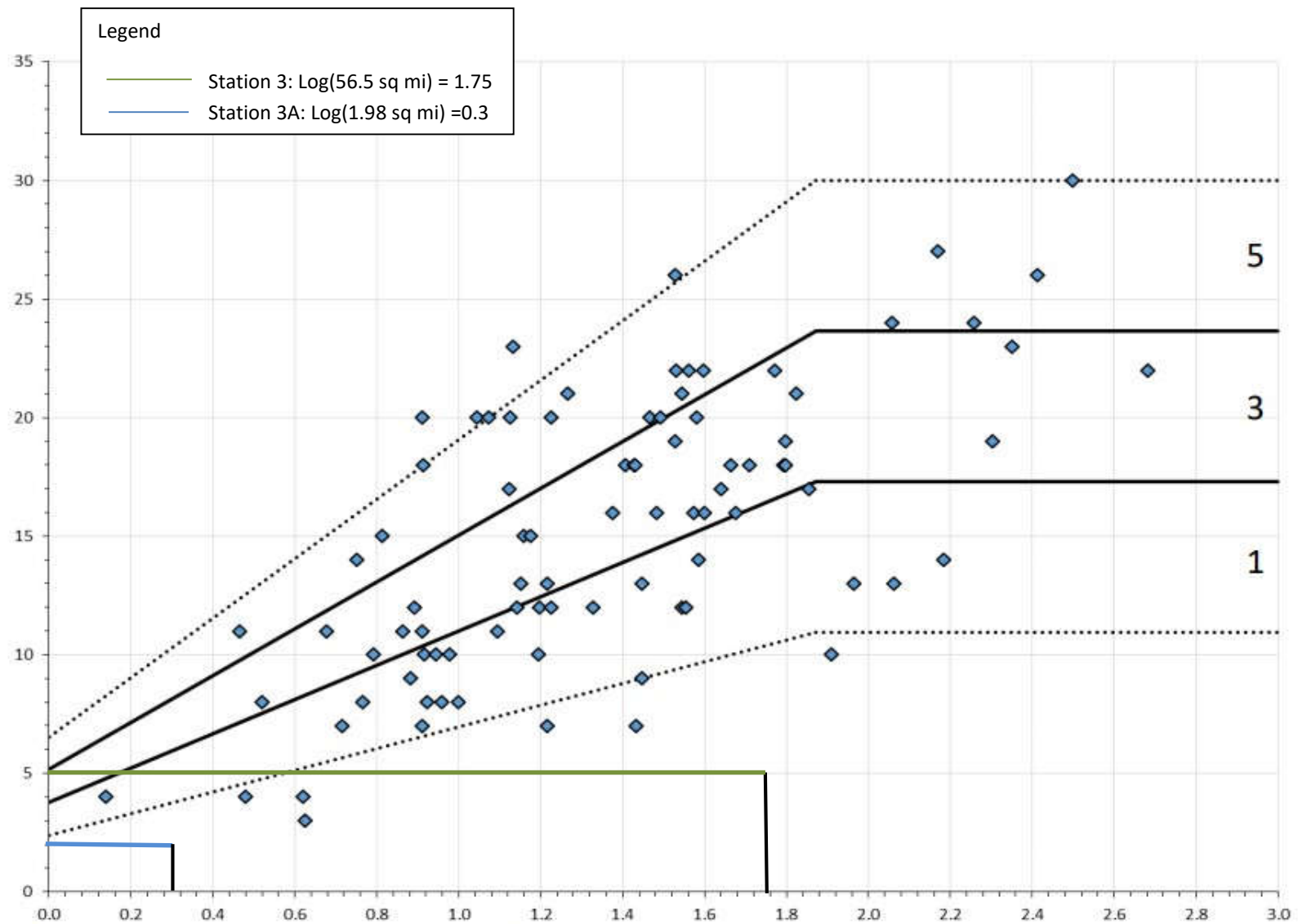
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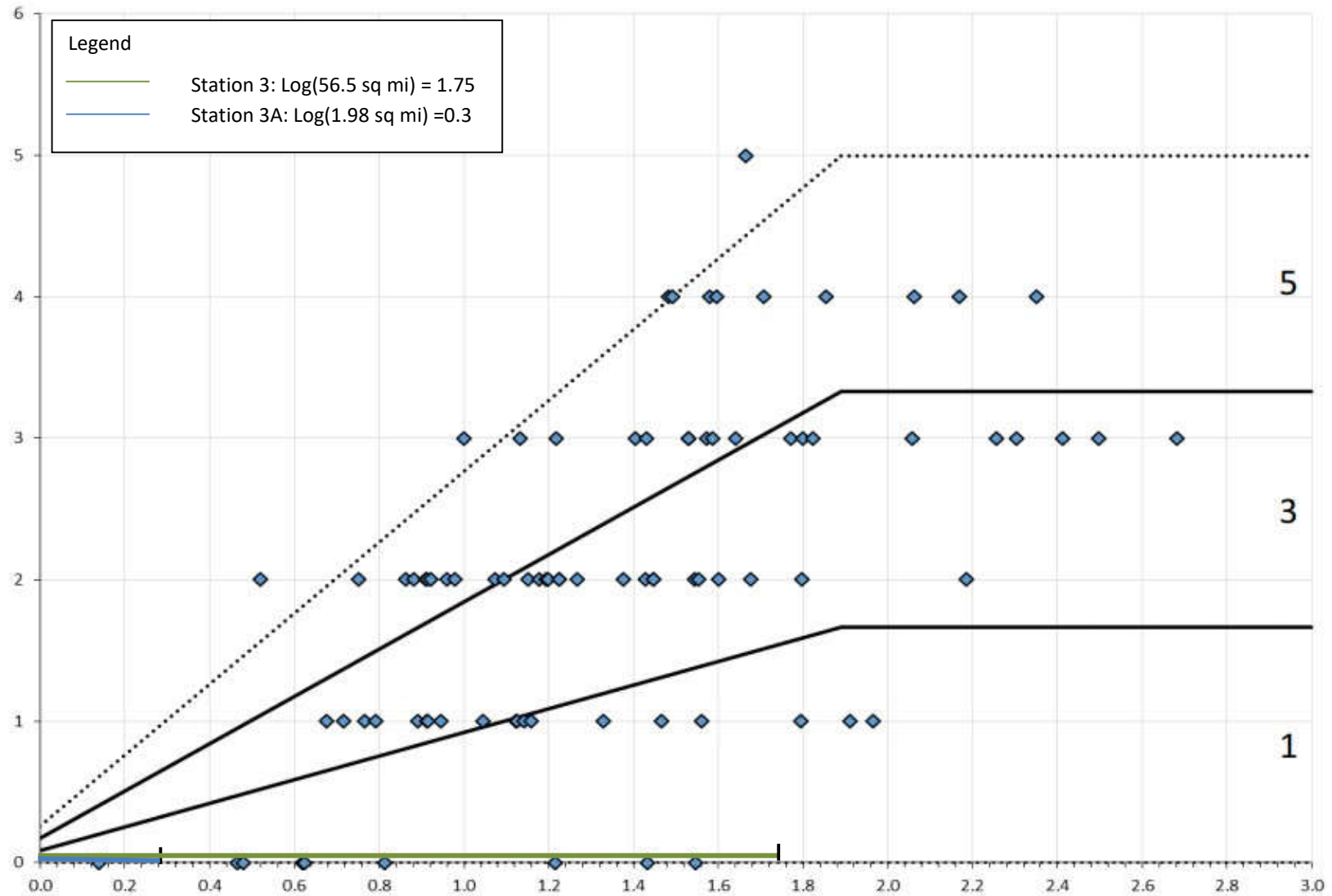
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MSR Graphs

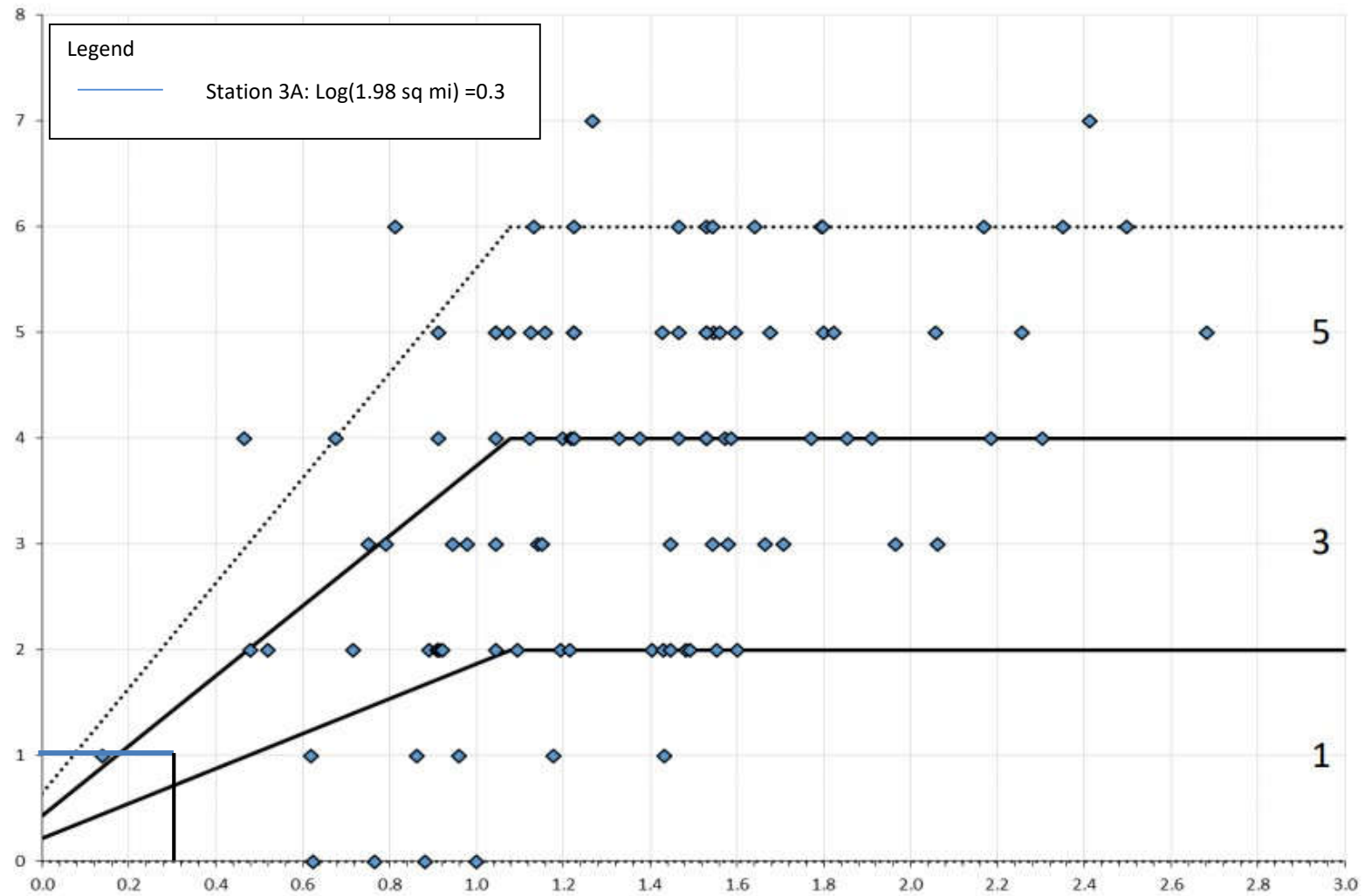
City of Cordele - 2019 Fish Sampling Score Update per the 2020 GA WRD Scoring Criteria



ACFI – SEP. Total number of native species in the Southeastern Plains ecoregion of the Apalachicola drainage basin plotted against the log (base 10) transformed value of the drainage basin area (square miles).

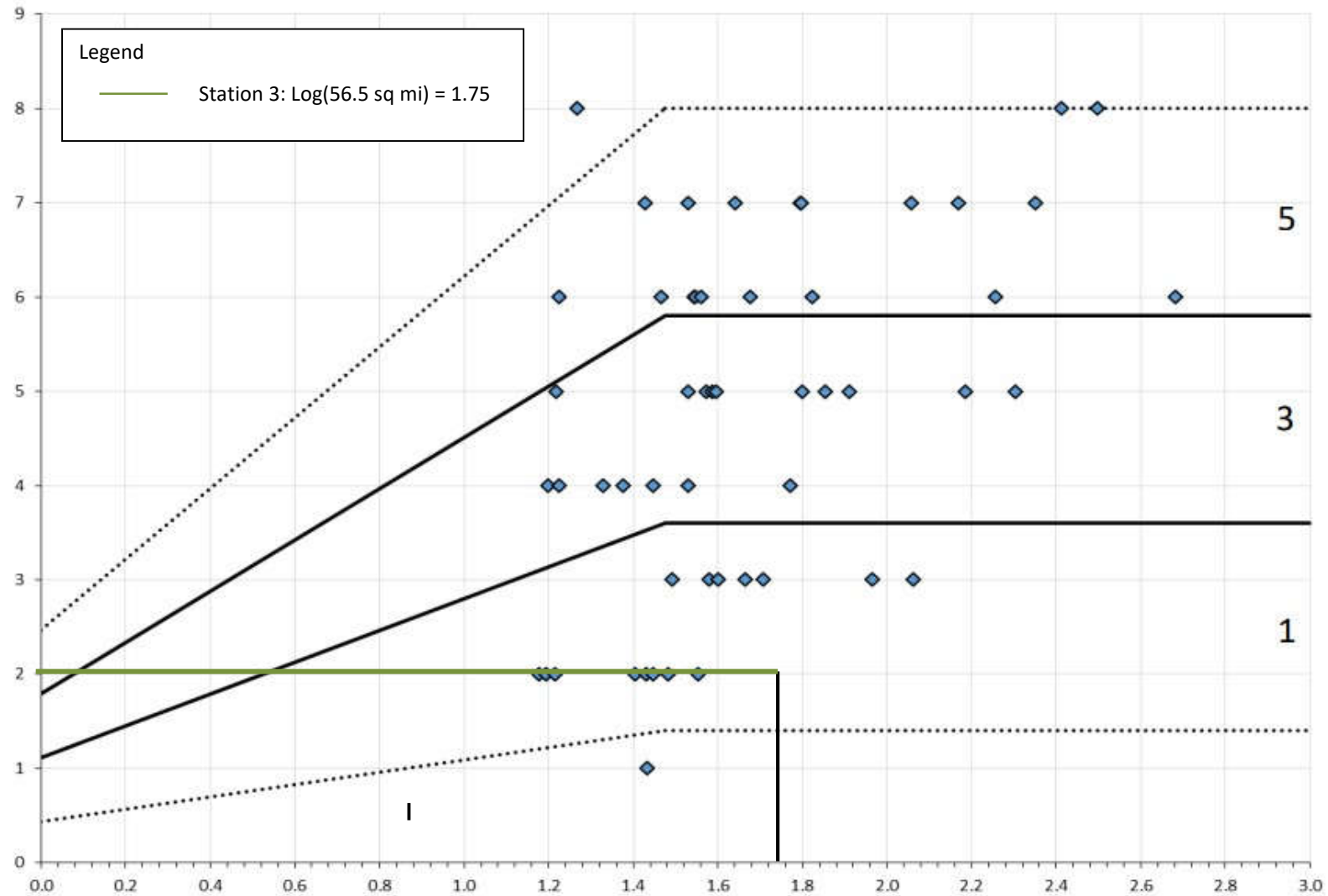


ACF2 – SEP. Number of benthic invertivore species in the Southeastern Plains ecoregion of the Apalachicola drainage basin plotted against the log (base 10) transformed value of the drainage basin area (square miles).



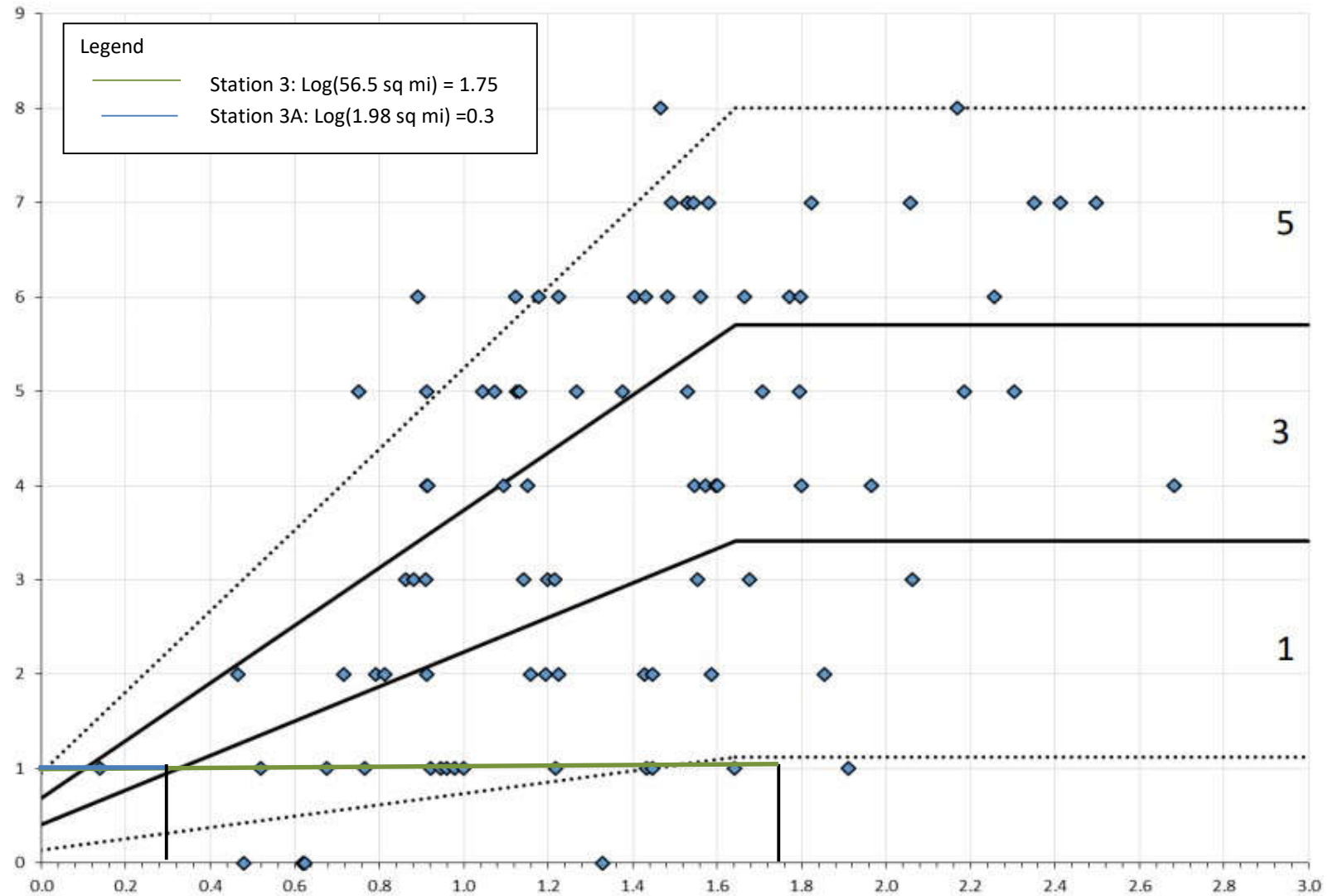
ACF3a – SEP. Number of native sunfish species in headwater streams (<15 square mile drainage basin area) in the Southeastern Plains ecoregion of the Apalachicola drainage basin plotted against the log (base 10) transformed value of the drainage basin area (square miles).

City of Cordele - 2019 Fish Sampling Score Update per the 2020 GA WRD Scoring Criteria

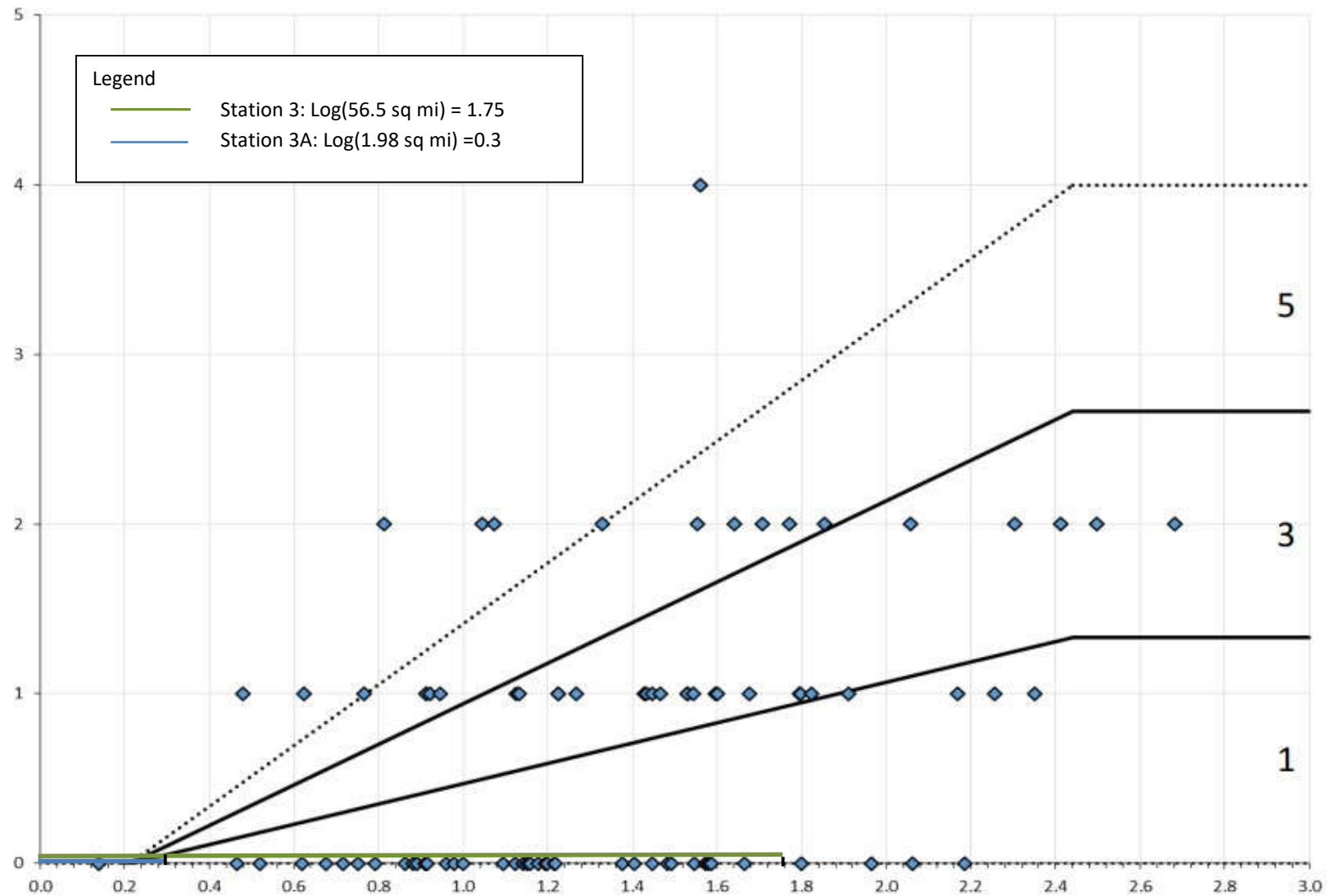


ACF3b – SEP. Number of native centrarchid species in the Southeastern Plains ecoregion of the Apalachicola drainage basin plotted against the log (base 10) transformed value of the drainage basin area (square miles).

City of Cordele - 2019 Fish Sampling Score Update per the 2020 GA WRD Scoring Criteria

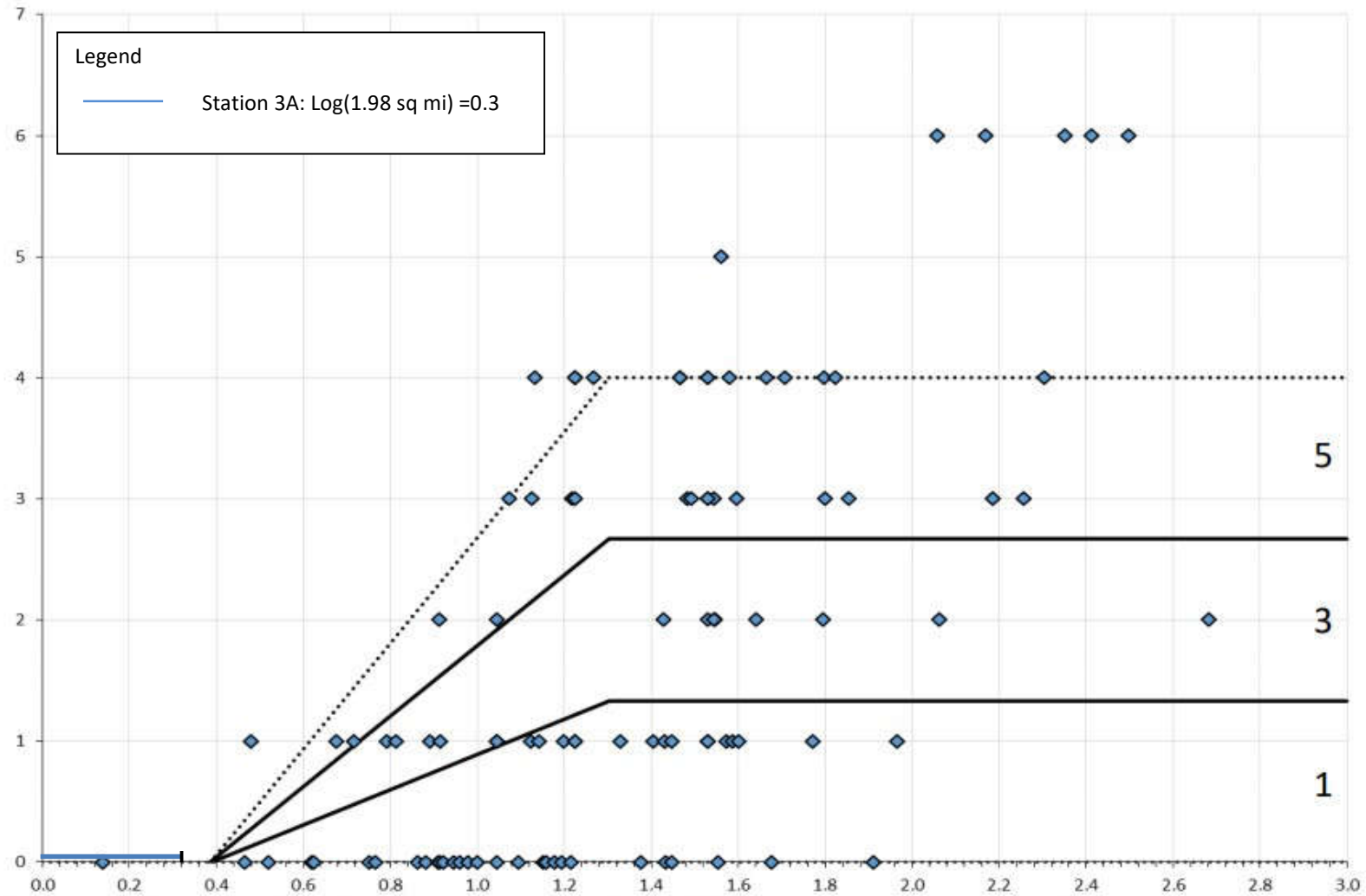


ACF4 – SEP. Number of native insectivorous cyprinid species in the Southeastern Plains ecoregion of the Apalachicola drainage basin plotted against the log (base 10) transformed value of the drainage basin area (square miles).



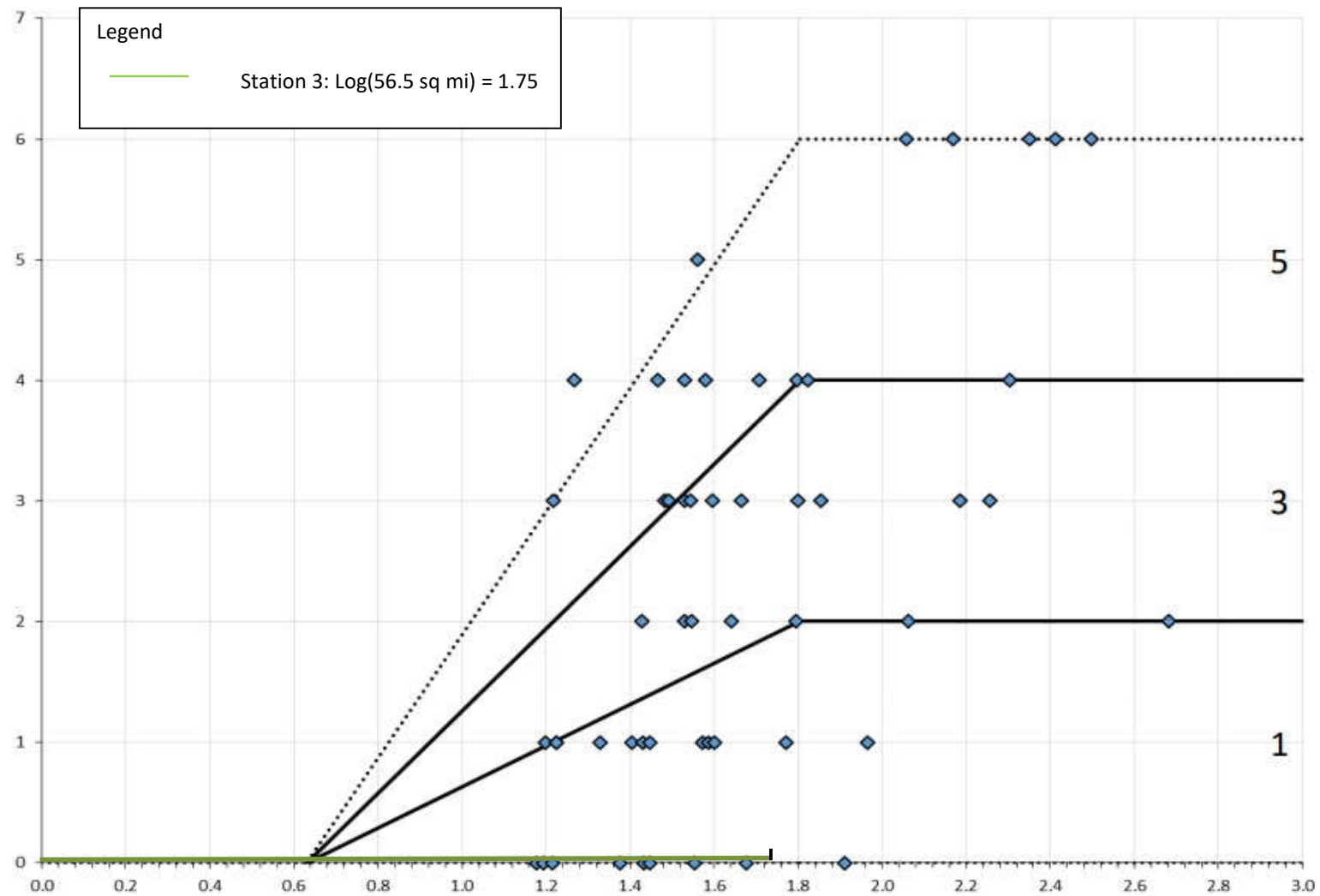
ACF5 – SEP. Number of native round-bodied-sucker species in the Southeastern Plains ecoregion of the Apalachicola drainage basin plotted against the log (base 10) transformed value of the drainage basin area (square miles).

City of Cordele - 2019 Fish Sampling Score Update per the 2020 GA WRD Scoring Criteria



ACF6a – SEP. Total number of species ranked as sensitive at headwater sites (<15 square miles drainage basin area) in the Southeastern Plains ecoregion of the Apalachicola drainage basin plotted against the log (base 10) transformed value of the drainage basin area (square miles).

City of Cordele - 2019 Fish Sampling Score Update per the 2020 GA WRD Scoring Criteria



ACF6b – SEP. Number of species ranked as intolerants in the Southeastern Plains ecoregion of the Apalachicola drainage basin plotted against the log (base 10) transformed value of the drainage basin area (square miles).

Appendix E

Field Sheets

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 1</u>	
LATITUDE (DD): <u>32.000285</u>		LONGITUDE (DD): <u>-83.764537</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>ZH</u>			
FORM COMPLETED BY: <u>ZH</u>		DATE: <u>5/7/20</u>	REASON FOR SURVEY: <u>Wpp</u>
PROJECT: <u>Cordell Watershed</u>		TIME: <u>0830</u> <u>AM</u> PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data	
Unit used: <u>YSI 096101319</u>	
Water Temperature: <u>18.02</u> °C	Depth (m):
Specific Conductance: <u>152</u> (μmhos/cm)	Salinity:
Dissolved Oxygen (mg/L): <u>6.53</u>	Dissolved Oxygen: <u>68.4</u> %
pH: <u>6.39</u>	Air Temperature: °C

In-situ Turbidity Measurement	
Unit used: <u>Hach 980400017832</u>	
Turbidity: <u>0.32</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>	
Sample ID #: <u>Station 1</u>	# of Bottles Collected:
Parameters	
Total Suspended Solids	Fecal / E-coli
Alkalinity	
Clean Metals (ICP/MS)	Half-Gallon bottle
Preservative: <u>HNO₃, <2 pH</u>	500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity No preservative	250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2	250 ml bottle
Ortho-phosphate	Total Phosphorus
Preservative H ₂ SO ₄ , pH <2	250 ml bottle

Sampled by (signature): <u>Zach Hill</u>	Date/Time: <u>5/7/20 0830</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 2A</u>	
LATITUDE (DD): <u>31.980510</u>		LONGITUDE (DD): <u>-83.781283</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>ZH</u>			
FORM COMPLETED BY: <u>ZH</u>		DATE: <u>5/7/20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordule Watershed</u>		TIME: <u>0845</u> <u>AM</u> PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data	
Unit used: <u>YSI 09G101379</u>	
Water Temperature: <u>20.01</u> °C	Depth (m):
Specific Conductance: <u>99</u> (μmhos/cm)	Salinity:
Dissolved Oxygen (mg/L): <u>2.47</u>	Dissolved Oxygen: <u>27.2</u> %
pH: <u>6.00</u>	Air Temperature: °C

In-situ Turbidity Measurement	
Unit used: <u>Hach 980400017832</u>	
Turbidity: <u>105</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>		
Sample ID #: <u>Station 2A</u>	# of Bottles Collected:	
Parameters		
Total Suspended Solids	Fecal / E-coli	
Alkalinity		
Clean Metals (ICP/MS)		
Metals blank collected at this site? Yes or No		
Alkalinity	No preservative	Half-Gallon bottle
	Preservative: HNO ₃ , <2 pH	500mL plastic bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)	
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)	
Ortho-phosphate	Preservative H ₂ SO ₄ , pH <2	250 ml bottle
	Total Phosphorus	
	Preservative H ₂ SO ₄ , pH <2	250 ml bottle

Sampled by (signature): <u>Zach Hill</u>	Date/Time: <u>5/7/20 10845</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 3</u>	
LATITUDE (DD): <u>31.974493</u>		LONGITUDE (DD): <u>-83.794286</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>ZH</u>			
FORM COMPLETED BY: <u>ZH</u>		DATE: <u>5/7/20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordule watershed</u>		TIME: <u>0910</u> <u>AM</u> PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data	
Unit used: <u>YSI 090101379</u>	
Water Temperature: <u>18.67</u> °C	Depth (m):
Specific Conductance: <u>173</u> (μmhos/cm)	Salinity:
Dissolved Oxygen (mg/L): <u>5.97</u>	Dissolved Oxygen: <u>63.9</u> %
pH: <u>5.90</u>	Air Temperature: °C

In-situ Turbidity Measurement	
Unit used: <u>Hach 980400017832</u>	
Turbidity: <u>0.18</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>	
Sample ID #: <u>Station 3</u>	# of Bottles Collected:
Parameters	
Total Suspended Solids	Fecal / E-Coli
Alkalinity	
Clean Metals (ICP/MS) No preservative Half-Gallon bottle	
Preservative: HNO ₃ , <2 pH 500mL plastic bottle	
Metals blank collected at this site? Yes or No	
Alkalinity No preservative 250 ml bottle	
Total Kjeldahl Nitrogen (TKN) Ammonia (NH ₃)	
Nitrate-Nitrite (NO ₂ -NO ₃) Total Organic Carbon (TOC)	
Ortho-phosphate Preservative H ₂ SO ₄ , pH <2 250 ml bottle	
Total Phosphorus Preservative H ₂ SO ₄ , pH <2 250 ml bottle	

Sampled by (signature): <u>Z. Hill</u>	Date/Time: <u>5/7/20</u> <u>0910</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 3A</u>	
LATITUDE (DD): <u>31.974027</u>		LONGITUDE (DD): <u>-83.790603</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>ZH</u>			
FORM COMPLETED BY: <u>ZH</u>		DATE: <u>5/7/20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordale Watershed</u>		TIME: <u>0900</u> <u>AM</u>	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>YSI 096101379</u>			
Water Temperature: <u>17.49</u> °C		Depth (m):	
Specific Conductance: <u>316</u> (μmhos/cm)		Salinity:	
Dissolved Oxygen (mg/L): <u>5.51</u>		Dissolved Oxygen: <u>57.7</u> %	
pH: <u>5.66</u>		Air Temperature: °C	

In-situ Turbidity Measurement	
Unit used: <u>Hach 980400017832</u>	
Turbidity: <u>5.95</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>		
Sample ID #: <u>Station 3A</u>		# of Bottles Collected:
Parameters		
Total Suspended Solids		
Alkalinity		
No preservative Half-Gallon bottle		
Clean Metals (ICP/MS) Preservative: HNO ₃ , <2 pH 500mL plastic bottle		
Metals blank collected at this site? Yes or No		
Alkalinity No preservative 250 ml bottle		
Total Kjeldahl Nitrogen (TKN) Ammonia (NH ₃)		
Nitrate-Nitrite (NO ₂ -NO ₃) Total Organic Carbon (TOC)		
Preservative H ₂ SO ₄ , pH <2 250 ml bottle		
Ortho-phosphate Total Phosphorus		
Preservative H ₂ SO ₄ , pH <2 250 ml bottle		

Sampled by (signature): <u>Z. H. Hill</u>	Date/Time: <u>5/7/20 0900</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: Cedar Creek		SITE # (ID): Station 6	
LATITUDE (DD): 31.909894		LONGITUDE (DD): -83.805849	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: ZH			
FORM COMPLETED BY: ZH		DATE: 5/7/20	REASON FOR SURVEY: WPP
PROJECT: Cordule Watershed		TIME: 0930 AM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: YSI 09601379			
Water Temperature: 16.45 °C		Depth (m):	
Specific Conductance: 85 (μmhos/cm)		Salinity:	
Dissolved Oxygen (mg/L): 6.79		Dissolved Oxygen: 69.8 %	
pH: 5.62		Air Temperature: °C	

In-situ Turbidity Measurement	
Unit used: Hach 980400017832	
Turbidity: 0.27	NTU

Name of Lab to Send Grab Samples: ETL	
Sample ID #: Station 6	# of Bottles Collected:
Parameters	
Total Suspended Solids	Fecal (E-coli)
Alkalinity	
No preservative	
Clean Metals (ICP/MS) Preservative: HNO ₃ , <2 pH	
Metals blank collected at this site? Yes or No	
Alkalinity No preservative	250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2 250 ml bottle	
Ortho-phosphate	Total Phosphorus
Preservative H ₂ SO ₄ , pH <2 250 ml bottle	

Sampled by (signature): <i>ZH Hill</i>	Date/Time: 5/7/20 0930	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: Gum Creek	SITE # (ID): Station 1	
LATITUDE (DD): 32.000285	LONGITUDE (DD): -83.764537	
LATITUDE (D,M,S):	LONGITUDE (D,M,S):	
INVESTIGATORS: ZH/MW		
FORM COMPLETED BY: MW	DATE: 5-13-20	REASON FOR SURVEY:
PROJECT: Cordele Watershed	TIME: 0805 AM	WPP

DRY EVENT

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: YSI 09G101379			
Water Temperature: 16.94 °C	Depth (m):		
Specific Conductance: 238 (μmhos/cm)	Salinity:		
Dissolved Oxygen (mg/L): 7.21	Dissolved Oxygen: 74.7 %		
pH: 6.98	Air Temperature: 59.7 °C		

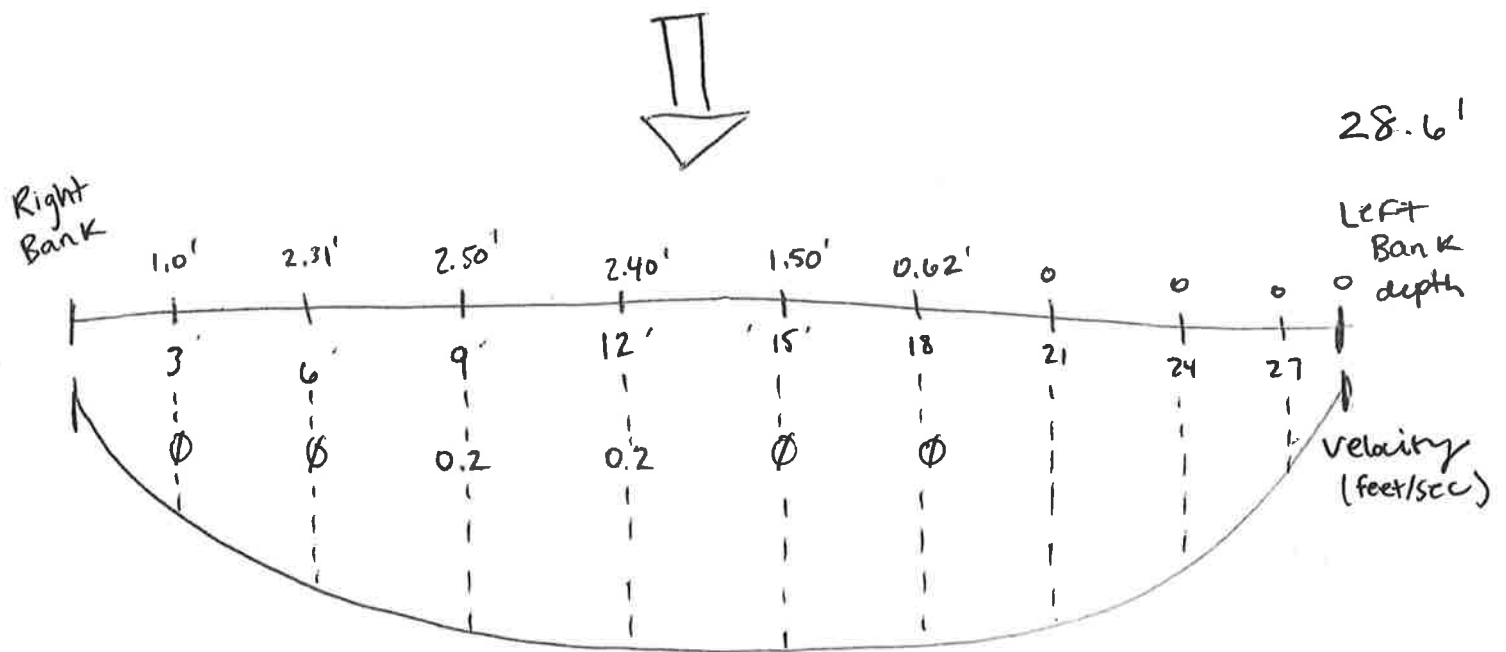
In-situ Turbidity Measurement	
Unit used: 940400005080	
Turbidity: 16.6 NTU	

Name of Lab to Send Grab Samples: XENCO/ETL	
Sample ID #:	# of Bottles Collected:
Parameters	
Total Suspended Solids	+ fecal & E. coli
Alkalinity	
No preservative	Half-Gallon bottle
Clean Metals (ICP/MS)	Preservative: HNO ₃ , <2 pH 500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity No preservative	250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2	250 ml bottle
Ortho-phosphate	Total Phosphorus
Preservative H ₂ SO ₄ , pH <2	250 ml bottle

Sampled by (signature): Melissa Norris	Date/Time: 5-13-20	Team Leader/Received (signature):	Date/Time:
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Date/Time Delivered to Name of Lab Here:	Date/Time Delivered or Sent to Name of Lab Here:
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Cordele Watershed Dry Event
5-13-20
Station 1



$\begin{array}{r} 7.5 \text{ ft}^2 \\ \times .2 \text{ ft/sec} \\ \hline 1.5 \text{ cfs} \end{array}$	$\begin{array}{r} 7.2 \text{ ft}^2 \\ \times .2 \text{ ft/sec} \\ \hline 1.44 \text{ cfs} \end{array}$
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Flow Station 1
2.94 cfs

DRY EVENT

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: Gum Creek Trib.		SITE # (ID): Station 2A	
LATITUDE (DD): 31.980510		LONGITUDE (DD): -83.781283	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: ZH/MW			
FORM COMPLETED BY: MW		DATE: 5-13-20	REASON FOR SURVEY: WPP
PROJECT: Cordele Watershed		TIME: 0845 AM PM	

Depth Calibration for Water Quality Multiprobe

Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data

Unit used: YSI 09G101379			
Water Temperature: 19.29 °C	Depth (m):		
Specific Conductance: 104 (μmhos/cm)	Salinity:		
Dissolved Oxygen (mg/L): 4.04	Dissolved Oxygen: 43.7 %		
pH: 6.53	Air Temperature: 59.9 °C		

In-situ Turbidity Measurement

Unit used: 940400005080	
Turbidity: 0.23	NTU

Name of Lab to Send Grab Samples: XENCO/ETL

Sample ID #:

of Bottles Collected:

Parameters

Total Suspended Solids

+ fecal & E. coli

Alkalinity

No preservative

Half-Gallon bottle

Clean Metals (ICP/MS)

Preservative: HNO₃, <2 pH

500mL plastic bottle

Metals blank collected at this site? Yes or No

Alkalinity No preservative

250 ml bottle

Total Kjeldahl Nitrogen (TKN)

Ammonia (NH₃)

Nitrate-Nitrite (NO₂-NO₃)

Total Organic Carbon (TOC)

Preservative H₂SO₄, pH <2

250 ml bottle

Ortho-phosphate

Total Phosphorus

Preservative H₂SO₄, pH <2

250 ml bottle

Sampled by (signature):

Melisse Norris

Date/Time:

5-13-20

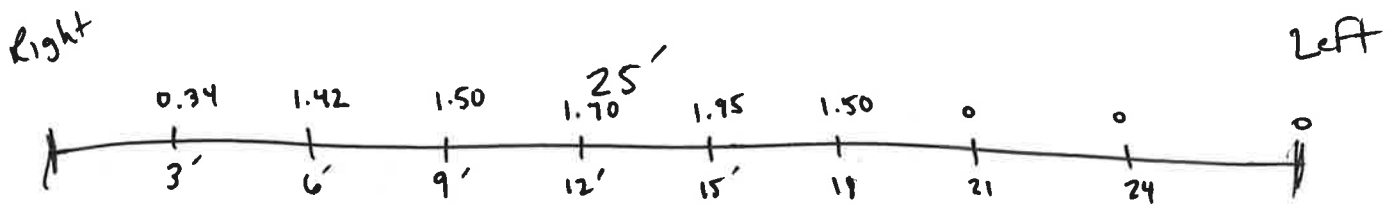
Team Leader/Received (signature):

Date/Time:

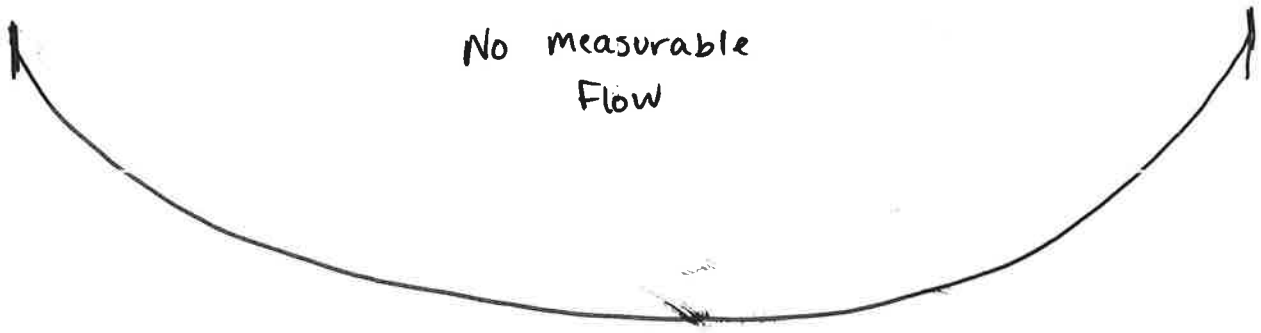
Date/Time Delivered to Name of Lab Here:

Date/Time Delivered or Sent to Name of Lab Here:

Cordell Watershed Dry Event
5-13-20
Station 2A



No measurable
Flow



DRY EVENT

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: Gum Creek		SITE # (ID): Station 3	
LATITUDE (DD): 31.974493		LONGITUDE (DD): -83.794286	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: ZH/MW			
FORM COMPLETED BY: MW		DATE: 5-13-20	REASON FOR SURVEY: WPP
PROJECT: Cordele Watershed		TIME: 0925 AM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: YSI 09G101379			
Water Temperature: 18.11	° C	Depth (m):	
Specific Conductance: 223	(μmhos/cm)	Salinity:	
Dissolved Oxygen (mg/L): 5.35		Dissolved Oxygen: 56.7	%
pH: 7.20		Air Temperature: 69.5	° C

In-situ Turbidity Measurement	
Unit used: 940400005080	
Turbidity: 0.20	NTU

Name of Lab to Send Grab Samples: XENCO/ETL	
Sample ID #:	# of Bottles Collected:
Parameters	
Total Suspended Solids	+ fecal & E. coli
Alkalinity	
No preservative	Half-Gallon bottle
Clean Metals (ICP/MS)	Preservative: HNO ₃ , <2 pH
Metals blank collected at this site? Yes or <u>No</u>	500mL plastic bottle
Alkalinity	No preservative
	250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
	Preservative H ₂ SO ₄ , pH <2
Ortho-phosphate	250 ml bottle
	Total Phosphorus
	Preservative H ₂ SO ₄ , pH <2
	250 ml bottle

Sampled by (signature): Melisse Norris	Date/Time: 5-13-20	Team Leader/Received (signature):	Date/Time:
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Date/Time Delivered to Name of Lab Here:	Date/Time Delivered or Sent to Name of Lab Here:
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Cordale Watershed Dry Event

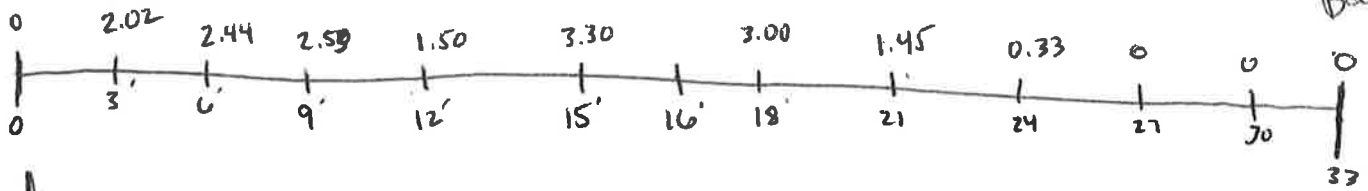
5-13-20
Station 3



33

Right Bank

Left Bank



No measurable
flow

DRY EVENT

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: Gum Creek Trib.		SITE # (ID): Station 3A	
LATITUDE (DD): 31.974027		LONGITUDE (DD): -83.790603	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: ZH/MW			
FORM COMPLETED BY: MW		DATE: 5-13-20	REASON FOR SURVEY: WPP
PROJECT: Cordele Watershed		TIME: 8:05 AM PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: YSI 09G101379			
Water Temperature: 18.37 °C	Depth (m):		
Specific Conductance: 355 (μmhos/cm)	Salinity:		
Dissolved Oxygen (mg/L): 6.13	Dissolved Oxygen: 65.5 %		
pH: 6.59	Air Temperature: 70.5 °C		

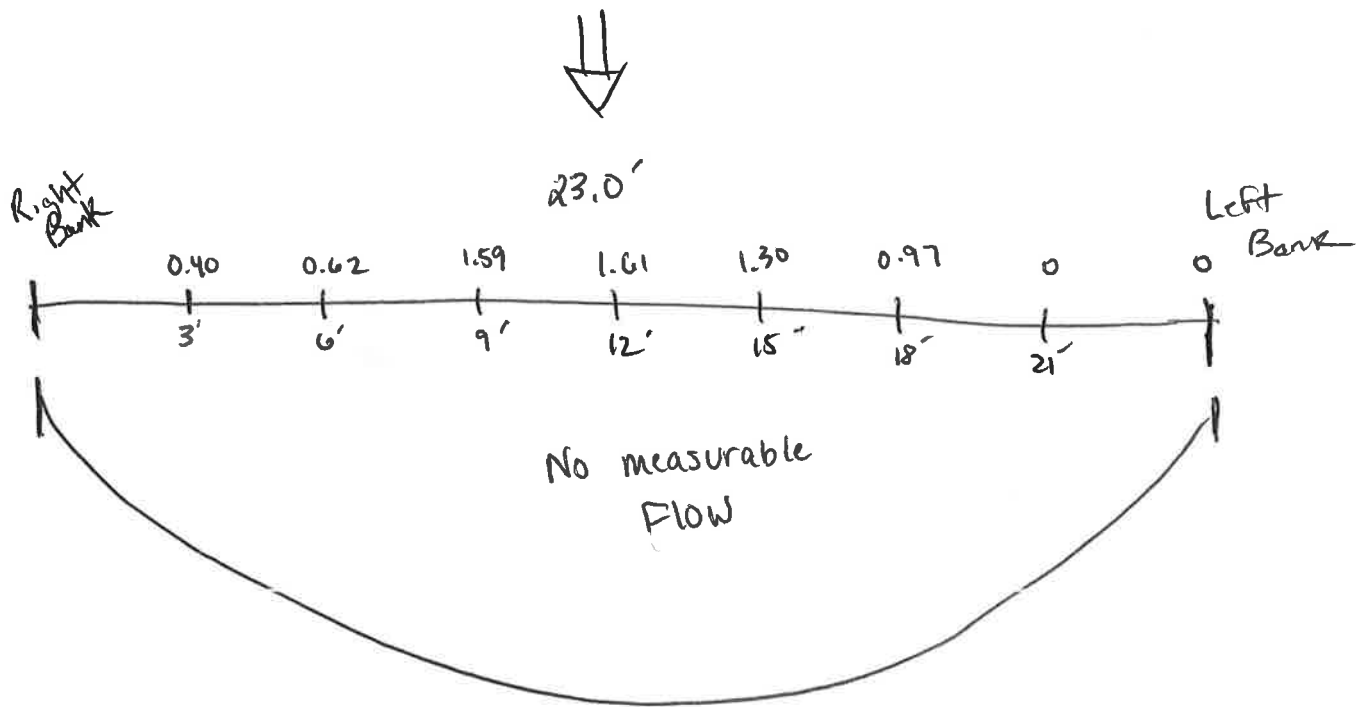
In-situ Turbidity Measurement	
Unit used: 940400005080	
Turbidity: 0.42	NTU

Name of Lab to Send Grab Samples: XENCO/ETL	
Sample ID #:	# of Bottles Collected:
Parameters	
Total Suspended Solids	+ fecal & E. coli
Alkalinity	
No preservative	Half-Gallon bottle
Clean Metals (ICP/MS)	Preservative: HNO ₃ , <2 pH 500mL plastic bottle
Metals blank collected at this site? Yes or <u>No</u>	
Alkalinity	No preservative 250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2	250 ml bottle
Ortho-phosphate	Total Phosphorus
Preservative H ₂ SO ₄ , pH <2	250 ml bottle

Sampled by (signature): <u>Melisse Norris</u>	Date/Time: 5-13-20	Team Leader/Received (signature):	Date/Time:
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Date/Time Delivered to Name of Lab Here:	Date/Time Delivered or Sent to Name of Lab Here:
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Cordele Watershed Dry Event
5-13-20
Station 3A



In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: Cedar Creek	SITE # (ID): station 6	
LATITUDE (DD): 31.909894	LONGITUDE (DD): -83.805849	
LATITUDE (D,M,S):	LONGITUDE (D,M,S):	
INVESTIGATORS: ZH/MW		
FORM COMPLETED BY: MW	DATE: 5-13-20	REASON FOR SURVEY:
PROJECT: Cordele Watershed	TIME: 0950 AM PM	WPP

DRY EVENT

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: YSI 09G101379			
Water Temperature: 17.40 °C	Depth (m):		
Specific Conductance: 87 (μmhos/cm)	Salinity:		
Dissolved Oxygen (mg/L): 4.56	Dissolved Oxygen: 47.5 %		
pH: 6.84	Air Temperature: 68.2 °C		

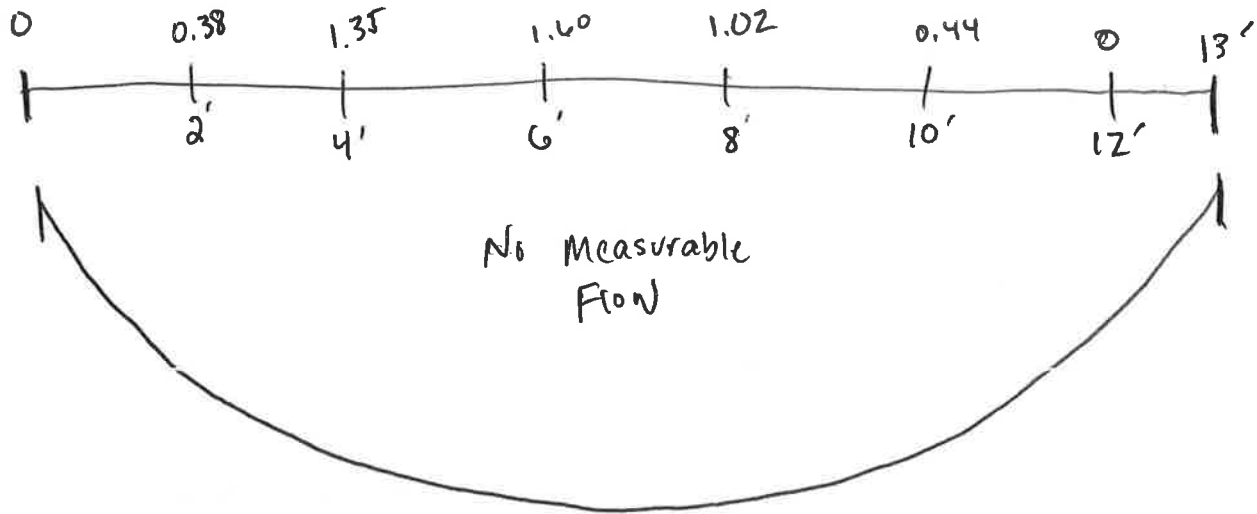
In-situ Turbidity Measurement	
Unit used: 940400005080	
Turbidity: 0.29	NTU

Name of Lab to Send Grab Samples: XENCO/ETL	
Sample ID #:	# of Bottles Collected:
Parameters	
Total Suspended Solids	+ fecal & E. coli
Alkalinity	
No preservative	Half-Gallon bottle
Clean Metals (ICP/MS)	Preservative: HNO ₃ , <2 pH 500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity No preservative	250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2	250 ml bottle
Ortho-phosphate	Total Phosphorus
Preservative H ₂ SO ₄ , pH <2	250 ml bottle

Sampled by (signature): Melisse Norris	Date/Time: 5-13-20	Team Leader/Received (signature):	Date/Time:
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Date/Time Delivered to Name of Lab Here:	Date/Time Delivered or Sent to Name of Lab Here:
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Cordelle Watershed Dry Event
5-13-20
Station 6



In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 1</u>	
LATITUDE (DD): <u>32.000285</u>		LONGITUDE (DD): <u>-83.764357</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>ZH</u>			
FORM COMPLETED BY: <u>ZH</u>		DATE: <u>5/21/20</u>	REASON FOR SURVEY: <u>Wpp</u>
PROJECT: <u>Cordule Watershed</u>		TIME: <u>0825</u> <u>AM</u> PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data	
Unit used: <u>YSI 096101379</u>	
Water Temperature: <u>19.86</u> °C	Depth (m):
Specific Conductance: <u>53</u> (μmhos/cm)	Salinity:
Dissolved Oxygen (mg/L): <u>6.37</u>	Dissolved Oxygen: <u>69.9</u> %
pH: <u>5.52</u>	Air Temperature: °C

In-situ Turbidity Measurement	
Unit used: <u>Hach</u>	
Turbidity: <u>980400017832</u> <u>245</u> NTU	

Name of Lab to Send Grab Samples: <u>ETL</u>	
Sample ID #:	# of Bottles Collected:
Parameters	
Total Suspended Solids	Fecal / E-coli
Alkalinity	
Clean Metals (ICP/MS)	Preservative: <u>HNO₃, <2 pH</u>
Metals blank collected at this site? Yes or No	
Alkalinity	Preservative: <u>H₂SO₄, pH <2</u>
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Ortho-phosphate	Total Phosphorus

Sampled by (signature): <u>Z. H. Hill</u>	Date/Time: <u>5/21/20</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 2A</u>	
LATITUDE (DD): <u>31.980510</u>		LONGITUDE (DD): <u>-83.781283</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>ZH</u>			
FORM COMPLETED BY: <u>ZH</u>		DATE: <u>5/21/20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordell Watershed</u>		TIME: <u>0835</u> <u>AM</u> PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>YSI 096101379</u>			
Water Temperature: <u>20.67</u> °C		Depth (m):	
Specific Conductance: <u>54</u> (μmhos/cm)		Salinity:	
Dissolved Oxygen (mg/L): <u>5.14</u>		Dissolved Oxygen: <u>57.3</u> %	
pH: <u>5.65</u>		Air Temperature: °C	

In-situ Turbidity Measurement	
Unit used: <u>Hach 980400017832</u>	
Turbidity: <u>123</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>	
Sample ID #:	# of Bottles Collected:
Parameters	
Total Suspended Solids	Fecal / E. coli;
Alkalinity	
No preservative	
Clean Metals (ICP/MS)	Half-Gallon bottle
Preservative: HNO ₃ , <2 pH	500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity	250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2	250 ml bottle
Ortho-phosphate	Total Phosphorus
Preservative H ₂ SO ₄ , pH <2	250 ml bottle

Sampled by (signature): <u>3-2 Hill</u>	Date/Time: <u>5/21/20</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 3</u>	
LATITUDE (DD): <u>31.974493</u>		LONGITUDE (DD): <u>-83.794286</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>ZH</u>			
FORM COMPLETED BY: <u>ZH</u>		DATE: <u>5/21/20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordale Watershed</u>		TIME: <u>0910</u> <u>AM</u> PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>YSI 096101379</u>			
Water Temperature: <u>20.31</u> °C		Depth (m):	
Specific Conductance: <u>85</u> (μmhos/cm)		Salinity:	
Dissolved Oxygen (mg/L): <u>5.66</u>		Dissolved Oxygen: <u>62.7</u> %	
pH: <u>6.57</u>		Air Temperature: °C	

In-situ Turbidity Measurement	
Unit used: <u>Hach 980400017832</u>	
Turbidity: <u>27.4</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>			
Sample ID #:		# of Bottles Collected:	
Parameters			
Total Suspended Solids		Fecal / E-coli	
Alkalinity			
No preservative			
Clean Metals (ICP/MS)		Half-Gallon bottle	
Preservative: <u>HNO₃, <2 pH</u>		500mL plastic bottle	
Metals blank collected at this site? Yes or No			
Alkalinity	No preservative	250 ml bottle	
Total Kjeldahl Nitrogen (TKN)		Ammonia (NH ₃)	
Nitrate-Nitrite (NO ₂ -NO ₃)		Total Organic Carbon (TOC)	
Preservative H ₂ SO ₄ , pH <2		250 ml bottle	
Ortho-phosphate		Total Phosphorus	
Preservative H ₂ SO ₄ , pH <2		250 ml bottle	

Sampled by (signature): <u>Zach Hill</u>	Date/Time: <u>5/21/20</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 3A</u>	
LATITUDE (DD): <u>31.974027</u>		LONGITUDE (DD): <u>-83.790603</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>ZH</u>			
FORM COMPLETED BY: <u>ZH</u>		DATE: <u>5/21/20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordale Watershed</u>		TIME: <u>0855</u> <u>AM</u> PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>YSI 096101379</u>			
Water Temperature: <u>20.87</u> °C		Depth (m):	
Specific Conductance: <u>132</u> (μmhos/cm)		Salinity:	
Dissolved Oxygen (mg/L): <u>6.51</u>		Dissolved Oxygen: <u>72.8</u> %	
pH: <u>6.77</u>		Air Temperature: °C	

In-situ Turbidity Measurement	
Unit used: <u>Hach 980400017832</u>	
Turbidity: <u>18.7</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>			
Sample ID #:		# of Bottles Collected:	
Parameters			
Total Suspended Solids		Fecal / E-Coli.	
Alkalinity			
No preservative			
Clean Metals (ICP/MS)		Preservative: <u>HNO₃, <2 pH</u>	Half-Gallon bottle 500mL plastic bottle
Metals blank collected at this site? Yes or No			
Alkalinity	No preservative	250 ml bottle	
Total Kjeldahl Nitrogen (TKN)		Ammonia (NH ₃)	
Nitrate-Nitrite (NO ₂ -NO ₃)		Total Organic Carbon (TOC)	
Preservative H ₂ SO ₄ , pH <2		250 ml bottle	
Ortho-phosphate		Total Phosphorus	
Preservative H ₂ SO ₄ , pH <2		250 ml bottle	

Sampled by (signature): <u>Zach Hill</u>	Date/Time: <u>5/21/20</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: Cedar Creek		SITE # (ID): Station 6	
LATITUDE (DD): 31.909894		LONGITUDE (DD): -83.805849	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: ZH			
FORM COMPLETED BY: ZH		DATE: 5/21/20	REASON FOR SURVEY: WPP
PROJECT: Cordell Watershed		TIME: 0935 AM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data	
Unit used: YSI 096101379	
Water Temperature: 20.52 °C	Depth (m):
Specific Conductance: 57 (μmhos/cm)	Salinity:
Dissolved Oxygen (mg/L): 7.08	Dissolved Oxygen: 78.7 %
pH: 6.12	Air Temperature: °C

In-situ Turbidity Measurement	
Unit used: Hach 980400017832	
Turbidity: 27.3	NTU

Name of Lab to Send Grab Samples: ETL	
Sample ID #:	# of Bottles Collected:
Parameters	
Total Suspended Solids	Fecal / E-coli
Alkalinity	
Clean Metals (ICP/MS) No preservative Half-Gallon bottle	
Preservative: HNO ₃ , <2 pH 500mL plastic bottle	
Metals blank collected at this site? Yes or No	
Alkalinity No preservative 250 ml bottle	
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Ortho-phosphate	Total Phosphorus
Preservative H ₂ SO ₄ , pH <2 250 ml bottle	

Sampled by (signature): <i>Zach Hill</i>	Date/Time: 5/21/20	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 1</u>	
LATITUDE (DD): <u>32.000285</u>		LONGITUDE (DD): <u>-83.764357</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>David Jones</u>			
FORM COMPLETED BY: <u>DP</u>		DATE: <u>5-26-20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordele Watershed</u>		TIME: <u>0850</u> (<u>AM</u>) PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>YSI 556 MPS SN# 01F0337AC</u>			
Water Temperature: <u>22.98</u> °C		Depth (m): <u>—</u>	
Specific Conductance: <u>179</u> (μmhos/cm)		Salinity: <u>—</u>	
Dissolved Oxygen (mg/L): <u>5.67</u>		Dissolved Oxygen: <u>66.1</u> %	
pH: <u>6.88</u>		Air Temperature: <u>21.75</u> °C	

In-situ Turbidity Measurement	
Unit used: <u>Hach 2100P SN# 980400005917</u>	
Turbidity: <u>23.2</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>			
Sample ID #: <u>Station 1</u>		# of Bottles Collected: <u>2</u>	
Parameters			
Total Suspended Solids		<u>Fecal Coliforms/E. coli</u>	
Alkalinity			
No preservative		Half-Gallon bottle	
Clean Metals (ICP/MS)	Preservative: <u>HNO₃, <2 pH</u>	500mL plastic bottle	
Metals blank collected at this site? Yes or No			
Alkalinity	No preservative	250 ml bottle	
Total Kjeldahl Nitrogen (TKN)		Ammonia (NH ₃)	
Nitrate-Nitrite (NO ₂ -NO ₃)		Total Organic Carbon (TOC)	
Preservative H ₂ SO ₄ , pH <2		250 ml bottle	
Ortho-phosphate		Total Phosphorus	
Preservative H ₂ SO ₄ , pH <2		250 ml bottle	

Sampled by (signature): <u>[Signature]</u>	Date/Time: <u>5-26-20 0850</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 2A</u>	
LATITUDE (DD): <u>31.980510</u>		LONGITUDE (DD): <u>-83.781283</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>David Jones</u>			
FORM COMPLETED BY: <u>DJS</u>		DATE: <u>5-26-20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordele Watershed</u>		TIME: <u>0910</u> AM PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>YSI 556 MPS SN# 01F0337AC</u>			
Water Temperature: <u>24.52</u> °C		Depth (m): <u>—</u>	
Specific Conductance: <u>189</u> (μmhos/cm)		Salinity: <u>—</u>	
Dissolved Oxygen (mg/L): <u>2.02</u>		Dissolved Oxygen: <u>24.2</u> %	
pH: <u>6.77</u>		Air Temperature: <u>22.36</u> °C	

In-situ Turbidity Measurement	
Unit used: <u>Hach 2100 P SN 980400005717</u>	
Turbidity: <u>20.0</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>	
Sample ID #: <u>Station 2A</u>	# of Bottles Collected: <u>2</u>
Parameters	
Total Suspended Solids	<u>Fecal Coliforms / E. Coli:</u>
Alkalinity	
No preservative	Half-Gallon bottle
Clean Metals (ICP/MS)	Preservative: <u>HNO₃, <2 pH</u> 500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity	No preservative 250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2	250 ml bottle
Ortho-phosphate	Total Phosphorus
Preservative H ₂ SO ₄ , pH <2	250 ml bottle

Sampled by (signature): <u>[Signature]</u>	Date/Time: <u>5-26-20/0910</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

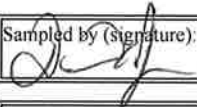
STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 3</u>	
LATITUDE (DD): <u>31.94493</u>		LONGITUDE (DD): <u>-83.794266</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>David Jones</u>			
FORM COMPLETED BY: <u>DAJ</u>		DATE: <u>5-26-20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordale Watershed</u>		TIME: <u>0950</u> <u>AM</u> PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data	
Unit used: <u>YSI 556 MPS SN# 01F0337 AC</u>	
Water Temperature: <u>23.36</u> °C	Depth (m): <u>—</u>
Specific Conductance: <u>270</u> (μmhos/cm)	Salinity: <u>—</u>
Dissolved Oxygen (mg/L): <u>9.37</u>	Dissolved Oxygen: <u>63.1</u> %
pH: <u>6.82</u>	Air Temperature: <u>22.11</u> °C

In-situ Turbidity Measurement	
Unit used: <u>Hach 2100P SN# 980400005917</u>	
Turbidity: <u>19.2</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>	
Sample ID #: <u>Station 3</u>	# of Bottles Collected: <u>2</u>
Parameters	
Total Suspended Solids	<u>Fecal Coliforms / E. Coli</u>
Alkalinity	
No preservative	Half-Gallon bottle
Clean Metals (ICP/MS)	Preservative: <u>HNO₃, <2 pH</u> 500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity	No preservative 250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2	250 ml bottle
Ortho-phosphate	Total Phosphorus
Preservative H ₂ SO ₄ , pH <2	250 ml bottle

Sampled by (signature): 	Date/Time: <u>5-26-20 0956</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gun Creek</u>		SITE # (ID): <u>Station 3A</u>	
LATITUDE (DD): <u>31.974027</u>		LONGITUDE (DD): <u>-83.790603</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>David Jones</u>			
FORM COMPLETED BY: <u>DNS</u>		DATE: <u>5-26-20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cardele Watershed</u>		TIME: <u>0930</u> (AM) PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data	
Unit used: <u>YSI 556 MPS SN# 0150337 AC</u>	
Water Temperature: <u>23.46</u> °C	Depth (m): <u>—</u>
Specific Conductance: <u>369</u> (μmhos/cm)	Salinity: <u>—</u>
Dissolved Oxygen (mg/L): <u>5.70</u>	Dissolved Oxygen: <u>67.1</u> %
pH: <u>6.75</u>	Air Temperature: <u>22.37</u> °C

In-situ Turbidity Measurement	
Unit used: <u>Hech 2100P SN# 780400005917</u>	
Turbidity: <u>7.38</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>	
Sample ID #: <u>Station 3A</u>	# of Bottles Collected: <u>2</u>
Parameters	
Total Suspended Solids	<u>E. Coli / Fecal Coliforms</u>
Alkalinity	
No preservative	Half-Gallon bottle
Clean Metals (ICP/MS)	Preservative: <u>HNO₃, <2 pH</u> 500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity	No preservative 250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2	250 ml bottle
Ortho-phosphate	Total Phosphorus
Preservative H ₂ SO ₄ , pH <2	250 ml bottle

Sampled by (signature): <u>[Signature]</u>	Date/Time: <u>5-26-20 0930</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

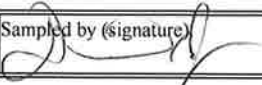
STREAM NAME: <u>Cedar Creek</u>		SITE # (ID): <u>Station 6</u>	
LATITUDE (DD): <u>31.909894</u>		LONGITUDE (DD): <u>-83.805849</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>David Jones</u>			
FORM COMPLETED BY: <u>DJS</u>		DATE: <u>5-26-20</u>	REASON FOR SURVEY: <u>WWP</u>
PROJECT: <u>Cordele Watershed</u>		TIME: <u>1010</u> AM PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>YSI 556 MPS SN# 01F0337AL</u>			
Water Temperature: <u>23.15</u> °C		Depth (m): <u>—</u>	
Specific Conductance: <u>163</u> (μmhos/cm)		Salinity: <u>—</u>	
Dissolved Oxygen (mg/L): <u>4.62</u>		Dissolved Oxygen: <u>54.0</u> %	
pH: <u>6.72</u>		Air Temperature: <u>22.17</u> °C	

In-situ Turbidity Measurement	
Unit used: <u>Hach 2100P SN# 980400005917</u>	
Turbidity: <u>18.5</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>	
Sample ID #: <u>Station 6</u>	# of Bottles Collected: <u>2</u>
Parameters	
Total Suspended Solids	<u>Fecal Coliforms / E. coli</u>
Alkalinity	
No preservative	Half-Gallon bottle
Clean Metals (ICP/MS)	Preservative: <u>HNO₃, <2 pH</u> 500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity	No preservative 250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2	250 ml bottle
Ortho-phosphate	Total Phosphorus
Preservative H ₂ SO ₄ , pH <2	250 ml bottle

Sampled by (signature): 	Date/Time: <u>5/26/20 10:10</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>	SITE # (ID): <u>Station 1</u>	
LATITUDE (DD): <u>32.000285</u>	LONGITUDE (DD): <u>-83.764357</u>	
LATITUDE (D,M,S):	LONGITUDE (D,M,S):	
INVESTIGATORS: <u>Anna McWhirter / David Jones</u>		
FORM COMPLETED BY: <u>Anna McWhirter</u>	DATE: <u>9-15</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordale watershed</u>	TIME: <u>945</u> <u>AM</u> PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data		
Unit used: <u>YSI MPS SN# 01F0337AC</u>		
Water Temperature: <u>25.5</u> °C	Depth (m):	
Specific Conductance: <u>145</u> (μmhos/cm)	Salinity:	
Dissolved Oxygen (mg/L): <u>4.53</u>	Dissolved Oxygen: <u>4.53</u> <u>55.3</u> %	
pH: <u>6.22</u>	Air Temperature: <u>24.48</u> °C	

In-situ Turbidity Measurement	
Unit used: <u>Hach 2100P SN# 940400005080</u>	
Turbidity: <u>17.4</u> NTU	

Name of Lab to Send Grab Samples: <u>XENW / etl</u>
Sample ID #: <u>Station 1</u> # of Bottles Collected: <u>6</u>
Parameters
<u>Total Suspended Solids</u> <u>Boo5</u> <u>Metals + Hardness</u>
Alkalinity
No preservative Half-Gallon bottle
Clean Metals (ICP/MS) Preservative: HNO ₃ , <2 pH 500mL plastic bottle
Metals blank collected at this site? Yes or <u>No</u>
Alkalinity No preservative 250 ml bottle
<u>Total Kjeldahl Nitrogen (TKN)</u> <u>Ammonia (NH₃)</u> <u>COO</u>
<u>Nitrate-Nitrite (NO₂-NO₃)</u> <u>Total Organic Carbon (TOC)</u>
Preservative H ₂ SO ₄ , pH <2 250 ml bottle
<u>Ortho-phosphate</u> <u>Total Phosphorus</u>
Preservative H ₂ SO ₄ , pH <2 250 ml bottle

Sampled by (signature): <u>[Signature]</u>	Date/Time: <u>9/15/20</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:	Date/Time Delivered or Sent to Name of Lab Here:		

DRY EVENT

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek Trib.</u>		SITE # (ID): <u>Station 2A</u>	
LATITUDE (DD): <u>31.980510</u>		LONGITUDE (DD): <u>-83.781283</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>Anna McWhirter / David Jones</u>			
FORM COMPLETED BY: <u>Anna McWhirter</u>		DATE: <u>9-15</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordele Watershed</u>		TIME: <u>1115</u> <u>AM</u> PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data	
Unit used: <u>YSI MPS SN# 01F0337AC</u>	
Water Temperature: <u>26.31</u> °C	Depth (m):
Specific Conductance: <u>116</u> (μmhos/cm)	Salinity:
Dissolved Oxygen (mg/L): <u>0.5</u>	Dissolved Oxygen: <u>6.1</u> %
pH: <u>6.09</u>	Air Temperature: <u>28.11</u> °C

In-situ Turbidity Measurement	
Unit used: <u>Hach 2100P SN# 940400005080</u>	
Turbidity: <u>12.2</u>	NTU

Name of Lab to Send Grab Samples: <u>XENCO/ETL</u>	
Sample ID #: <u>station 2A</u>	# of Bottles Collected: <u>6</u>
Parameters	
<u>Total Suspended Solids</u>	<u>1300.5</u> <u>Metals + Hardness</u>
Alkalinity	
No preservative	Half-Gallon bottle
Clean Metals (ICP/MS)	Preservative: HNO ₃ , <2 pH 500mL plastic bottle
Metals blank collected at this site? Yes or <u>No</u>	
Alkalinity	No preservative 250 ml bottle
<u>Total Kjeldahl Nitrogen (TKN)</u>	<u>Ammonia (NH₃)</u> <u>CO₂</u>
<u>Nitrate-Nitrite (NO₂-NO₃)</u>	<u>Total Organic Carbon (TOC)</u>
Preservative H ₂ SO ₄ , pH <2 250 ml bottle	
<u>Ortho-phosphate</u>	<u>Total Phosphorus</u>
Preservative H ₂ SO ₄ , pH <2 250 ml bottle	

Sampled by (signature): <u>[Signature]</u>	Date/Time: <u>9-15-20</u> <u>1115</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

DRY EVENT

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 3</u>	
LATITUDE (DD): <u>31.94493</u>		LONGITUDE (DD): <u>-83.794286</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>Anna McWhirter / David Jones</u>			
FORM COMPLETED BY: <u>Anna McWhirter</u>		DATE: <u>9-15</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordele Watershed</u>		TIME: <u>1305</u> AM <input checked="" type="checkbox"/> PM <input type="checkbox"/>	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>YSI MPS SN# 01F0337A0</u>			
Water Temperature: <u>25.42</u> °C		Depth (m):	
Specific Conductance: <u>281</u> (μmhos/cm)		Salinity:	
Dissolved Oxygen (mg/L): <u>4.23</u>		Dissolved Oxygen: <u>51.6</u> %	
pH: <u>6.62</u>		Air Temperature: <u>25.8</u> °C	

In-situ Turbidity Measurement	
Unit used: <u>Hach 2100P SN# 940400005080</u>	
Turbidity: <u>10.7</u>	NTU

Name of Lab to Send Grab Samples: <u>XENCO/ETL</u>		
Sample ID #: <u>Station 3</u>	# of Bottles Collected:	
Parameters		
<u>Total Suspended Solids</u>	<u>Boos</u>	<u>Metals & Hardness</u>
<u>Alkalinity</u>		
	No preservative	Half-Gallon bottle
<u>Clean Metals (ICP/MS)</u>	Preservative: <u>HNO₃, <2 pH</u>	<u>500mL plastic bottle</u>
Metals blank collected at this site? Yes or <u>No</u>		
<u>Alkalinity</u>	No preservative	250 ml bottle
<u>Total Kjeldahl Nitrogen (TKN)</u>	<u>Ammonia (NH₃)</u>	<u>COD</u>
<u>Nitrate-Nitrite (NO₂-NO₃)</u>	<u>Total Organic Carbon (TOC)</u>	
	Preservative <u>H₂SO₄, pH <2</u>	250 ml bottle
<u>Ortho-phosphate</u>	<u>Total Phosphorus</u>	
	Preservative <u>H₂SO₄, pH <2</u>	250 ml bottle

Sampled by (signature):	Date/Time:	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

DRY EVENT

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek Trib.</u>		SITE # (ID): <u>Station 3A</u>	
LATITUDE (DD): <u>31.974027</u>		LONGITUDE (DD): <u>-83.790603</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>Anna McWhirter / David Jones</u>			
FORM COMPLETED BY: <u>Anna McWhirter</u>		DATE: <u>9-15</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordele Watershed</u>		TIME: <u>1210</u> AM <u>PM</u>	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>YSI MSP SN# 01F0337AC</u>			
Water Temperature: <u>26.84</u> °C		Depth (m):	
Specific Conductance: <u>273</u> (μmhos/cm)		Salinity:	
Dissolved Oxygen (mg/L): <u>6.12</u>		Dissolved Oxygen: <u>76.3</u> %	
pH: <u>6.61</u>		Air Temperature: <u>25.12</u> °C	

In-situ Turbidity Measurement	
Unit used: <u>Hach 2100P SN# 940405005080</u>	
Turbidity: <u>12.9</u>	NTU

Name of Lab to Send Grab Samples: <u>XENCO/en</u>		
Sample ID #: <u>Station 3A</u>	# of Bottles Collected:	
Parameters		
<u>Total Suspended Solids</u>	<u>10005</u>	<u>Metals & Hardness</u>
<u>Alkalinity</u>	<u>No preservative</u>	<u>Half-Gallon bottle</u>
<u>Clean Metals (ICP/MS)</u>	<u>Preservative: HNO₃, <2 pH</u>	<u>500mL plastic bottle</u>
Metals blank collected at this site? Yes or <u>No</u>		
<u>Alkalinity</u>	<u>No preservative</u>	<u>250 ml bottle</u>
<u>Total Kjeldahl Nitrogen (TKN)</u>	<u>Ammonia (NH₃)</u>	<u>COD</u>
<u>Nitrate-Nitrite (NO₂-NO₃)</u>	<u>Total Organic Carbon (TOC)</u>	
<u>Preservative H₂SO₄, pH <2</u>		<u>250 ml bottle</u>
<u>Ortho-phosphate</u>	<u>Total Phosphorus</u>	
<u>Preservative H₂SO₄, pH <2</u>		<u>250 ml bottle</u>

Sampled by (signature): <u>[Signature]</u>	Date/Time: <u>9-15-20</u> <u>1210</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

DRY EVENT

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Cedar Creek</u>	SITE # (ID): <u>Station 6</u>	
LATITUDE (DD): <u>31.669894</u>	LONGITUDE (DD): <u>-83.805849</u>	
LATITUDE (D,M,S):	LONGITUDE (D,M,S):	
INVESTIGATORS: <u>Anna Murwhater / David Jones</u>		
FORM COMPLETED BY: <u>Anna Murwhater</u>	DATE: <u>9-15</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordele Watershed</u>	TIME: <u>1420</u> AM PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

NO SAMPLE - STAGNANT / NOT FLOWING
In-situ Field Chemistry Data

Unit used: <u>NA</u>	
Water Temperature: ° C	Depth (m):
Specific Conductance: (μmhos/cm)	Salinity:
Dissolved Oxygen (mg/L):	Dissolved Oxygen: %
pH:	Air Temperature: ° C

<i>In-situ Turbidity Measurement</i>	
Unit used: <u>NA</u>	
Turbidity:	NTU

Name of Lab to Send Grab Samples: <u>NA</u>
Sample ID #: <u>Station 6</u> # of Bottles Collected: <u>0</u>
Parameters
Total Suspended Solids
Alkalinity
No preservative Half-Gallon bottle
Clean Metals (ICP/MS) Preservative: HNO ₃ , <2 pH 500mL plastic bottle
Metals blank collected at this site? Yes or No
Alkalinity No preservative 250 ml bottle
Total Kjeldahl Nitrogen (TKN) Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃) Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2 250 ml bottle
Ortho-phosphate Total Phosphorus
Preservative H ₂ SO ₄ , pH <2 250 ml bottle

Sampled by (signature): <u>[Signature]</u>	Date/Time: <u>9-15-20 1420</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

DRY EVENT - NO FLOW (stagnant)

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 1</u>	
LATITUDE (DD): <u>32.000285</u>		LONGITUDE (DD): <u>-83.764537</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>MW</u>			
FORM COMPLETED BY: <u>MW</u>		DATE: <u>10-8-20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordele Watershed</u>		TIME: <u>0800</u> <u>AM</u> PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data	
Unit used: <u>SmartTroll</u>	
Water Temperature: <u>13.59</u> °C	Depth (m):
Specific Conductance: <u>195.64</u> (μmhos/cm)	Salinity:
Dissolved Oxygen (mg/L): <u>6.46</u>	Dissolved Oxygen: %
pH: <u>7.48</u>	Air Temperature: <u>63°F</u> °C

In-situ Turbidity Measurement	
Unit used: <u>HACH 940400005080</u>	
Turbidity: <u>8.72</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>	
Sample ID #: <u>Station 1</u>	# of Bottles Collected: <u>2</u>
Parameters	<u>fecal + E. coli</u>
Total Suspended Solids	
Alkalinity	
No preservative	
Clean Metals (ICP/MS)	Half-Gallon bottle
Preservative: HNO ₃ , <2 pH	500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity	250 ml bottle
No preservative	
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2	
Ortho-phosphate	250 ml bottle
Total Phosphorus	
Preservative H ₂ SO ₄ , pH <2	
250 ml bottle	

Sampled by (signature): <u>Melissa Norris</u>	Date/Time: <u>10-8-20</u> <u>0800</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 2A</u>	
LATITUDE (DD): <u>31.980510</u>		LONGITUDE (DD): <u>-83.781283</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>MW</u>			
FORM COMPLETED BY: <u>MW</u>		DATE: <u>10-8-20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordele Watershed</u>		TIME: <u>0825</u> AM PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>Smar Troll</u>			
Water Temperature: <u>13.46</u> °C		Depth (m):	
Specific Conductance: <u>165.84</u> (μmhos/cm)		Salinity:	
Dissolved Oxygen (mg/L): <u>2.71</u>		Dissolved Oxygen: <u>26.07</u> %	
pH: <u>7.30</u>		Air Temperature: <u>64°F</u> °C	

In-situ Turbidity Measurement	
Unit used: <u>Hach 940400005080</u>	
Turbidity: <u>7.22</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>	
Sample ID #: <u>Station 2A</u>	# of Bottles Collected: <u>2</u>
Parameters <u>Fecal + E. coli</u>	
Total Suspended Solids	
Alkalinity	
No preservative	
Clean Metals (ICP/MS)	Preservative: <u>HNO₃, <2 pH</u> Half-Gallon bottle
Metals blank collected at this site? Yes or No	
Alkalinity	No preservative 250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2 250 ml bottle	
Ortho-phosphate	Total Phosphorus
Preservative H ₂ SO ₄ , pH <2 250 ml bottle	

Sampled by (signature): <u>Melissa Norris</u>	Date/Time: <u>10-8-20 0825</u>	Team Leader/Received (signature):	Date/Time:
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Date/Time Delivered to Name of Lab Here:	Date/Time Delivered or Sent to Name of Lab Here:
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In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 3</u>	
LATITUDE (DD): <u>31.974493</u>		LONGITUDE (DD): <u>-83.794286</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>MW</u>			
FORM COMPLETED BY: <u>MW</u>		DATE: <u>10-8-20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordele Watershed</u>		TIME: <u>0910</u> AM PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>Smor Troll</u>			
Water Temperature: <u>14.06</u> °C		Depth (m):	
Specific Conductance: <u>207.32</u> (μmhos/cm)		Salinity:	
Dissolved Oxygen (mg/L): <u>7.05</u>		Dissolved Oxygen: <u>68.74</u> %	
pH: <u>7.48</u>		Air Temperature: <u>68°F</u> °C	

In-situ Turbidity Measurement	
Unit used: <u>Hach 940400005080</u>	
Turbidity: <u>5.50</u>	NTU

Name of Lab to Send Grab Samples: <u>Hach 940400005080 ETL</u>	
Sample ID #: <u>Station 3</u>	# of Bottles Collected: <u>2</u>
Parameters <u>Fecal + E. coli</u>	
Total Suspended Solids	
Alkalinity	
No preservative	
Clean Metals (ICP/MS)	Half-Gallon bottle
Preservative: <u>HNO₃, <2 pH</u>	500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity	No preservative
250 ml bottle	
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2	
Ortho-phosphate	250 ml bottle
Total Phosphorus	
Preservative H ₂ SO ₄ , pH <2	
250 ml bottle	

Sampled by (signature): <u>Melissa Norris</u>	Date/Time: <u>10-8-20 0910</u>	Team Leader/Received (signature):	Date/Time:
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Date/Time Delivered to Name of Lab Here:	Date/Time Delivered or Sent to Name of Lab Here:
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In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 3A</u>	
LATITUDE (DD): <u>31.974027</u>		LONGITUDE (DD): <u>-83.790603</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>MW</u>			
FORM COMPLETED BY: <u>MW</u>		DATE: <u>10-8-20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordele Watershed</u>		TIME: <u>0845</u> AM PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>Smor Troll</u>			
Water Temperature: <u>14.26</u> °C		Depth (m):	
Specific Conductance: <u>133.29</u> (μmhos/cm)		Salinity:	
Dissolved Oxygen (mg/L): <u>4.57</u>		Dissolved Oxygen: <u>64.39</u> %	
pH: <u>7.03</u>		Air Temperature: <u>66</u> °F	

In-situ Turbidity Measurement	
Unit used: <u>Hach 940400005080</u>	
Turbidity: <u>8.55</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>			
Sample ID #: <u>Station 3A</u>		# of Bottles Collected: <u>2</u>	
Parameters <u>fecal + E. coli</u>			
Total Suspended Solids			
Alkalinity			
No preservative		Half-Gallon bottle	
Clean Metals (ICP/MS)	Preservative: <u>HNO₃, <2 pH</u>	500mL plastic bottle	
Metals blank collected at this site? Yes or No			
Alkalinity	No preservative	250 ml bottle	
Total Kjeldahl Nitrogen (TKN)		Ammonia (NH ₃)	
Nitrate-Nitrite (NO ₂ -NO ₃)		Total Organic Carbon (TOC)	
Preservative H ₂ SO ₄ , pH <2		250 ml bottle	
Ortho-phosphate		Total Phosphorus	
Preservative H ₂ SO ₄ , pH <2		250 ml bottle	

Sampled by (signature): <u>Melissa Norvis</u>	Date/Time: <u>10-8-20</u> <u>0845</u>	Team Leader/Received (signature):	Date/Time:
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Date/Time Delivered to Name of Lab Here:	Date/Time Delivered or Sent to Name of Lab Here:
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In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Cedar Creek</u>		SITE # (ID): <u>Station 6</u>	
LATITUDE (DD): <u>31.909894</u>		LONGITUDE (DD): <u>-83.805849</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>MW</u>			
FORM COMPLETED BY: <u>MW</u>		DATE: <u>10-8-20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordele Watershed</u>		TIME: <u>0945</u> AM PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>Smar Troll</u>			
Water Temperature: <u>13.88</u> °C		Depth (m):	
Specific Conductance: <u>97.92</u> (μmhos/cm)		Salinity:	
Dissolved Oxygen (mg/L): <u>2.92</u>		Dissolved Oxygen: <u>28.30</u> %	
pH: <u>7.32</u>		Air Temperature: <u>68°F</u> °C	

In-situ Turbidity Measurement	
Unit used: <u>Hach 940400005080</u>	
Turbidity: <u>10.6</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>			
Sample ID #: <u>Station 6</u>		# of Bottles Collected: <u>2</u>	
Parameters <u>fecal + E. coli</u>			
Total Suspended Solids			
Alkalinity			
No preservative			
Clean Metals (ICP/MS)		Preservative: <u>HNO₃, <2 pH</u>	
		Half-Gallon bottle 500mL plastic bottle	
Metals blank collected at this site? Yes or No			
Alkalinity		No preservative	
		250 ml bottle	
Total Kjeldahl Nitrogen (TKN)		Ammonia (NH ₃)	
Nitrate-Nitrite (NO ₂ -NO ₃)		Total Organic Carbon (TOC)	
		Preservative H ₂ SO ₄ , pH <2	
Ortho-phosphate		250 ml bottle	
		Total Phosphorus	
		Preservative H ₂ SO ₄ , pH <2	
		250 ml bottle	

Sampled by (signature): <u>Meissa Norir</u>	Date/Time: <u>10-8-20</u> <u>0945</u>	Team Leader/Received (signature):	Date/Time:
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Date/Time Delivered to Name of Lab Here:	Date/Time Delivered or Sent to Name of Lab Here:
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In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 1</u>	
LATITUDE (DD): <u>32.000285</u>		LONGITUDE (DD): <u>-83.764537</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>MW, DJ</u>			
FORM COMPLETED BY: <u>MW</u>		DATE: <u>10-15-20</u>	REASON FOR SURVEY:
PROJECT: <u>Cordell Watershed</u>		TIME: <u>0830</u> AM PM	<u>WPP</u>

DRY EVENT

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>Smar Troll</u>			
Water Temperature: <u>13.84</u>	° C	Depth (m):	
Specific Conductance: <u>185.01</u>	(μmhos/cm)	Salinity:	
Dissolved Oxygen (mg/L): <u>5.39</u>		Dissolved Oxygen: <u>52.00</u>	%
pH: <u>7.65</u>		Air Temperature: <u>72°F</u>	° C

In-situ Turbidity Measurement	
Unit used: <u>Hanaka</u>	
Turbidity: <u>5.19</u>	NTU

Name of Lab to Send Grab Samples: <u>XENCO, ETL</u>	
Sample ID #: <u>Station 1</u>	# of Bottles Collected: <u>6/2</u>
Parameters <u>+ fecal + E. coli</u>	
Total Suspended Solids	
Alkalinity	
No preservative Half-Gallon bottle	
Clean Metals (ICP/MS)	Preservative: <u>HNO₃, <2 pH</u> 500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity	No preservative 250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative <u>H₂SO₄, pH <2</u> 250 ml bottle	
Ortho-phosphate	Total Phosphorus
Preservative <u>H₂SO₄, pH <2</u> 250 ml bottle	

Sampled by (signature): <u>Melissa Norris</u>	Date/Time: <u>10-15-20</u>	Team Leader/Received (signature):	Date/Time:
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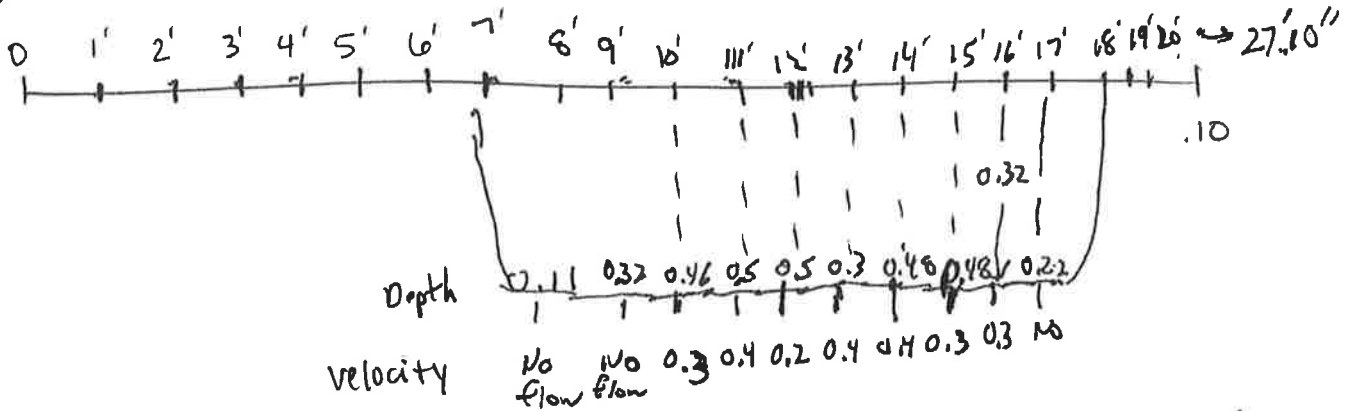
Date/Time Delivered to Name of Lab Here:	Date/Time Delivered or Sent to Name of Lab Here:
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Cordele Watershed Station 1

10/15/20 Dry Event

LB

RB



$\begin{array}{r} 0.46 \text{ ft}^2 \\ \times .3 \text{ ft/sec} \\ \hline 0.138 \text{ cfs} \end{array}$	$\begin{array}{r} 0.50 \text{ ft}^2 \\ \times .4 \text{ ft/sec} \\ \hline 0.2 \text{ cfs} \end{array}$	$\begin{array}{r} 0.5 \text{ ft}^2 \\ \times .2 \text{ ft/sec} \\ \hline 0.1 \text{ cfs} \end{array}$	$\begin{array}{r} 0.3 \text{ ft}^2 \\ \times .4 \text{ ft/sec} \\ \hline 0.12 \text{ cfs} \end{array}$	$\begin{array}{r} 0.48 \text{ ft}^2 \\ \times .4 \text{ ft/sec} \\ \hline 0.192 \text{ cfs} \end{array}$	$\begin{array}{r} 0.48 \text{ ft}^2 \\ \times .3 \text{ ft/sec} \\ \hline 0.144 \text{ cfs} \end{array}$	$\begin{array}{r} 0.32 \text{ ft}^2 \\ \times .3 \text{ ft/sec} \\ \hline 0.096 \text{ cfs} \end{array}$
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flow at Station 1:
0.99 cfs

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 2A</u>	
LATITUDE (DD): <u>31.980510</u>		LONGITUDE (DD): <u>-83.781283</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>MN, DJ</u>			
FORM COMPLETED BY: <u>MW</u>		DATE: <u>10-15-20</u>	REASON FOR SURVEY:
PROJECT: <u>Cordele Watershed</u>		TIME: <u>0910</u> AM PM	<u>WPP</u>

DRY EVENT

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>Smar Troll</u>			
Water Temperature: <u>14.01</u> °C	Depth (m):		
Specific Conductance: <u>120.84</u> (μmhos/cm)	Salinity:		
Dissolved Oxygen (mg/L): <u>5.93</u>	Dissolved Oxygen: <u>0.58</u> %		
pH: <u>7.49</u>	Air Temperature: <u>72°F</u> / °C		

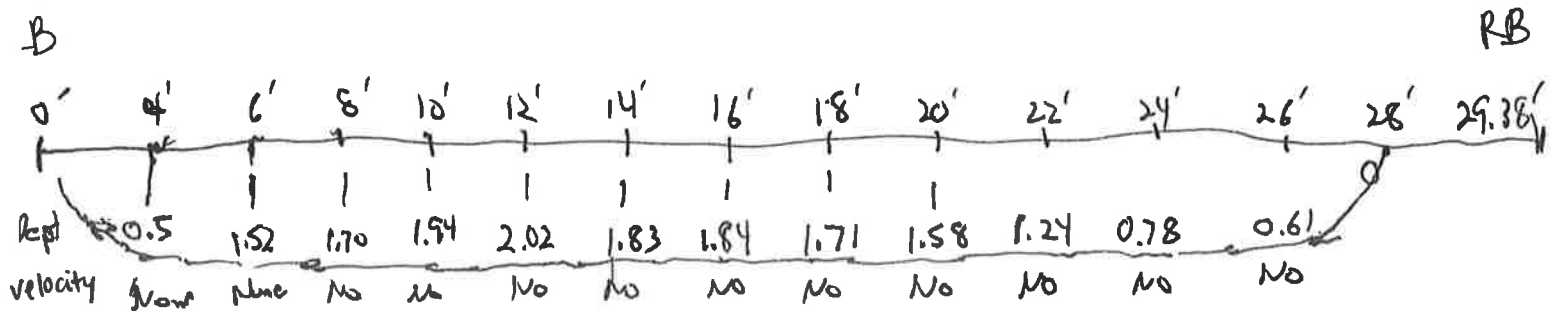
In-situ Turbidity Measurement	
Unit used: <u>Hanaha</u>	
Turbidity: <u>8.16</u>	NTU

Name of Lab to Send Grab Samples: <u>XENCO / ETL</u>	
Sample ID #: <u>Station 2A</u>	# of Bottles Collected: <u>6 / 2</u>
Parameters <u>+ fecal & E. coli</u>	
Total Suspended Solids	
Alkalinity	
No preservative Half-Gallon bottle	
Clean Metals (ICP/MS) Preservative: HNO ₃ , <2 pH 500mL plastic bottle	
Metals blank collected at this site? Yes or No	
Alkalinity No preservative 250 ml bottle	
Total Kjeldahl Nitrogen (TKN) Ammonia (NH ₃)	
Nitrate-Nitrite (NO ₂ -NO ₃) Total Organic Carbon (TOC)	
Preservative H ₂ SO ₄ , pH <2 250 ml bottle	
Ortho-phosphate Total Phosphorus	
Preservative H ₂ SO ₄ , pH <2 250 ml bottle	

Sampled by (signature): <u>Melissa Novis</u>	Date/Time: <u>10-15-20</u>	Team Leader/Received (signature):	Date/Time:
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Date/Time Delivered to Name of Lab Here:	Date/Time Delivered or Sent to Name of Lab Here:
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Cordele Watershed
 Station 2A
 10/15/20 Dry Event



No measurable
 flow

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>	SITE # (ID): <u>Station 3</u>	
LATITUDE (DD): <u>31.974493</u>	LONGITUDE (DD): <u>-83.794286</u>	
LATITUDE (D,M,S):	LONGITUDE (D,M,S):	
INVESTIGATORS: <u>MW, DJ</u>		
FORM COMPLETED BY: <u>MW</u>	DATE: <u>10-15-20</u>	REASON FOR SURVEY:
PROJECT: <u>Cordelle Watershed</u>	TIME: <u>0935</u> AM PM	<u>WPP</u>

DRY EVENT

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

<i>In-situ</i> Field Chemistry Data			
Unit used: <u>Smar Troll</u>			
Water Temperature: <u>14.80</u> °C	Depth (m):		
Specific Conductance: <u>211.30</u> (μmhos/cm)	Salinity:		
Dissolved Oxygen (mg/L): <u>7.14</u>	Dissolved Oxygen: <u>70.77</u> %		
pH: <u>7.50</u>	Air Temperature: <u>79°C</u> °C		

<i>In-situ</i> Turbidity Measurement	
Unit used: <u>Hanaha</u>	
Turbidity: <u>4.66</u>	NTU

Name of Lab to Send Grab Samples: <u>XENCO / ETL</u>	
Sample ID #: <u>Station 3</u>	# of Bottles Collected: <u>6/2</u>
Parameters <u>fecal + E. coli 0935</u>	
Total Suspended Solids	<u>Cum. Samples 1150</u>
Alkalinity	
No preservative	Half-Gallon bottle
Clean Metals (ICP/MS)	Preservative: <u>HNO₃, <2 pH</u> 500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity	No preservative 250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative <u>H₂SO₄, pH <2</u>	250 ml bottle
Ortho-phosphate	Total Phosphorus
Preservative <u>H₂SO₄, pH <2</u>	250 ml bottle

Sampled by (signature): <u>Mussa Norris</u>	Date/Time: <u>10-15-20</u>	Team Leader/Received (signature):	Date/Time:
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Date/Time Delivered to Name of Lab Here:	Date/Time Delivered or Sent to Name of Lab Here:
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Cordelle Watershed

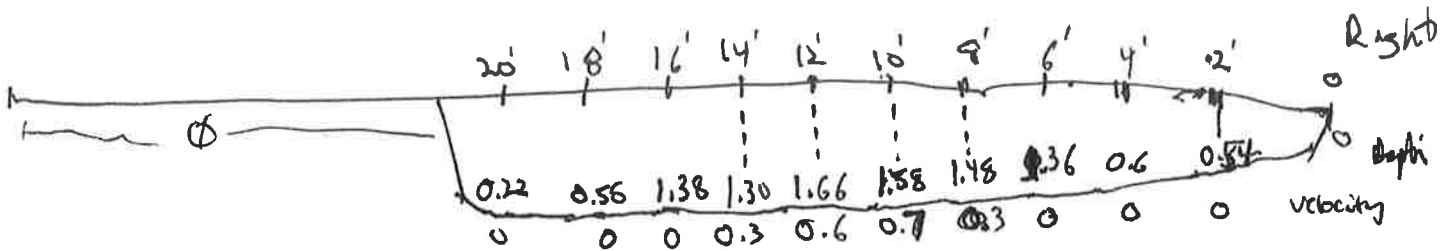
Station 3

10/15/20 Dry Event

LB

36.9

RB



2.6 ft ²	3.32 ft ²	3.16 ft ²	2.96 ft ²
x .3 ft/sec	x .6 ft/sec	x .7 ft/sec	x .3 ft/sec
0.78 cfs	1.992 cfs	2.212 cfs	0.888 cfs

Flow at Station 3

5.872 cfs

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>station 3A</u>	
LATITUDE (DD): <u>31.974027</u>		LONGITUDE (DD): <u>- 83.790603</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>NW, DS</u>			
FORM COMPLETED BY: <u>NW</u>		DATE: <u>10-15-20</u>	REASON FOR SURVEY:
PROJECT: <u>Cordell Watershed</u>		TIME: <u>0925</u> AM PM	<u>WPP</u>

DRY EVENT

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

<i>In-situ</i> Field Chemistry Data			
Unit used: <u>Smar Troll</u>			
Water Temperature: <u>15.56</u>	° C	Depth (m):	
Specific Conductance: <u>184.58</u>	(μmhos/cm)	Salinity:	
Dissolved Oxygen (mg/L): <u>7.32</u>		Dissolved Oxygen: <u>73.88</u>	%
pH: <u>7.59</u>		Air Temperature: <u>79°F</u>	° C

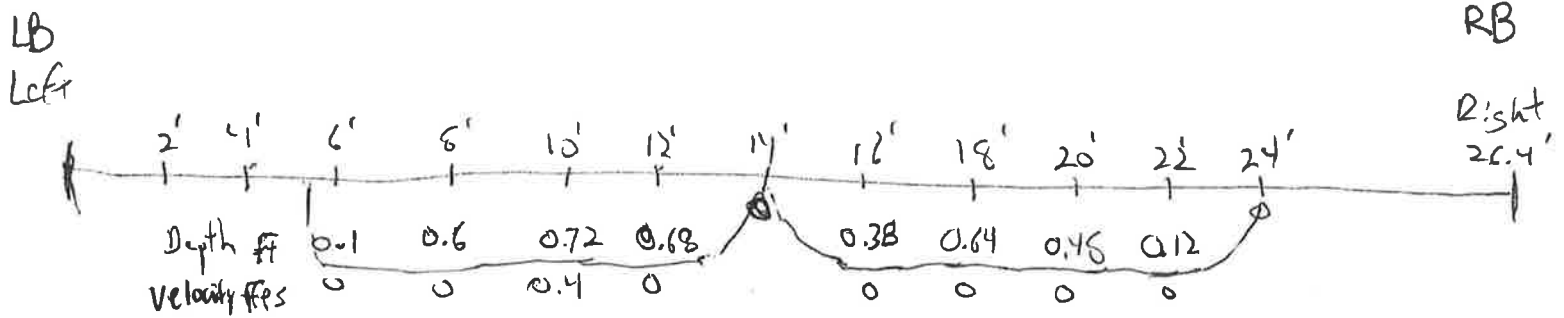
<i>In-situ</i> Turbidity Measurement	
Unit used: <u>Hanaha</u>	
Turbidity: <u>72.0</u>	NTU

Name of Lab to Send Grab Samples: <u>XENCO, ETL</u>	
Sample ID #: <u>Station 3A</u>	# of Bottles Collected: <u>6/2</u>
Parameters <u>Fecal + E-Coli 0925</u>	
Total Suspended Solids	Chem Samples: <u>1215</u>
Alkalinity	
No preservative	Half-Gallon bottle
Clean Metals (ICP/MS)	Preservative: <u>HNO₃, <2 pH</u>
Metals blank collected at this site? Yes or No	500mL plastic bottle
Alkalinity	No preservative
250 ml bottle	
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative <u>H₂SO₄, pH <2</u>	250 ml bottle
Ortho-phosphate	Total Phosphorus
Preservative <u>H₂SO₄, pH <2</u>	250 ml bottle

Sampled by (signature): <u>Melissa Novis</u>	Date/Time: <u>10-15-20</u>	Team Leader/Received (signature):	Date/Time:
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Date/Time Delivered to Name of Lab Here:	Date/Time Delivered or Sent to Name of Lab Here:
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Cordele Watershed
 Station 3A
 10/15/20 Dry Event



$$\begin{array}{r}
 1.44 \text{ ft}^2 \\
 \times .4 \text{ ft/sec} \\
 \hline
 0.576 \text{ cfs}
 \end{array}$$

Flow at Station 3A
 0.576 cfs

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: Cedar Creek	SITE # (ID): Station 6	
LATITUDE (DD): 31.909894	LONGITUDE (DD): -83.805849	
LATITUDE (D,M,S):	LONGITUDE (D,M,S):	
INVESTIGATORS: MW, DS		
FORM COMPLETED BY: MW	DATE: 10-15-20	REASON FOR SURVEY: WPP
PROJECT: Cordelle Watershed	TIME: 0950 AM PM	

DRY EVENT

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: Smar Troll			
Water Temperature: 13.84 °C	Depth (m):		
Specific Conductance: 97.31 (μmhos/cm)	Salinity:		
Dissolved Oxygen (mg/L): 3.18	Dissolved Oxygen: 31.18 %		
pH: 7.14	Air Temperature: 73°F		°C

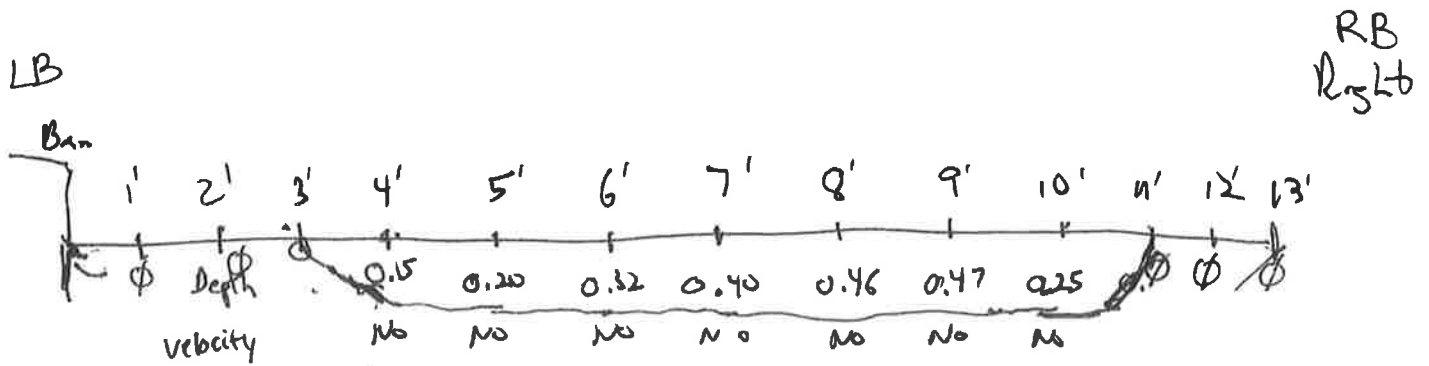
In-situ Turbidity Measurement	
Unit used: Hanaha	
Turbidity: 9.45	NTU

Name of Lab to Send Grab Samples: Xenco / ETL		
Sample ID #: Station 6	# of Bottles Collected: 16/2	
Parameters + fecal & E. coli		
Total Suspended Solids		
Alkalinity		
No preservative Half-Gallon bottle		
Clean Metals (ICP/MS)	Preservative: HNO ₃ , <2 pH	500mL plastic bottle
Metals blank collected at this site? Yes or No		
Alkalinity	No preservative	250 ml bottle
Total Kjeldahl Nitrogen (TKN)		Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)		Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2		250 ml bottle
Ortho-phosphate		Total Phosphorus
Preservative H ₂ SO ₄ , pH <2		250 ml bottle

Sampled by (signature): Mussa Norris	Date/Time: 10-15-20	Team Leader/Received (signature):	Date/Time:
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Date/Time Delivered to Name of Lab Here:	Date/Time Delivered or Sent to Name of Lab Here:
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Cordele Watershed
Station 6
10/15/20 Dry Event



No measurable flow

In-situ and Grab Sample Water Chemistry Field Sheet

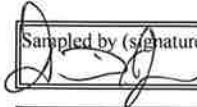
STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 1</u>	
LATITUDE (DD): <u>32.000285</u>		LONGITUDE (DD): <u>-83.764537</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>David Jones</u>			
FORM COMPLETED BY: <u>DS</u>		DATE: <u>10-22-20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordale Watershed</u>		TIME: <u>0815</u> <u>AM</u> PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>In-situ</u>		SN # <u>566218</u>	
Water Temperature: <u>11.92</u> °C	Depth (m): <u>—</u>		
Specific Conductance: <u>233.92</u> (μmhos/cm)	Salinity: <u>—</u>		
Dissolved Oxygen (mg/L): <u>7.59</u>	Dissolved Oxygen: <u>42.58</u> %		
pH: <u>7.72</u>	Air Temperature: <u>69°F / 20.55</u> °C		

In-situ Turbidity Measurement	
Unit used: <u>Hanna 98703</u>	S/N # <u>08306491</u>
Turbidity: <u>4.43</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>	
Sample ID #: <u>Station 1</u>	# of Bottles Collected: <u>2</u>
Parameters	
Total Suspended Solids	<u>E. Coli / Fecal Coliforms</u>
Alkalinity	
No preservative	Half-Gallon bottle
Clean Metals (ICP/MS)	Preservative: <u>HNO₃, <2 pH</u> 500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity	No preservative 250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2	250 ml bottle
Ortho-phosphate	Total Phosphorus
Preservative H ₂ SO ₄ , pH <2	250 ml bottle

Sampled by (signature): 	Date/Time: <u>10-22-20</u> <u>0815</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 2A</u>	
LATITUDE (DD): <u>31.980510</u>		LONGITUDE (DD): <u>-83.781283</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>David Jones</u>			
FORM COMPLETED BY: <u>DAS</u>		DATE: <u>10-22-20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordale Watershed</u>		TIME: <u>0845</u> <u>AM</u> PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data	
Unit used: <u>In-situ</u>	SN # <u>566218</u>
Water Temperature: <u>11.59</u> °C	Depth (m): <u>—</u>
Specific Conductance: <u>122.13</u> (μmhos/cm)	Salinity: <u>—</u>
Dissolved Oxygen (mg/L): <u>1.39</u>	Dissolved Oxygen: <u>12.83</u> %
pH: <u>7.64</u>	Air Temperature: <u>68°F / 20</u> °C

In-situ Turbidity Measurement	
Unit used: <u>Hanna H5 98703</u>	SN # <u>08306491</u>
Turbidity: <u>6.69</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>	
Sample ID #: <u>Station 2A</u>	# of Bottles Collected: <u>2</u>
Parameters	
Total Suspended Solids	<u>E. Coli / Fecal Coliforms</u>
Alkalinity	
No preservative	Half-Gallon bottle
Clean Metals (ICP/MS)	Preservative: <u>HNO₃, <2 pH</u> 500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity	No preservative 250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2	250 ml bottle
Ortho-phosphate	Total Phosphorus
Preservative H ₂ SO ₄ , pH <2	250 ml bottle

Sampled by (signature): <u>[Signature]</u>	Date/Time: <u>10-22-20</u> <u>0845</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 3</u>	
LATITUDE (DD): <u>31.974493</u>		LONGITUDE (DD): <u>-83.794286</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>David Jones</u>			
FORM COMPLETED BY: <u>DJS</u>		DATE: <u>10-22-20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordale Watershed</u>		TIME: <u>0915</u> <u>AM</u> PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data	
Unit used: <u>In-situ</u>	<u>SN# 566218</u>
Water Temperature: <u>12.33</u> °C	Depth (m): <u>—</u>
Specific Conductance: <u>267.39</u> (μmhos/cm)	Salinity: <u>—</u>
Dissolved Oxygen (mg/L): <u>6.58</u>	Dissolved Oxygen: <u>61.55</u> %
pH: <u>7.86</u>	Air Temperature: <u>70</u> °C

In-situ Turbidity Measurement	
Unit used: <u>Hanna HI 98703</u>	<u>SN# 08306491</u>
Turbidity: <u>3.39</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>	
Sample ID #: <u>Station 3</u>	# of Bottles Collected: <u>2</u>
Parameters	
Total Suspended Solids	<u>E. Coli / Fecal Coliforms</u>
Alkalinity	
No preservative	Half-Gallon bottle
Clean Metals (ICP/MS)	Preservative: <u>HNO₃, <2 pH</u>
	500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity	No preservative 250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2	250 ml bottle
Ortho-phosphate	Total Phosphorus
Preservative H ₂ SO ₄ , pH <2	250 ml bottle

Sampled by (signature): <u>[Signature]</u>	Date/Time: <u>10-22-20 0915</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gun Creek</u>		SITE # (ID): <u>Station 3A</u>	
LATITUDE (DD): <u>31.974027</u>		LONGITUDE (DD): <u>-83.790603</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>David Jones</u>			
FORM COMPLETED BY: <u>DJD</u>		DATE: <u>10-22-20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordele Watershed</u>		TIME: <u>0900</u> <u>AM</u> PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>In-situ</u>		SN# <u>566218</u>	
Water Temperature: <u>12.52</u> °C		Depth (m): <u>—</u>	
Specific Conductance: <u>302.02</u> (μmhos/cm)		Salinity: <u>—</u>	
Dissolved Oxygen (mg/L): <u>6.30</u>		Dissolved Oxygen: <u>59.20</u> %	
pH: <u>7.60</u>		Air Temperature: <u>68°F / 20</u> °C	

In-situ Turbidity Measurement	
Unit used: <u>Hanna HI 98703</u>	SN# <u>0830691</u>
Turbidity: <u>6.55</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>	
Sample ID #: <u>Station 3A</u>	# of Bottles Collected: <u>2</u>
Parameters	
Total Suspended Solids	<u>E. Coli / Fecal Coliforms</u>
Alkalinity	
No preservative	Half-Gallon bottle
Clean Metals (ICP/MS)	Preservative: <u>HNO₃, <2 pH</u> 500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity	No preservative 250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2	250 ml bottle
Ortho-phosphate	Total Phosphorus
Preservative H ₂ SO ₄ , pH <2	250 ml bottle

Sampled by (signature): <u>[Signature]</u>	Date/Time: <u>10-22-20 0900</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Cedar Creek</u>		SITE # (ID): <u>Station 6</u>	
LATITUDE (DD): <u>31.909894</u>		LONGITUDE (DD): <u>-83.805849</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>David Jones</u>			
FORM COMPLETED BY: <u>DJS</u>		DATE: <u>10-23-20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordele Watershed</u>		TIME: <u>0940</u> (<u>AM</u>) PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>In-situ</u>		SN# <u>566218</u>	
Water Temperature: <u>—</u>	° C	Depth (m): <u>—</u>	
Specific Conductance: <u>—</u>	(μmhos/cm)	Salinity: <u>—</u>	
Dissolved Oxygen (mg/L): <u>—</u>		Dissolved Oxygen: <u>—</u>	%
pH: <u>—</u>		Air Temperature: <u>—</u>	° C

In-situ Turbidity Measurement	
Unit used: <u>Hanna HI 98703</u>	SN# <u>08306491</u>
Turbidity: <u>—</u>	NTU

Name of Lab to Send Grab Samples: <u>None</u>	
Sample ID #:	# of Bottles Collected: <u>0</u>
Parameters	
Total Suspended Solids	<u>No Flowing Water - Stagnant</u>
Alkalinity	
	No preservative Half-Gallon bottle
Clean Metals (ICP/MS)	Preservative: HNO ₃ , <2 pH 500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity	No preservative 250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
	Preservative H ₂ SO ₄ , pH <2 250 ml bottle
Ortho-phosphate	Total Phosphorus
	Preservative H ₂ SO ₄ , pH <2 250 ml bottle

Sampled by (signature): <u>[Signature]</u>	Date/Time: <u>10-22-20 0940</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet


STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 1</u>	
LATITUDE (DD): <u>32.000285</u>		LONGITUDE (DD): <u>-83.764537</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>David Jones</u>			
FORM COMPLETED BY: <u>DAS</u>		DATE: <u>10-29-20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordale Watershed</u>		TIME: <u>0810</u> <u>AM</u> PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>YSI 556 MPS SN# 01F0337AL</u>			
Water Temperature: <u>22.84</u> °C		Depth (m):	
Specific Conductance: <u>384</u> (μmhos/cm)		Salinity:	
Dissolved Oxygen (mg/L): <u>3.69</u>		Dissolved Oxygen: <u>42.9</u> %	
pH: <u>7.06</u>		Air Temperature: <u>23.88</u> °C	

In-situ Turbidity Measurement	
Unit used: <u>Hanna HI 98703 SN# 08306491</u>	
Turbidity: <u>4.89</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>	
Sample ID #: <u>Station 1</u>	# of Bottles Collected: <u>2</u>
Parameters	
Total Suspended Solids	<u>E. coli / Fecal Coliforms</u>
Alkalinity	
No preservative	Half-Gallon bottle
Clean Metals (ICP/MS)	Preservative: <u>HNO₃, <2 pH</u>
	500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity	No preservative 250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2	250 ml bottle
Ortho-phosphate	Total Phosphorus
Preservative H ₂ SO ₄ , pH <2	250 ml bottle

Sampled by (signature): 	Date/Time: <u>10-29-20</u> <u>0810</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gum Creek</u>		SITE # (ID): <u>Station 2A</u>	
LATITUDE (DD): <u>31.980510</u>		LONGITUDE (DD): <u>-83.781283</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>David Jones</u>			
FORM COMPLETED BY: <u>[Signature]</u>		DATE: <u>10-29-20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordele Watershed</u>		TIME: <u>0830</u> <u>(AM)</u> PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>YSI 556 MPS</u> SN# <u>01F0337AC</u>			
Water Temperature: <u>22.53</u> °C		Depth (m): <u>—</u>	
Specific Conductance: <u>250</u> (μmhos/cm)		Salinity: <u>—</u>	
Dissolved Oxygen (mg/L): <u>0.67</u>		Dissolved Oxygen: <u>6.6</u> %	
pH: <u>6.62</u>		Air Temperature: <u>23.88</u> °C	

In-situ Turbidity Measurement	
Unit used: <u>Hanna HI 98703</u> SN# <u>08306491</u>	
Turbidity: <u>7.17</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>	
Sample ID #: <u>Station 2A</u>	# of Bottles Collected: <u>2</u>
Parameters	
Total Suspended Solids	<u>E. coli / Fecal Coliforms</u>
Alkalinity	
No preservative	Half-Gallon bottle
Clean Metals (ICP/MS)	Preservative: <u>HNO₃, <2 pH</u> 500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity	No preservative 250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2	250 ml bottle
Ortho-phosphate	Total Phosphorus
Preservative H ₂ SO ₄ , pH <2	250 ml bottle

Sampled by (signature): <u>[Signature]</u>	Date/Time: <u>10-29-20</u> <u>0830</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

STREAM NAME: <u>Gun Creek</u>		SITE # (ID): <u>Station 3</u>	
LATITUDE (DD): <u>31.974493</u>		LONGITUDE (DD): <u>-83.794286</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>David Jones</u>			
FORM COMPLETED BY: <u>DJS</u>		DATE: <u>10-29-20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cardale Watershed</u>		TIME: <u>0850</u> <u>AM</u> PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>YSI 556 MPS</u> SN#			
Water Temperature: <u>23.09</u> °C		Depth (m): <u>—</u>	
Specific Conductance: <u>373</u> (μmhos/cm)		Salinity: <u>—</u>	
Dissolved Oxygen (mg/L): <u>3.65</u>		Dissolved Oxygen: <u>42.7</u> %	
pH: <u>7.08</u>		Air Temperature: <u>23.88</u> °C	

In-situ Turbidity Measurement	
Unit used: <u>Hanna HI 98703</u> SN# <u>08306491</u>	
Turbidity: <u>7.11</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>	
Sample ID #: <u>Station 3</u>	# of Bottles Collected: <u>2</u>
Parameters	
Total Suspended Solids	<u>E. Coli / Fecal Coliforms</u>
Alkalinity	
No preservative	Half-Gallon bottle
Clean Metals (ICP/MS)	Preservative: <u>HNO₃, <2 pH</u> 500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity	No preservative 250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2	250 ml bottle
Ortho-phosphate	Total Phosphorus
Preservative H ₂ SO ₄ , pH <2	250 ml bottle

Sampled by (signature): <u>[Signature]</u>	Date/Time: <u>10-29-20 0850</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet


STREAM NAME: <u>Gunn Creek</u>		SITE # (ID): <u>Station 3A</u>	
LATITUDE (DD): <u>31.994027</u>		LONGITUDE (DD): <u>-83.790603</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>David Jones</u>			
FORM COMPLETED BY: <u>DAJ</u>		DATE: <u>10-29-20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordele Watershed</u>		TIME: <u>0840</u> <u>AM</u> PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data	
Unit used: <u>YSI 556 MPS SN# 01F0337 AC</u>	
Water Temperature: <u>23.70</u> °C	Depth (m):
Specific Conductance: <u>349</u> (μmhos/cm)	Salinity:
Dissolved Oxygen (mg/L): <u>4.30</u>	Dissolved Oxygen: <u>50.9</u> %
pH: <u>7.23</u>	Air Temperature: <u>23.88</u> °C

In-situ Turbidity Measurement	
Unit used: <u>Hanna HI 98703 SN# 08306491</u>	
Turbidity: <u>20.7</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>	
Sample ID #: <u>Station 3A</u>	# of Bottles Collected: <u>2</u>
Parameters	
Total Suspended Solids	<u>E. coli / Fecal Coliforms</u>
Alkalinity	
No preservative	Half-Gallon bottle
Clean Metals (ICP/MS)	Preservative: <u>HNO₃, <2 pH</u>
	500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity	No preservative 250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2	250 ml bottle
Ortho-phosphate	Total Phosphorus
Preservative H ₂ SO ₄ , pH <2	250 ml bottle

Sampled by (signature): 	Date/Time: <u>10-29-20</u> <u>0840</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

In-situ and Grab Sample Water Chemistry Field Sheet

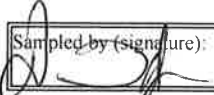
STREAM NAME: <u>Cedar Creek</u>		SITE # (ID): <u>Station 6</u>	
LATITUDE (DD): <u>31.909894</u>		LONGITUDE (DD): <u>-83.805849</u>	
LATITUDE (D,M,S):		LONGITUDE (D,M,S):	
INVESTIGATORS: <u>David Jones</u>			
FORM COMPLETED BY: <u>DAJ</u>		DATE: <u>10-29-20</u>	REASON FOR SURVEY: <u>WPP</u>
PROJECT: <u>Cordele Watershed</u>		TIME: <u>0910</u> <u>AM</u> PM	

Depth Calibration for Water Quality Multiprobe				
Initial Reading	Adjust To	Temperature	Final Reading	Δ Initial to Final

In-situ Field Chemistry Data			
Unit used: <u>YSI 556 MPS</u> <u>SN# 01F0337 AC</u>			
Water Temperature: <u>22.80</u> °C		Depth (m): <u>—</u>	
Specific Conductance: <u>225</u> (μmhos/cm)		Salinity: <u>—</u>	
Dissolved Oxygen (mg/L): <u>2.23</u>		Dissolved Oxygen: <u>25.9</u> %	
pH: <u>6.17</u>		Air Temperature: <u>23.88</u> °C	

In-situ Turbidity Measurement	
Unit used: <u>Hanna HI 98703</u> <u>SN# 08306491</u>	
Turbidity: <u>11.5</u>	NTU

Name of Lab to Send Grab Samples: <u>ETL</u>	
Sample ID #: <u>Station 6</u>	# of Bottles Collected: <u>2</u>
Parameters	
Total Suspended Solids	<u>E. Coli / Fecal Coliforms</u>
Alkalinity	
No preservative	Half-Gallon bottle
Clean Metals (ICP/MS)	Preservative: <u>HNO₃, <2 pH</u> 500mL plastic bottle
Metals blank collected at this site? Yes or No	
Alkalinity	No preservative 250 ml bottle
Total Kjeldahl Nitrogen (TKN)	Ammonia (NH ₃)
Nitrate-Nitrite (NO ₂ -NO ₃)	Total Organic Carbon (TOC)
Preservative H ₂ SO ₄ , pH <2	250 ml bottle
Ortho-phosphate	Total Phosphorus
Preservative H ₂ SO ₄ , pH <2	250 ml bottle

Sampled by (signature): 	Date/Time: <u>10-29-20</u> <u>0918</u>	Team Leader/Received (signature):	Date/Time:
Date/Time Delivered to Name of Lab Here:		Date/Time Delivered or Sent to Name of Lab Here:	

Appendix F

Laboratory Reports

REVISED

ANALYTICAL REPORT

ETL PROJECT ID: 20-1650

5/21/2020 - Revision 1

**JIM SMITH
TTL, INC.
3202 GILLIONVILLE RD
ALBANY, GA 31721-
TEL: (229) 432-5805
FAX: (229) 432-7018**

**CLIENT PROJECT NAME: CORDELE WATERSHED
CLIENT PROJECT ID:
FACILITY ID:**

Enclosed are the analytical results for sample(s) received by Environmental Testing Laboratories on May 07, 2020. Results reported herein are reported on an as received basis and conform to current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Sample analyses performed by Environmental Testing Laboratories, Inc. (ETL) unless otherwise noted. ETL is accredited through NELAC and the Florida Department of Health, Certification #E87684. Scope of analyses: RCRA/CERCLA Metals, General Chemistry, Extractable Organics, and Volatile Organics. Effective Dates: February 14, 2002 through June 30, 2020.

This report shall not be reproduced, except in full, without the written consent of Environmental Testing Laboratories, Inc. This report has been signed and authorized by the signatory using an electronic signature and is intended to be the legally binding equivalent of a traditionally handwritten signature.

Authorized for release by:



ENVIRONMENTAL TESTING LABORATORIES INC

412 W. Walcott Street | Thomasville, GA 31792 | Phone: (229)-228-2592 | Fax: (229)-228-2594

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Laboratory Qualifiers

- !** Data deviate from historically established concentration ranges.
- #** Surrogate compound inadvertently omitted.
- \$** Due to dilution, surrogate compound was not detected.
- *** Not reported due to interference
- ?** Data are rejected as should not be used.
- A** Value reported is the arithmetic mean (average) of two or more determinations.
- B** Results based upon colony counts outside the acceptable range.
- D** Measurement made in the field.
- E** Extra samples were taken at composite stations.
- F** When reporting species, F indicates the female sex.
- H** Value based on field kit determination; results may not be accurate.
- I** The reported value is between the laboratory method detection limit and the laboratory practical
- J** Estimated value.
- K** Off-scale low. Actual value is known to be less than the value given.
- L** Off-scale high. Actual value is known to be greater than the value given.
- M** Presence of material is verified but not quantified; the actual value is less than the value given.
- N** Presumptive evidence of presence of material.
- O** Sampled, but analysis lost or not performed.
- Q** Sample held beyond the accepted holding time.
- R** Significant rain in the past 48 hours.
- S1** Surrogate recovery reported is outside of laboratory established QA/QC Limits
- S2** Analyte recovery reported is outside of laboratory established QA/QC Limits
- S3** Analyte precision reported is outside of laboratory established QA/QC Limits
- T** Value reported is less than the laboratory method detection limit.
- U** Compound was analyzed for but not detected.
- V** Indicates that the analyte was detected in both the sample and the associated method blank.
- Y** Laboratory analysis was from an improperly preserved sample. Data may not be accurate.
- Z** Too many colonies were present; numeric value represents the filtration volume.

Project Narrative



Environmental Testing Laboratories, Inc. is accredited through NELAC and the Florida Department of Health.



Solid samples are reported on a dry weight basis unless otherwise noted.



Please refer to Section 4.0 of the ETL Quality Assurance Manual for a measure of uncertainty.



All analyses are performed using EPA or FL-DEP methods and certified to meet NELAC requirements, except where noted.

Analysis
Samples

ETL recognizes that Fecal results should equal or exceed E-Coli values but offer up facts that these were 2 independent methods performed with both having a high degree of variability.

Report Preparation
General

Revision 1 issued to correct sample IDs to reflect the COC.



Analytical Method Summary

E87684 **Environmental Testing Laboratories Inc.**
412 W. Walcott Street, Thomasville, GA 31792
(229) 228-2592

EPA 1603

Water Bath Incubator (SM18 9222 D (MF))

Standard Methods 18th Edition

Sample Summary

Laboratory Sample ID	Client Sample ID	Matrix	End Date / Time Sampled		Grab / Composite	Percent Moisture
261993	STATION 1	AQUEOUS-Fresh	5/7/2020	8:30	G	
261994	STATION 2A	AQUEOUS-Fresh	5/7/2020	8:45	G	
261995	STATION 3A	AQUEOUS-Fresh	5/7/2020	9:00	G	
261996	STATION 3	AQUEOUS-Fresh	5/7/2020	9:10	G	
261997	STATION 6	AQUEOUS-Fresh	5/7/2020	9:30	G	

Executive Summary

Analyte	Analytical Method	Result	Units	Qualifiers	Result Comments
STATION 1 (261993)					
E-Coli	EPA 1603	180	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	100	#/100 mL		
STATION 2A (261994)					
E-Coli	EPA 1603	150	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	350	#/100 mL		
STATION 3A (261995)					
E-Coli	EPA 1603	1500	#/100 mL	B	
Coliform Fecal	SM18 9222 D (MF)	1300	#/100 mL	B	
STATION 3 (261996)					
E-Coli	EPA 1603	140	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	100	#/100 mL		
STATION 6 (261997)					
E-Coli	EPA 1603	200	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	140	#/100 mL		



Analytical Data

Client Sample ID: STATION 1

Sample Location:

Date Collected: 05/07/2020 08:30 AM

Laboratory Sample ID: 261993

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	100		#/100 mL	20	20	5/7/2020 1:45:00 PM
E-Coli	10	180		#/100 mL	20	20	5/7/2020 2:00:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Analytical Data

Client Sample ID: STATION 2A

Laboratory Sample ID: 261994

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 05/07/2020 08:45 AM

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	25	350		#/100 mL	50	50	5/7/2020 1:45:00 PM
E-Coli	25	150		#/100 mL	50	50	5/7/2020 2:00:00 PM



Analytical Data

Client Sample ID: STATION 3A
Sample Location:
Date Collected: 05/07/2020 09:00 AM

Laboratory Sample ID: 261995
Matrix: AQUEOUS-Fresh
Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	1300	B	#/100 mL	20	20	5/7/2020 1:45:00 PM
E-Coli	10	1500	B	#/100 mL	20	20	5/7/2020 2:00:00 PM



Analytical Data

Client Sample ID: STATION 3

Sample Location:

Date Collected: 05/07/2020 09:10 AM

Laboratory Sample ID: 261996

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	100		#/100 mL	20	20	5/7/2020 1:45:00 PM
E-Coli	10	140		#/100 mL	20	20	5/7/2020 2:00:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Analytical Data

Client Sample ID: STATION 6

Sample Location:

Date Collected: 05/07/2020 09:30 AM

Laboratory Sample ID: 261997

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	140		#/100 mL	20	20	5/7/2020 1:45:00 PM
E-Coli	10	200		#/100 mL	20	20	5/7/2020 2:00:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Data Chronicle

Client Sample ID: STATION 1

Laboratory Sample ID: 261993

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 05/07/2020 08:30 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	10	050720 EC	5/7/2020 2:00:00 PM	5/7/2020 2:00:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	10	050720 MFC	5/7/2020 1:45:00 PM	5/7/2020 1:45:00 PM	KDM	E87684

Client Sample ID: STATION 2A

Laboratory Sample ID: 261994

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 05/07/2020 08:45 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	25	050720 EC	5/7/2020 2:00:00 PM	5/7/2020 2:00:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	25	050720 MFC	5/7/2020 1:45:00 PM	5/7/2020 1:45:00 PM	KDM	E87684

Client Sample ID: STATION 3A

Laboratory Sample ID: 261995

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 05/07/2020 09:00 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	10	050720 EC	5/7/2020 2:00:00 PM	5/7/2020 2:00:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	10	050720 MFC	5/7/2020 1:45:00 PM	5/7/2020 1:45:00 PM	KDM	E87684

Client Sample ID: STATION 3

Laboratory Sample ID: 261996

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 05/07/2020 09:10 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	10	050720 EC	5/7/2020 2:00:00 PM	5/7/2020 2:00:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	10	050720 MFC	5/7/2020 1:45:00 PM	5/7/2020 1:45:00 PM	KDM	E87684

Client Sample ID: STATION 6

Laboratory Sample ID: 261997

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 05/07/2020 09:30 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	10	050720 EC	5/7/2020 2:00:00 PM	5/7/2020 2:00:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	10	050720 MFC	5/7/2020 1:45:00 PM	5/7/2020 1:45:00 PM	KDM	E87684

QUALITY ASSURANCE / QUALITY CONTROL DATA

J

Preparation Batch ID: 050720 EC
Method Batch ID: M050720 EC

Analysis Method: EPA 1603

Preparation Type: No Prep
Preparation Date: 5/7/2020 2:00:00 PM

Analyte	MDL	PQL	Result	Qual	Units	Spike Amount	% REC	% REC Low Limit	-	% REC High Limit	%RPD	% RPD Limit
---------	-----	-----	--------	------	-------	--------------	-------	-----------------	---	------------------	------	-------------

QA/QC Type: MB	Lab Sample ID: 050720 ECMB	Client Sample ID: 050720 ECMB	Date Analyzed: 5/7/2020 2:00:00 PM
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E-Coli	2.0	2.0	2.0	U	#/100 mL
--------	-----	-----	-----	---	----------

QA/QC Type: LCS	Lab Sample ID: 050720 ECLCS	Client Sample ID: 050720 ECLCS	Date Analyzed: 5/7/2020 2:00:00 PM
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E-Coli	2.0	2.0	340	#/100 mL	1500	22.7	17	-	646
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QA/QC Type: DUP	Lab Sample ID: 050720 ECDUP	Client Sample ID: 261993DUP	Date Analyzed: 5/7/2020 2:00:00 PM
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E-Coli	20	20	140	#/100 mL					25	46
--------	----	----	-----	----------	--	--	--	--	----	----

Comments:

Preparation Batch ID: 050720 MFC
Method Batch ID: M050720 MFC

Analysis Method: SM18 9222 D (MF)

Preparation Type: No Prep
Preparation Date: 5/7/2020 1:45:00 PM

Analyte	MDL	PQL	Result	Qual	Units	Spike Amount	% REC	% REC Low Limit	-	% REC High Limit	%RPD	% RPD Limit
---------	-----	-----	--------	------	-------	--------------	-------	-----------------	---	------------------	------	-------------

QA/QC Type: MB	Lab Sample ID: 050720 MFCMB	Client Sample ID: 050720 MFCMB	Date Analyzed: 5/7/2020 1:45:00 PM
----------------	-----------------------------	--------------------------------	------------------------------------

Coliform Fecal	2.0	2.0	2.0	U	#/100 mL
----------------	-----	-----	-----	---	----------

QA/QC Type: LCS	Lab Sample ID: 050720 MFCLCS	Client Sample ID: 050720 MFCLCS	Date Analyzed: 5/7/2020 1:45:00 PM
-----------------	------------------------------	---------------------------------	------------------------------------

Coliform Fecal	2.0	2.0	1260	#/100 mL	970	130	17	-	646
----------------	-----	-----	------	----------	-----	-----	----	---	-----

QA/QC Type: LCSD	Lab Sample ID: 050720 MFCLCSD	Client Sample ID: 050720 MFCLCSD	Date Analyzed: 5/7/2020 1:45:00 PM
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Coliform Fecal	2.0	2.0	1120	#/100 mL	970	115	17	-	646	12	36
----------------	-----	-----	------	----------	-----	-----	----	---	-----	----	----

QA/QC Type: DUP	Lab Sample ID: 050720 MFCDUP	Client Sample ID: 262022DUP	Date Analyzed: 5/7/2020 1:45:00 PM
-----------------	------------------------------	-----------------------------	------------------------------------

Coliform Fecal	5.0	5.0	40	#/100 mL					22	36
----------------	-----	-----	----	----------	--	--	--	--	----	----

Comments:

Chain of Custody Record

Company: TTL Inc.						Environmental Testing Laboratories, Inc.  412 W. Walcott Street Thomasville, GA 31792-4359 229/228-2592 (telephone) 229/228-2594 (telefax) www.etl-inc.com						Page 1 of 1					
Address: 4589 Val North Dr Valdosta, GA 31602												Project Name: Cordale Watershed					
Telephone Number: (229) 244-8619 Telefax Number:						Project Number: 000190601252.00											
Sampled by [Print Name(s)] / Affiliation Zachary Hill						Project Manager: Jim Smith											
Sampler(s) Signature(s) Zach Hill						Facility ID Number:											
						REQUESTED DUE DATE / /											
						Remarks Lab Number											
Item No.	Field ID No.	Sample Date Time		Grab or Composite	Matrix (see Codes)	Number of Containers	Fecal	E-Coli									
1	Station 1	5/7/20	0830	Grab	SW	2	X	X								261993	
2	Station 2A		0845													994	
3	Station 3A		0900													995	
4	Station 3		0910													996	
5	Station 6		0930													997	
Shipment Method				Total Number of Containers												← Preservatives (see Codes) ICE: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Out:	/ /	Via:	Item No.			Relinquished by / Affiliation			Date		Time		Accepted by / Affiliation		Date		
Returned:	/ /	Via:				Zach Hill			5/7/20		1040		Jim Smith		5/7/20		
Additional Comments:						Jim Smith			5/7/20		1-20						
Cooler Number(s) / Temperature(s) (°C)						Sampling Kit Number		Received in Lab By:									
1/11C/3.2								BER				5-7-20		13:20			
MATRIX CODES:		A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water WW = Wastewater O = Other (specify)															
PRESERVATIVE CODES:		H = Hydrochloric acid S = Sulfuric acid N = Nitric Na = Sodium Hydroxide O = Other (specify)															
PRESERVATIVE CODES:		SOIL VOCS MS = Methanol / Sodium Bisulfate MD = Methanol / DI Water															
ETL PROJECT NO.														20-16			

Project Receipt Summary

20-1650

Project Details

Client: ITL INC.

Project Name: CORDELE WATERSHED

Shipping and Receiving

Date/Time Received: 5/7/2020 1:20:00 PM

If present, were cooler custody seals intact?

Sampling Personnel: HILL

☐ Yes ☐ No ☒ N/A

Shipping Method: Laboratory Courier

If present, were sample bottle custody seals intact

Shipping Tracking Number:

☐ Yes ☐ No ☒ N/A

Thermal Preservation

Cooler Temp Method: Sample Temperature

Were cooler temperatures in compliance? (0.1-6.0C)

Thermometer ID: 16032413

☒ Yes ☐ No ☐ N/A

Number of Coolers: 1

Cooler Temperatures: 3.2

Chain of Custody

Was the chain-of-custody received in coolers?

☒ Yes ☐ No ☐ N/A

Was the chain-of-custody signed and properly relinquished?

☒ Yes ☐ No ☐ N/A

Does the chain-of-custody agree with samples and analyses?

☒ Yes ☐ No ☐ N/A

Container Receipt

Were samples received in appropriate bottlenecks for analyses?

☒ Yes ☐ No ☐ N/A

Was sufficient volume submitted for analyses requested?

☒ Yes ☐ No ☐ N/A

Were samples received within method holding times?

☒ Yes ☐ No ☐ N/A

Were VOA vials received with zero headspace?

☐ Yes ☐ No ☒ N/A

Were aqueous samples received at an acceptable pH?

☒ Yes ☐ No ☐ N/A

pH Test Strip Manufacturer / Lot #: MQUANT-HC988495

Comments

I certify I have answered the questions contained herein to the best of my knowledge and have affixed labels with unique IDs onto each sample container received. I certify any discrepancies regarding the samples as received by the laboratory have been documented completely in the comments section of this form.

BCR

Brandon Ray

Project Receipt Summary

20-1650

Project Sample Detail

Lab Sample ID	Client Sample ID	Matrix	TRPH	MAVPH	SPLP	Speciation	MaEPH
261993	STATION 1	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
261993-E1 (E-Coil)							
261993-E2 (Fecal)							
261994	STATION 2	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
261994-E1 (E-Coil)							
261994-E2 (Fecal)							
261995	STATION 3	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
261995-E1 (E-Coil)							
261995-E2 (Fecal)							
261996	STATION 4	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
261996-E1 (E-Coil)							
261996-E2 (Fecal)							
261997	STATION 5	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
261997-E1 (E-Coil)							
261997-E2 (Fecal)							

Project Receipt Summary

20-1650

Project Bottle Count Summary

Container Type	Preservative	Number of Containers
Sterile Bottle w/ Thiosulfate Pill	STERILE	10
Total		10

FINAL **ANALYTICAL REPORT**

ETL PROJECT ID: 20-1721

5/15/2020 - Revision 0

**MELISSA NORRIS
TTL, INC.
3202 GILLIONVILLE RD
ALBANY, GA 31721-
TEL: (229) 432-5805
FAX: (229) 432-7018**

**CLIENT PROJECT NAME: CORDELE WATERSHED
CLIENT PROJECT ID:
FACILITY ID:**

Enclosed are the analytical results for sample(s) received by Environmental Testing Laboratories on May 13, 2020. Results reported herein are reported on an as received basis and conform to current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Sample analyses performed by Environmental Testing Laboratories, Inc. (ETL) unless otherwise noted. ETL is accredited through NELAC and the Florida Department of Health, Certification #E87684. Scope of analyses: RCRA/CERCLA Metals, General Chemistry, Extractable Organics, and Volatile Organics. Effective Dates: February 14, 2002 through June 30, 2020.

This report shall not be reproduced, except in full, without the written consent of Environmental Testing Laboratories, Inc. This report has been signed and authorized by the signatory using an electronic signature and is intended to be the legally binding equivalent of a traditionally handwritten signature.

Authorized for release by:



ENVIRONMENTAL TESTING LABORATORIES INC

412 W. Walcott Street | Thomasville, GA 31792 | Phone: (229)-228-2592 | Fax: (229)-228-2594

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Laboratory Qualifiers

- !** Data deviate from historically established concentration ranges.
- #** Surrogate compound inadvertently omitted.
- \$** Due to dilution, surrogate compound was not detected.
- *** Not reported due to interference
- ?** Data are rejected as should not be used.
- A** Value reported is the arithmetic mean (average) of two or more determinations.
- B** Results based upon colony counts outside the acceptable range.
- D** Measurement made in the field.
- E** Extra samples were taken at composite stations.
- F** When reporting species, F indicates the female sex.
- H** Value based on field kit determination; results may not be accurate.
- I** The reported value is between the laboratory method detection limit and the laboratory practical
- J** Estimated value.
- K** Off-scale low. Actual value is known to be less than the value given.
- L** Off-scale high. Actual value is known to be greater than the value given.
- M** Presence of material is verified but not quantified; the actual value is less than the value given.
- N** Presumptive evidence of presence of material.
- O** Sampled, but analysis lost or not performed.
- Q** Sample held beyond the accepted holding time.
- R** Significant rain in the past 48 hours.
- S1** Surrogate recovery reported is outside of laboratory established QA/QC Limits
- S2** Analyte recovery reported is outside of laboratory established QA/QC Limits
- S3** Analyte precision reported is outside of laboratory established QA/QC Limits
- T** Value reported is less than the laboratory method detection limit.
- U** Compound was analyzed for but not detected.
- V** Indicates that the analyte was detected in both the sample and the associated method blank.
- Y** Laboratory analysis was from an improperly preserved sample. Data may not be accurate.
- Z** Too many colonies were present; numeric value represents the filtration volume.

Project Narrative



Environmental Testing Laboratories, Inc. is accredited through NELAC and the Florida Department of Health.



Solid samples are reported on a dry weight basis unless otherwise noted.



Please refer to Section 4.0 of the ETL Quality Assurance Manual for a measure of uncertainty.



All analyses are performed using EPA or FL-DEP methods and certified to meet NELAC requirements, except where noted.



Analytical Method Summary

E87684 **Environmental Testing Laboratories Inc.**
412 W. Walcott Street, Thomasville, GA 31792
(229) 228-2592

EPA 1603

Water Bath Incubator (SM18 9222 D (MF))

Standard Methods 18th Edition



Sample Summary

Laboratory Sample ID	Client Sample ID	Matrix	End Date / Time Sampled		Grab / Composite	Percent Moisture
262278	STATION 1	AQUEOUS-Fresh	5/13/2020	8:05	G	
262279	STATION 2A	AQUEOUS-Fresh	5/13/2020	8:45	G	
262280	STATION 3A	AQUEOUS-Fresh	5/13/2020	9:05	G	
262281	STATION 3	AQUEOUS-Fresh	5/13/2020	9:25	G	
262282	STATION 6	AQUEOUS-Fresh	5/13/2020	9:50	G	

Executive Summary

Analyte	Analytical Method	Result	Units	Qualifiers	Result Comments
STATION 1 (262278)					
E-Coli	EPA 1603	160	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	140	#/100 mL		
STATION 2A (262279)					
E-Coli	EPA 1603	260	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	300	#/100 mL		
STATION 3A (262280)					
E-Coli	EPA 1603	340	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	400	#/100 mL		
STATION 3 (262281)					
E-Coli	EPA 1603	80	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	120	#/100 mL		
STATION 6 (262282)					
E-Coli	EPA 1603	280	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	380	#/100 mL		



Analytical Data

Client Sample ID: STATION 1

Sample Location:

Date Collected: 05/13/2020 08:05 AM

Laboratory Sample ID: 262278

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	140		#/100 mL	20	20	5/13/2020 1:00:00 PM
E-Coli	10	160		#/100 mL	20	20	5/13/2020 12:40:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Analytical Data

Client Sample ID: STATION 2A

Sample Location:

Date Collected: 05/13/2020 08:45 AM

Laboratory Sample ID: 262279

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	300		#/100 mL	20	20	5/13/2020 1:00:00 PM
E-Coli	10	260		#/100 mL	20	20	5/13/2020 12:40:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Analytical Data

Client Sample ID: STATION 3A

Sample Location:

Date Collected: 05/13/2020 09:05 AM

Laboratory Sample ID: 262280

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	400		#/100 mL	20	20	5/13/2020 1:00:00 PM
E-Coli	10	340		#/100 mL	20	20	5/13/2020 12:40:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Analytical Data

Client Sample ID: STATION 3

Sample Location:

Date Collected: 05/13/2020 09:25 AM

Laboratory Sample ID: 262281

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	120		#/100 mL	20	20	5/13/2020 1:00:00 PM
E-Coli	10	80		#/100 mL	20	20	5/13/2020 12:40:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Analytical Data

Client Sample ID: STATION 6

Sample Location:

Date Collected: 05/13/2020 09:50 AM

Laboratory Sample ID: 262282

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	380		#/100 mL	20	20	5/13/2020 1:00:00 PM
E-Coli	10	280		#/100 mL	20	20	5/13/2020 12:40:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Data Chronicle

Client Sample ID: STATION 1

Laboratory Sample ID: 262278

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 05/13/2020 08:05 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	10	051320 EC	5/13/2020 12:40:00 PM	5/13/2020 12:40:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	10	051320A MFC	5/13/2020 1:00:00 PM	5/13/2020 1:00:00 PM	KDM	E87684

Client Sample ID: STATION 2A

Laboratory Sample ID: 262279

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 05/13/2020 08:45 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	10	051320 EC	5/13/2020 12:40:00 PM	5/13/2020 12:40:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	10	051320A MFC	5/13/2020 1:00:00 PM	5/13/2020 1:00:00 PM	KDM	E87684

Client Sample ID: STATION 3A

Laboratory Sample ID: 262280

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 05/13/2020 09:05 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	10	051320 EC	5/13/2020 12:40:00 PM	5/13/2020 12:40:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	10	051320A MFC	5/13/2020 1:00:00 PM	5/13/2020 1:00:00 PM	KDM	E87684

Client Sample ID: STATION 3

Laboratory Sample ID: 262281

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 05/13/2020 09:25 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	10	051320 EC	5/13/2020 12:40:00 PM	5/13/2020 12:40:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	10	051320A MFC	5/13/2020 1:00:00 PM	5/13/2020 1:00:00 PM	KDM	E87684

Client Sample ID: STATION 6

Laboratory Sample ID: 262282

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 05/13/2020 09:50 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	10	051320 EC	5/13/2020 12:40:00 PM	5/13/2020 12:40:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	10	051320A MFC	5/13/2020 1:00:00 PM	5/13/2020 1:00:00 PM	KDM	E87684

QUALITY ASSURANCE / QUALITY CONTROL DATA

J

Preparation Batch ID: 051320 EC
Method Batch ID: M051320 EC

Analysis Method: EPA 1603

Preparation Type: No Prep
Preparation Date: 5/13/2020 12:40:00 PM

Analyte	MDL	PQL	Result	Qual	Units	Spike Amount	% REC	% REC Low Limit	-	% REC High Limit	%RPD	% RPD Limit
---------	-----	-----	--------	------	-------	--------------	-------	-----------------	---	------------------	------	-------------

QA/QC Type: MB	Lab Sample ID: 051320 ECMB	Client Sample ID: 051320 ECMB	Date Analyzed: 5/13/2020 12:40:00 PM									
E-Coli	2.0	2.0	2.0	U	#/100 mL							

QA/QC Type: LCS	Lab Sample ID: 051320 ECLCS	Client Sample ID: 051320 ECLCS	Date Analyzed: 5/13/2020 12:40:00 PM									
E-Coli	2.0	2.0	1550		#/100 mL	1500	103	25	-	505		

QA/QC Type: LCSD	Lab Sample ID: 051320 ECLCSD	Client Sample ID: 051320 ECLCSD	Date Analyzed: 5/13/2020 12:40:00 PM									
E-Coli	2.0	2.0	1510		#/100 mL	1500	101	25	-	505	2.6	36

Comments:

Preparation Batch ID: 051320A MFC
Method Batch ID: M051320A MFC

Analysis Method: SM18 9222 D (MF)

Preparation Type: No Prep
Preparation Date: 5/13/2020 1:00:00 PM

Analyte	MDL	PQL	Result	Qual	Units	Spike Amount	% REC	% REC Low Limit	-	% REC High Limit	%RPD	% RPD Limit
---------	-----	-----	--------	------	-------	--------------	-------	-----------------	---	------------------	------	-------------

QA/QC Type: MB	Lab Sample ID: 051320A MFCMB	Client Sample ID: 051320A MFCMB	Date Analyzed: 5/13/2020 1:00:00 PM									
Coliform Fecal	2.0	2.0	2.0	U	#/100 mL							


QA/QC Type: LCS	Lab Sample ID: 051320A MFCLCS	Client Sample ID: 051320A MFCLCS	Date Analyzed: 5/13/2020 1:00:00 PM									
Coliform Fecal	2.0	2.0	1160		#/100 mL	970	120	17	-	646		

QA/QC Type: LCSD	Lab Sample ID: 051320A MFCLCSD	Client Sample ID: 051320A MFCLCSD	Date Analyzed: 5/13/2020 1:00:00 PM									
Coliform Fecal	2.0	2.0	1160		#/100 mL	970	120	17	-	646	0	36

QA/QC Type: DUP	Lab Sample ID: 051320A MFCDDUP	Client Sample ID: 262265DUP	Date Analyzed: 5/13/2020 1:00:00 PM									
Coliform Fecal	10	10	10	US3	#/100 mL						67	36

Comments:

Chain of Custody Record

Company: TTL, Inc.							Environmental Testing Laboratories, Inc.  412 W. Walcott Street Thomasville, GA 31792-4359 229/228-2592 (telephone) 229/228-2594 (telefax) www.etl-inc.com							Page 1 of 1	
Address: 4589 Val North Dr.														Project Name: Cordale Watershed	
Telephone Number:				Telefax Number:			Project Number:								
Sampled by [Print Name(s)] / Affiliation Melissa Norris / Zack Hill							Analyses Requested								
Sampler(s) Signature(s)							Project Manager:								
							Facility ID Number:								
							REQUESTED DUE DATE / /								
Item No.	Field ID No.	Sample Date Time		Grab or Composite	Matrix (see Codes)	Number of Containers	Remarks Lab Number								
1	Station 1	5-13-20	0805	Grab	SW	2	X	X							262278
2	Station 2A		0845				X	X							279
3	Station 3A		0905				X	X							280
4	Station 3		0925				X	X							281
5	Station 6		0950				X	X							282
Shipment Method				Total Number of Containers			Preservatives (see Codes) ICE: <input type="checkbox"/> Yes <input type="checkbox"/> No								
Out:	/ /	Via:	Item No.		Relinquished by / Affiliation		Date	Time	Accepted by / Affiliation			Date	Time		
Returned:	/ /	Via:	1-5		Melissa Norris		5-13-20	12:20	PCR			5-13-20	12:20		
Additional Comments:			Cooler Number(s) / Temperature(s) (°C)				Sampling Kit Number		Received in Lab By:						
			1/Ice/3.2						PCR			5-13-20		12:20	
MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water WW = Wastewater O = Other (specify)															
PRESERVATIVE CODES: H = Hydrochloric acid S = Sulfuric acid N = Nitric Na = Sodium Hydroxide O = Other (specify)															
PRESERVATIVE CODES: SOIL VOCS MS = Methanol / Sodium Bisulfate MD = Methanol / DI Water															
ETL PROJECT NO.												20-1721			

Project Receipt Summary

20-1721

Project Details

Client: ITL, INC.

Project Name: CORDELE WATERSHED

Shipping and Receiving

Date/Time Received: 5/13/2020 12:20:00 PM If present, were cooler custody seals intact?

Sampling Personnel: NORRIS ☐ Yes ☐ No ☒ N/A

Shipping Method: Client Drop-Off If present, were sample bottle custody seals intact?

Shipping Tracking Number: ☐ Yes ☐ No ☒ N/A

Thermal Preservation

Cooler Temp Method: Sample Temperature Were cooler temperatures in compliance? (0.1-6.0C)

Thermometer ID: 16032413 ☒ Yes ☐ No ☐ N/A

Number of Coolers: 1 Cooler Temperatures: 3.2

Chain of Custody

Was the chain-of-custody received in coolers? ☒ Yes ☐ No ☐ N/A

Was the chain-of-custody signed and properly relinquished? ☒ Yes ☐ No ☐ N/A

Does the chain-of-custody agree with samples and analyses? ☒ Yes ☐ No ☐ N/A

Container Receipt

Were samples received in appropriate bottleware for analyses? ☒ Yes ☐ No ☐ N/A

Was sufficient volume submitted for analyses requested? ☒ Yes ☐ No ☐ N/A

Were samples received within method holding times? ☒ Yes ☐ No ☐ N/A

Were VOA vials received with zero headspace? ☐ Yes ☐ No ☒ N/A

Were aqueous samples received at an acceptable pH? ☒ Yes ☐ No ☐ N/A

pH Test Strip Lot: MQUANT-HC989495

Comments

I certify I have answered the questions contained herein to the best of my knowledge and have affixed labels with unique IDs onto each sample container received. I certify any discrepancies regarding the samples as received by the laboratory have been documented completely in the comments section of this form.

BR

Brandon Ray



ENVIRONMENTAL TESTING LABORATORIES INC

Project Receipt Summary

20-1721

Project Sample Detail

Lab Sample ID	Client Sample ID	Matrix	TRPH MaVPH SPLP Speciation MaEPH		
262278	STATION 1	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
262278-E1 (E-Coli)					
262278-E2 (Fecal)					
262279	STATION 2A	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
262279-E1 (E-Coli)					
262279-E2 (Fecal)					
262280	STATION 3A	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
262280-E1 (E-Coli)					
262280-E2 (Fecal)					
262281	STATION 3	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
262281-E1 (E-Coli)					
262281-E2 (Fecal)					
262282	STATION 6	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
262282-E1 (E-Coli)					
262282-E2 (Fecal)					

Project Receipt Summary

20-1721

Project Bottle Count Summary

Container Type	Preservative	Number of Containers
Sterile Bottle w/ Thiosulfate Pill	STERILE	10
Total		10

FINAL **ANALYTICAL REPORT**

ETL PROJECT ID: 20-1838

5/26/2020 - Revision 0

**MELISSA NORRIS
TTL, INC.
3202 GILLIONVILLE RD
ALBANY, GA 31721-
TEL: (229) 432-5805
FAX: (229) 432-7018**

**CLIENT PROJECT NAME: CORDELE WATERSHED
CLIENT PROJECT ID:
FACILITY ID:**

Enclosed are the analytical results for sample(s) received by Environmental Testing Laboratories on May 21, 2020. Results reported herein are reported on an as received basis and conform to current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Sample analyses performed by Environmental Testing Laboratories, Inc. (ETL) unless otherwise noted. ETL is accredited through NELAC and the Florida Department of Health, Certification #E87684. Scope of analyses: RCRA/CERCLA Metals, General Chemistry, Extractable Organics, and Volatile Organics. Effective Dates: February 14, 2002 through June 30, 2020.

This report shall not be reproduced, except in full, without the written consent of Environmental Testing Laboratories, Inc. This report has been signed and authorized by the signatory using an electronic signature and is intended to be the legally binding equivalent of a traditionally handwritten signature.

Authorized for release by:



ENVIRONMENTAL TESTING LABORATORIES INC

412 W. Walcott Street | Thomasville, GA 31792 | Phone: (229)-228-2592 | Fax: (229)-228-2594

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Laboratory Qualifiers

- !** Data deviate from historically established concentration ranges.
- #** Surrogate compound inadvertently omitted.
- \$** Due to dilution, surrogate compound was not detected.
- *** Not reported due to interference
- ?** Data are rejected as should not be used.
- A** Value reported is the arithmetic mean (average) of two or more determinations.
- B** Results based upon colony counts outside the acceptable range.
- D** Measurement made in the field.
- E** Extra samples were taken at composite stations.
- F** When reporting species, F indicates the female sex.
- H** Value based on field kit determination; results may not be accurate.
- I** The reported value is between the laboratory method detection limit and the laboratory practical
- J** Estimated value.
- K** Off-scale low. Actual value is known to be less than the value given.
- L** Off-scale high. Actual value is known to be greater than the value given.
- M** Presence of material is verified but not quantified; the actual value is less than the value given.
- N** Presumptive evidence of presence of material.
- O** Sampled, but analysis lost or not performed.
- Q** Sample held beyond the accepted holding time.
- R** Significant rain in the past 48 hours.
- S1** Surrogate recovery reported is outside of laboratory established QA/QC Limits
- S2** Analyte recovery reported is outside of laboratory established QA/QC Limits
- S3** Analyte precision reported is outside of laboratory established QA/QC Limits
- T** Value reported is less than the laboratory method detection limit.
- U** Compound was analyzed for but not detected.
- V** Indicates that the analyte was detected in both the sample and the associated method blank.
- Y** Laboratory analysis was from an improperly preserved sample. Data may not be accurate.
- Z** Too many colonies were present; numeric value represents the filtration volume.

Project Narrative



Environmental Testing Laboratories, Inc. is accredited through NELAC and the Florida Department of Health.



Solid samples are reported on a dry weight basis unless otherwise noted.



Please refer to Section 4.0 of the ETL Quality Assurance Manual for a measure of uncertainty.



All analyses are performed using EPA or FL-DEP methods and certified to meet NELAC requirements, except where noted.



Analytical Method Summary

E87684 **Environmental Testing Laboratories Inc.**
412 W. Walcott Street, Thomasville, GA 31792
(229) 228-2592

EPA 1603

Water Bath Incubator (SM18 9222 D (MF))

Standard Methods 18th Edition

Sample Summary

Laboratory Sample ID	Client Sample ID	Matrix	End Date / Time Sampled		Grab / Composite	Percent Moisture
262716	STATION 1	AQUEOUS-Wastewater	5/21/2020	8:25	G	
262717	STATION 2A	AQUEOUS-Wastewater	5/21/2020	8:35	G	
262718	STATION 3A	AQUEOUS-Wastewater	5/21/2020	8:55	G	
262719	STATION 3	AQUEOUS-Wastewater	5/21/2020	9:10	G	
262720	STATION 6	AQUEOUS-Wastewater	5/21/2020	9:35	G	

Executive Summary

Analyte	Analytical Method	Result	Units	Qualifiers	Result Comments
STATION 1 (262716)					
E-Coli	EPA 1603	5100	#/100 mL	B	
Coliform Fecal	SM18 9222 D (MF)	6700	#/100 mL	B	
STATION 2A (262717)					
E-Coli	EPA 1603	14000	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	24000	#/100 mL		
STATION 3A (262718)					
E-Coli	EPA 1603	1500	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	2300	#/100 mL		
STATION 3 (262719)					
E-Coli	EPA 1603	1400	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	3600	#/100 mL	B	
STATION 6 (262720)					
E-Coli	EPA 1603	2700	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	4000	#/100 mL	B	



Analytical Data

Client Sample ID: STATION 1

Laboratory Sample ID: 262716

Sample Location:

Matrix: AQUEOUS-Wastewater

Date Collected: 05/21/2020 08:25 AM

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	25	6700	B	#/100 mL	50	50	5/21/2020 1:40:00 PM
E-Coli	25	5100	B	#/100 mL	50	50	5/21/2020 2:00:00 PM



Analytical Data

Client Sample ID: STATION 2A

Laboratory Sample ID: 262717

Sample Location:

Matrix: AQUEOUS-Wastewater

Date Collected: 05/21/2020 08:35 AM

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	250	24000		#/100 mL	500	500	5/21/2020 1:40:00 PM
E-Coli	250	14000		#/100 mL	500	500	5/21/2020 2:00:00 PM



Analytical Data

Client Sample ID: STATION 3A

Laboratory Sample ID: 262718

Sample Location:

Matrix: AQUEOUS-Wastewater

Date Collected: 05/21/2020 08:55 AM

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	25	2300		#/100 mL	50	50	5/21/2020 1:40:00 PM
E-Coli	25	1500		#/100 mL	50	50	5/21/2020 2:00:00 PM



Analytical Data

Client Sample ID: STATION 3

Laboratory Sample ID: 262719

Sample Location:

Matrix: AQUEOUS-Wastewater

Date Collected: 05/21/2020 09:10 AM

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	25	3600	B	#/100 mL	50	50	5/21/2020 1:40:00 PM
E-Coli	25	1400		#/100 mL	50	50	5/21/2020 2:00:00 PM



Analytical Data

Client Sample ID: STATION 6

Laboratory Sample ID: 262720

Sample Location:

Matrix: AQUEOUS-Wastewater

Date Collected: 05/21/2020 09:35 AM

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	25	4000	B	#/100 mL	50	50	5/21/2020 1:40:00 PM
E-Coli	25	2700		#/100 mL	50	50	5/21/2020 2:00:00 PM



Data Chronicle

Client Sample ID: STATION 1

Laboratory Sample ID: 262716

Sample Location:

Matrix: AQUEOUS-Wastewater

Date Collected: 05/21/2020 08:25 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	25	052120 EC	5/21/2020 2:00:00 PM	5/21/2020 2:00:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	25	052120 MFC	5/21/2020 1:40:00 PM	5/21/2020 1:40:00 PM	KDM	E87684

Client Sample ID: STATION 2A

Laboratory Sample ID: 262717

Sample Location:

Matrix: AQUEOUS-Wastewater

Date Collected: 05/21/2020 08:35 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	250	052120 EC	5/21/2020 2:00:00 PM	5/21/2020 2:00:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	250	052120 MFC	5/21/2020 1:40:00 PM	5/21/2020 1:40:00 PM	KDM	E87684

Client Sample ID: STATION 3A

Laboratory Sample ID: 262718

Sample Location:

Matrix: AQUEOUS-Wastewater

Date Collected: 05/21/2020 08:55 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	25	052120 EC	5/21/2020 2:00:00 PM	5/21/2020 2:00:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	25	052120 MFC	5/21/2020 1:40:00 PM	5/21/2020 1:40:00 PM	KDM	E87684

Client Sample ID: STATION 3

Laboratory Sample ID: 262719

Sample Location:

Matrix: AQUEOUS-Wastewater

Date Collected: 05/21/2020 09:10 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	25	052120 EC	5/21/2020 2:00:00 PM	5/21/2020 2:00:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	25	052120 MFC	5/21/2020 1:40:00 PM	5/21/2020 1:40:00 PM	KDM	E87684

Client Sample ID: STATION 6

Laboratory Sample ID: 262720

Sample Location:

Matrix: AQUEOUS-Wastewater

Date Collected: 05/21/2020 09:35 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	25	052120 EC	5/21/2020 2:00:00 PM	5/21/2020 2:00:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	25	052120 MFC	5/21/2020 1:40:00 PM	5/21/2020 1:40:00 PM	KDM	E87684

QUALITY ASSURANCE / QUALITY CONTROL DATA

J

Preparation Batch ID: 052120 EC
Method Batch ID: M052120 EC

Analysis Method: EPA 1603

Preparation Type: No Prep
Preparation Date: 5/21/2020 2:00:00 PM

Analyte	MDL	PQL	Result	Qual	Units	Spike Amount	% REC	% REC Low Limit	-	% REC High Limit	%RPD	% RPD Limit
---------	-----	-----	--------	------	-------	--------------	-------	-----------------	---	------------------	------	-------------

QA/QC Type: MB	Lab Sample ID: 052120 ECMB	Client Sample ID: 052120 ECMB	Date Analyzed: 5/21/2020 2:00:00 PM									
E-Coli	2.0	2.0	2.0	U	#/100 mL							

QA/QC Type: DUP	Lab Sample ID: 052120 ECDUP	Client Sample ID: 262716DUP	Date Analyzed: 5/21/2020 2:00:00 PM									
E-Coli	50	50	3700	B	#/100 mL						32	46

Comments:

Preparation Batch ID: 052120 MFC
Method Batch ID: M052120 MFC

Analysis Method: SM18 9222 D (MF)

Preparation Type: No Prep
Preparation Date: 5/21/2020 1:40:00 PM

Analyte	MDL	PQL	Result	Qual	Units	Spike Amount	% REC	% REC Low Limit	-	% REC High Limit	%RPD	% RPD Limit
---------	-----	-----	--------	------	-------	--------------	-------	-----------------	---	------------------	------	-------------

QA/QC Type: MB	Lab Sample ID: 052120 MFCMB	Client Sample ID: 052120 MFCMB	Date Analyzed: 5/21/2020 1:40:00 PM									
Coliform Fecal	2.0	2.0	2.0	U	#/100 mL							


QA/QC Type: LCS	Lab Sample ID: 052120 MFCLCS	Client Sample ID: 052120 MFCLCS	Date Analyzed: 5/21/2020 1:40:00 PM									
Coliform Fecal	2.0	2.0	1040		#/100 mL	970	107	17	-	646		

QA/QC Type: LCSD	Lab Sample ID: 052120 MFCLCSD	Client Sample ID: 052120 MFCLCSD	Date Analyzed: 5/21/2020 1:40:00 PM									
Coliform Fecal	2.0	2.0	900		#/100 mL	970	92.8	17	-	646	14	36

QA/QC Type: DUP	Lab Sample ID: 052120 MFCDUP	Client Sample ID: 262729DUP	Date Analyzed: 5/21/2020 1:40:00 PM									
Coliform Fecal	5.0	5.0	15	S3	#/100 mL						91	36

Comments:

Chain of Custody Record

Company: TTL Inc							Environmental Testing Laboratories, Inc.  412 W. Walcott Street Thomasville, GA 31792-4359 229/228-2592 (telephone) 229/228-2594 (telefax) www.etl-inc.com							Page <u>1</u> of <u>1</u>					
Address: 4589 Val North Dr Valdosta, GA 31602														Project Name: Cordule Watershed					
Telephone Number: (229) 244-8619 Telefax Number:							Project Number: 000200001075.00												
Sampled by [Print Name(s)] / Affiliation Zachary Hill							Project Manager: Jim Smith												
Sampler(s) Signature(s) <i>Zachary Hill</i>							Facility ID Number:												
							REQUESTED DUE DATE / /												
							Remarks Lab Number												
Item No.	Field ID No.	Sample Date Time		Grab or Composite	Matrix (see Codes)	Number of Containers	Fecal	E-Coli											
1	station 1	5/21/20	0825	Grab	SW	2	X	X										262716	
2	station 2A		0835				X	X										717	
3	station 3A		0855				X	X										718	
4	station 3B		0910				X	X										719	
5	station 6		0935				X	X										720	
Shipment Method				Total Number of Containers		10												← Preservatives (see Codes) ICE: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Out:	/ /	Via:		Item No.	Relinquished by / Affiliation		Date	Time	Accepted by / Affiliation		Date	Time							
Returned:	/ /	Via:			<i>Zachary Hill</i>		5/21/20	1045	<i>Jim Smith</i>		5/21/20	1045							
Additional Comments:					<i>Jim Smith</i>		5/21/20	1222											
				Cooler Number(s) / Temperature(s) (°C)				Sampling Kit Number		Received in Lab By:									
				116/5.1						<i>PCR</i>		5-21-20 13:22							
MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water WW = Wastewater O = Other (specify)																			
PRESERVATIVE CODES: H = Hydrochloric acid S = Sulfuric acid N = Nitric Na = Sodium Hydroxide O = Other (specify)																			
PRESERVATIVE CODES: SOIL VOCs MS = Methanol / Sodium Bisulfate MD = Methanol / DI Water																			
ETL PROJECT NO.																20-1838			

Project Receipt Summary

20-1838

Project Details

Client: ITL, INC.

Project Name: CORDELE WATERSHED

Shipping and Receiving

Date/Time Received: 5/21/2020 1:22:00 PM

If present, were cooler custody seals intact?

Sampling Personnel: HILL

☐ Yes ☐ No ☒ N/A

Shipping Method: Laboratory Courier

If present, were sample bottle custody seals intact

Shipping Tracking Number:

☐ Yes ☐ No ☒ N/A

Thermal Preservation

Cooler Temp Method: Sample Temperature

Were cooler temperatures in compliance? (0.1-6.0C)

Thermometer ID: 16032413

☒ Yes ☐ No ☐ N/A

Number of Coolers: 1

Cooler Temperatures: 5.1

Chain of Custody

Was the chain-of-custody received in coolers?

☒ Yes ☐ No ☐ N/A

Was the chain-of-custody signed and properly relinquished?

☒ Yes ☐ No ☐ N/A

Does the chain-of-custody agree with samples and analyses?

☒ Yes ☐ No ☐ N/A

Container Receipt

Were samples received in appropriate bottleneare for analyses?

☒ Yes ☐ No ☐ N/A

Was sufficient volume submitted for analyses requested?

☒ Yes ☐ No ☐ N/A

Were samples received within method holding times?

☒ Yes ☐ No ☐ N/A

Were VOA vials received with zero headspace?

☐ Yes ☐ No ☒ N/A

Were aqueous samples received at an acceptable pH?

☒ Yes ☐ No ☐ N/A

pH Test Strip Lot: MOQUANT-HC989495

Comments

I certify I have answered the questions contained herein to the best of my knowledge and have affixed labels with unique IDs onto each sample container received. I certify any discrepancies regarding the samples as received by the laboratory have been documented completely in the comments section of this form.

Brandon Ray

Project Receipt Summary

20-1838

Project Sample Detail

Lab Sample ID	Client Sample ID	Matrix	TRPH MaVPH SPLP Speciation MaEPH		
262716	STATION 1	AQUEOUS-Wastewater	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
262716-E1 (E-Coli)					
262716-E2 (Fecal)					
262717	STATION 2A	AQUEOUS-Wastewater	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
262717-E1 (E-Coli)					
262717-E2 (Fecal)					
262718	STATION 3A	AQUEOUS-Wastewater	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
262718-E1 (E-Coli)					
262718-E2 (Fecal)					
262719	STATION 3	AQUEOUS-Wastewater	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
262719-E1 (E-Coli)					
262719-E2 (Fecal)					
262720	STATION 6	AQUEOUS-Wastewater	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
262720-E1 (E-Coli)					
262720-E2 (Fecal)					

Project Receipt Summary

20-1838

Project Bottle Count Summary

Container Type	Preservative	Number of Containers
Sterile Bottle w/ Thiosulfate Pill	STERILE	10
Total		10

FINAL **ANALYTICAL REPORT**

ETL PROJECT ID: 20-1874

5/27/2020 - Revision 0

**MELISSA NORRIS
TTL, INC.
3202 GILLIONVILLE RD
ALBANY, GA 31721-
TEL: (229) 432-5805
FAX: (229) 432-7018**

**CLIENT PROJECT NAME: CORDELE WATERSHED
CLIENT PROJECT ID:
FACILITY ID:**

Enclosed are the analytical results for sample(s) received by Environmental Testing Laboratories on May 20, 2020. Results reported herein are reported on an as received basis and conform to current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Sample analyses performed by Environmental Testing Laboratories, Inc. (ETL) unless otherwise noted. ETL is accredited through NELAC and the Florida Department of Health, Certification #E87684. Scope of analyses: RCRA/CERCLA Metals, General Chemistry, Extractable Organics, and Volatile Organics. Effective Dates: February 14, 2002 through June 30, 2020.

This report shall not be reproduced, except in full, without the written consent of Environmental Testing Laboratories, Inc. This report has been signed and authorized by the signatory using an electronic signature and is intended to be the legally binding equivalent of a traditionally handwritten signature.

Authorized for release by:



ENVIRONMENTAL TESTING LABORATORIES INC

412 W. Walcott Street | Thomasville, GA 31792 | Phone: (229)-228-2592 | Fax: (229)-228-2594

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Laboratory Qualifiers

- !** Data deviate from historically established concentration ranges.
- #** Surrogate compound inadvertently omitted.
- \$** Due to dilution, surrogate compound was not detected.
- *** Not reported due to interference
- ?** Data are rejected as should not be used.
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- B** Results based upon colony counts outside the acceptable range.
- D** Measurement made in the field.
- E** Extra samples were taken at composite stations.
- F** When reporting species, F indicates the female sex.
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- J** Estimated value.
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- N** Presumptive evidence of presence of material.
- O** Sampled, but analysis lost or not performed.
- Q** Sample held beyond the accepted holding time.
- R** Significant rain in the past 48 hours.
- S1** Surrogate recovery reported is outside of laboratory established QA/QC Limits
- S2** Analyte recovery reported is outside of laboratory established QA/QC Limits
- S3** Analyte precision reported is outside of laboratory established QA/QC Limits
- T** Value reported is less than the laboratory method detection limit.
- U** Compound was analyzed for but not detected.
- V** Indicates that the analyte was detected in both the sample and the associated method blank.
- Y** Laboratory analysis was from an improperly preserved sample. Data may not be accurate.
- Z** Too many colonies were present; numeric value represents the filtration volume.

Project Narrative



Environmental Testing Laboratories, Inc. is accredited through NELAC and the Florida Department of Health.



Solid samples are reported on a dry weight basis unless otherwise noted.



Please refer to Section 4.0 of the ETL Quality Assurance Manual for a measure of uncertainty.



All analyses are performed using EPA or FL-DEP methods and certified to meet NELAC requirements, except where noted.



Analytical Method Summary

E87684 **Environmental Testing Laboratories Inc.**
412 W. Walcott Street, Thomasville, GA 31792
(229) 228-2592

EPA 1603

Water Bath Incubator (SM18 9222 D (MF))

Standard Methods 18th Edition



Sample Summary

Laboratory Sample ID	Client Sample ID	Matrix	End Date / Time Sampled		Grab / Composite	Percent Moisture
262839	STATION 1	AQUEOUS-Fresh	5/26/2020	8:50	G	
262840	STATION 2A	AQUEOUS-Fresh	5/26/2020	9:10	G	
262841	STATION 3A	AQUEOUS-Fresh	5/26/2020	9:30	G	
262842	STATION 3	AQUEOUS-Fresh	5/26/2020	9:50	G	
262843	STATION 6	AQUEOUS-Fresh	5/26/2020	10:10	G	

Executive Summary

Analyte	Analytical Method	Result	Units	Qualifiers	Result Comments
STATION 1 (262839)					
E-Coli	EPA 1603	300	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	250	#/100 mL		
STATION 2A (262840)					
E-Coli	EPA 1603	800	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	1700	#/100 mL		
STATION 3A (262841)					
E-Coli	EPA 1603	1500	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	1600	#/100 mL		
STATION 3 (262842)					
E-Coli	EPA 1603	400	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	300	#/100 mL		
STATION 6 (262843)					
E-Coli	EPA 1603	300	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	550	#/100 mL		



Analytical Data

Client Sample ID: STATION 1

Sample Location:

Date Collected: 05/26/2020 08:50 AM

Laboratory Sample ID: 262839

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	25	250		#/100 mL	50	50	5/26/2020 2:05:00 PM
E-Coli	25	300		#/100 mL	50	50	5/26/2020 2:20:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Analytical Data

Client Sample ID: STATION 2A

Sample Location:

Date Collected: 05/26/2020 09:10 AM

Laboratory Sample ID: 262840

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	25	1700		#/100 mL	50	50	5/26/2020 2:05:00 PM
E-Coli	25	800		#/100 mL	50	50	5/26/2020 2:20:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Analytical Data

Client Sample ID: STATION 3A

Sample Location:

Date Collected: 05/26/2020 09:30 AM

Laboratory Sample ID: 262841

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	25	1600		#/100 mL	50	50	5/26/2020 2:05:00 PM
E-Coli	25	1500		#/100 mL	50	50	5/26/2020 2:20:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Analytical Data

Client Sample ID: STATION 3

Sample Location:

Date Collected: 05/26/2020 09:50 AM

Laboratory Sample ID: 262842

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	25	300		#/100 mL	50	50	5/26/2020 2:05:00 PM
E-Coli	25	400		#/100 mL	50	50	5/26/2020 2:20:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Analytical Data

Client Sample ID: STATION 6

Sample Location:

Date Collected: 05/26/2020 10:10 AM

Laboratory Sample ID: 262843

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	25	550		#/100 mL	50	50	5/26/2020 2:05:00 PM
E-Coli	25	300		#/100 mL	50	50	5/26/2020 2:20:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Data Chronicle

Client Sample ID: STATION 1

Laboratory Sample ID: 262839

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 05/26/2020 08:50 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	25	052620 EC	5/26/2020 2:20:00 PM	5/26/2020 2:20:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	25	052620 MFC	5/26/2020 2:05:00 PM	5/26/2020 2:05:00 PM	KDM	E87684

Client Sample ID: STATION 2A

Laboratory Sample ID: 262840

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 05/26/2020 09:10 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	25	052620 EC	5/26/2020 2:20:00 PM	5/26/2020 2:20:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	25	052620 MFC	5/26/2020 2:05:00 PM	5/26/2020 2:05:00 PM	KDM	E87684

Client Sample ID: STATION 3A

Laboratory Sample ID: 262841

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 05/26/2020 09:30 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	25	052620 EC	5/26/2020 2:20:00 PM	5/26/2020 2:20:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	25	052620 MFC	5/26/2020 2:05:00 PM	5/26/2020 2:05:00 PM	KDM	E87684

Client Sample ID: STATION 3

Laboratory Sample ID: 262842

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 05/26/2020 09:50 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	25	052620 EC	5/26/2020 2:20:00 PM	5/26/2020 2:20:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	25	052620 MFC	5/26/2020 2:05:00 PM	5/26/2020 2:05:00 PM	KDM	E87684

Client Sample ID: STATION 6

Laboratory Sample ID: 262843

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 05/26/2020 10:10 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	25	052620 EC	5/26/2020 2:20:00 PM	5/26/2020 2:20:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	25	052620 MFC	5/26/2020 2:05:00 PM	5/26/2020 2:05:00 PM	KDM	E87684

QUALITY ASSURANCE / QUALITY CONTROL DATA

J

Preparation Batch ID: 052620 EC
Method Batch ID: M052620 EC

Analysis Method: EPA 1603

Preparation Type: No Prep
Preparation Date: 5/26/2020 2:20:00 PM

Analyte	MDL	PQL	Result	Qual	Units	Spike Amount	% REC	% REC Low Limit	-	% REC High Limit	%RPD	% RPD Limit
---------	-----	-----	--------	------	-------	--------------	-------	-----------------	---	------------------	------	-------------

QA/QC Type: MB	Lab Sample ID: 052620 ECMB	Client Sample ID: 052620 ECMB	Date Analyzed: 5/26/2020 2:20:00 PM									
E-Coli	2.0	2.0	2.0	U	#/100 mL							

QA/QC Type: DUP	Lab Sample ID: 052620 ECDUP	Client Sample ID: 262839DUP	Date Analyzed: 5/26/2020 2:20:00 PM									
E-Coli	50	50	250		#/100 mL						18	46

Comments:

Preparation Batch ID: 052620 MFC
Method Batch ID: M052620 MFC

Analysis Method: SM18 9222 D (MF)

Preparation Type: No Prep
Preparation Date: 5/26/2020 2:05:00 PM

Analyte	MDL	PQL	Result	Qual	Units	Spike Amount	% REC	% REC Low Limit	-	% REC High Limit	%RPD	% RPD Limit
---------	-----	-----	--------	------	-------	--------------	-------	-----------------	---	------------------	------	-------------

QA/QC Type: MB	Lab Sample ID: 052620 MFCMB	Client Sample ID: 052620 MFCMB	Date Analyzed: 5/26/2020 2:05:00 PM									
Coliform Fecal	2.0	2.0	2.0	U	#/100 mL							

QA/QC Type: LCS	Lab Sample ID: 052620 MFCLCS	Client Sample ID: 052620 MFCLCS	Date Analyzed: 5/26/2020 2:05:00 PM									
Coliform Fecal	2.0	2.0	1260		#/100 mL	970	130	18	-	646		

QA/QC Type: LCSD	Lab Sample ID: 052620 MFCLCSD	Client Sample ID: 052620 MFCLCSD	Date Analyzed: 5/26/2020 2:05:00 PM									
Coliform Fecal	2.0	2.0	1100		#/100 mL	970	113	18	-	646	14	36

QA/QC Type: DUP	Lab Sample ID: 052620 MFCDUP	Client Sample ID: 262846DUP	Date Analyzed: 5/26/2020 2:05:00 PM									
Coliform Fecal	2.0	2.0	2.0	U	#/100 mL						0	36

Comments:

Chain of Custody Record

Company:

TTL, Inc.

Address:

4589 Va 1 North Dr. Valdosta GA 31602

Telephone Number:

229-244-8619

Telefax Number:

Sampled by [Print Name(s)] / Affiliation

David Jones / TTL

Sampler(s) Signature(s)

[Signature]

Item No.

Field ID No.

Sample

Date

Time

Grab or Composite

Matrix (see Codes)

Number of Containers

Fecal Coliforms

E. Coli

1

Station 1

5-26-20

0850

Grab

SW

2

✓

✓

2

Station 2A

5-26-20

0910

Grab

SW

2

✓

✓

3

Station 3A

5-26-20

0930

Grab

SW

2

✓

✓

4

Station 3

5-26-20

0950

Grab

SW

2

✓

✓

5

Station 6

5-26-20

1010

Grab

SW

2

✓

✓

Shipment Method

Total Number of Containers

10

Out:

/ /

Via:

Item No.

Relinquished by / Affiliation

Date

Time

Accepted by / Affiliation

Date

Time

Returned:

/ /

Via:

2020 / TTL

5-26-20

1040

T Jones

5/26/20

1040

Additional Comments:

T Jones

5/26/20

145

Cooler Number(s) / Temperature(s) (°C)

1/ICE/2.8

Sampling Kit Number

Received in Lab By:

BCL

5-20-20

1315

MATRIX CODES:

A = Air

GW = Groundwater

SE = Sediment

SO = Soil

SW = Surface Water

WW = Wastewater

O = Other (specify)

PRESERVATIVE CODES:

H = Hydrochloric acid

S = Sulfuric acid

N = Nitric

Na = Sodium Hydroxide

O = Other (specify)

PRESERVATIVE CODES:

SOIL VOCs

MS = Methanol / Sodium Bisulfate

MD = Methanol / DI Water

Environmental Testing Laboratories, Inc.

412 W. Walcott Street

Thomasville, GA 31792-4359

229/228-2592 (telephone)

229/228-2594 (telefax)

www.etl-inc.com

Analyses Requested

Project Name:

Cordale Watershed

Project Number:

Project Manager:

Melissa Morris

Facility ID Number:

REQUESTED DUE DATE

/ /

Remarks

Lab Number

262839

840

841

842

843

← Preservatives (see Codes) ICE: ☐ Yes ☐ No

ETL PROJECT NO.

20-1874



ENVIRONMENTAL TESTING LABORATORIES, INC.

Project Receipt Summary

20-1874

Project Details

Client: ITL, INC.

Project Name: CORDELE WATERSHED

Shipping and Receiving

Date/Time Received: 5/20/2020 1:45:00 PM If present, were cooler custody seals intact?

Sampling Personnel: JONES ☐ Yes ☐ No ☒ N/A

Shipping Method: Laboratory Courier If present, were sample bottle custody seals intact

Shipping Tracking Number: ☐ Yes ☐ No ☒ N/A

Thermal Preservation

Cooler Temp Method: Sample Temperature Were cooler temperatures in compliance? (0.1-6.0C)

Thermometer ID: 16032413 ☒ Yes ☐ No ☐ N/A

Number of Coolers: 1 Cooler Temperatures: 2.8

Chain of Custody

Was the chain-of-custody received in coolers? ☒ Yes ☐ No ☐ N/A

Was the chain-of-custody signed and properly relinquished? ☒ Yes ☐ No ☐ N/A

Does the chain-of-custody agree with samples and analyses? ☒ Yes ☐ No ☐ N/A

Container Receipt

Were samples received in appropriate bottleware for analyses? ☒ Yes ☐ No ☐ N/A

Was sufficient volume submitted for analyses requested? ☒ Yes ☐ No ☐ N/A

Were samples received within method holding times? ☒ Yes ☐ No ☐ N/A

Were VOA vials received with zero headspace? ☐ Yes ☐ No ☒ N/A

Were aqueous samples received at an acceptable pH? ☒ Yes ☐ No ☐ N/A

pH Test Strip Lot: MOQUANT-HC989495

Comments

I certify I have answered the questions contained herein to the best of my knowledge and have affixed labels with unique IDs onto each sample container received. I certify any discrepancies regarding the samples as received by the laboratory have been documented completely in the comments section of this form.

BR

Brandon Ray

Project Receipt Summary

20-1874

Project Sample Detail

Lab Sample ID	Client Sample ID	Matrix	TRPH SPLP Speciation MaEPH		
262839	STATION 1	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
262839-E1 (E-Coil)					
262839-E2 (Fecal)					
262840	STATION 2A	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
262840-E1 (E-Coil)					
262840-E2 (Fecal)					
262841	STATION 3A	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
262841-E1 (E-Coil)					
262841-E2 (Fecal)					
262842	STATION 3	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
262842-E1 (E-Coil)					
262842-E2 (Fecal)					
262843	STATION 6	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
262843-E1 (E-Coil)					
262843-E2 (Fecal)					

Project Receipt Summary

20-1874

Project Bottle Count Summary

Container Type	Preservative	Number of Containers
Sterile Bottle w/ Thiosulfate Pill	STERILE	10
Total		10

FINAL **ANALYTICAL REPORT**

ETL PROJECT ID: 20-3702

10/9/2020 - Revision 0

**MELISSA NORRIS
TTL, INC.
3202 GILLIONVILLE RD
ALBANY, GA 31721-
TEL: (229) 432-5805
FAX: (229) 432-7018**

**CLIENT PROJECT NAME: CORDELE WATERSHED
CLIENT PROJECT ID:
FACILITY ID:**

Enclosed are the analytical results for sample(s) received by Environmental Testing Laboratories on October 08, 2020. Results reported herein are reported on an as received basis and conform to current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Sample analyses performed by Environmental Testing Laboratories, Inc. (ETL) unless otherwise noted. ETL is accredited through NELAC and the Florida Department of Health, Certification #E87684. Scope of analyses: RCRA/CERCLA Metals, General Chemistry, Extractable Organics, and Volatile Organics. Effective Dates: February 14, 2002 through June 30, 2021.

This report shall not be reproduced, except in full, without the written consent of Environmental Testing Laboratories, Inc. This report has been signed and authorized by the signatory using an electronic signature and is intended to be the legally binding equivalent of a traditionally handwritten signature.

Authorized for release by:



ENVIRONMENTAL TESTING LABORATORIES INC

412 W. Walcott Street | Thomasville, GA 31792 | Phone: (229)-228-2592 | Fax: (229)-228-2594

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Laboratory Qualifiers

- !** Data deviate from historically established concentration ranges.
- #** Surrogate compound inadvertently omitted.
- \$** Due to dilution, surrogate compound was not detected.
- *** Not reported due to interference
- ?** Data are rejected as should not be used.
- A** Value reported is the arithmetic mean (average) of two or more determinations.
- B** Results based upon colony counts outside the acceptable range.
- D** Measurement made in the field.
- E** Extra samples were taken at composite stations.
- F** When reporting species, F indicates the female sex.
- H** Value based on field kit determination; results may not be accurate.
- I** The reported value is between the laboratory method detection limit and the laboratory practical
- J** Estimated value.
- K** Off-scale low. Actual value is known to be less than the value given.
- L** Off-scale high. Actual value is known to be greater than the value given.
- M** Presence of material is verified but not quantified; the actual value is less than the value given.
- N** Presumptive evidence of presence of material.
- O** Sampled, but analysis lost or not performed.
- Q** Sample held beyond the accepted holding time.
- R** Significant rain in the past 48 hours.
- S1** Surrogate recovery reported is outside of laboratory established QA/QC Limits
- S2** Analyte recovery reported is outside of laboratory established QA/QC Limits
- S3** Analyte precision reported is outside of laboratory established QA/QC Limits
- T** Value reported is less than the laboratory method detection limit.
- U** Compound was analyzed for but not detected.
- V** Indicates that the analyte was detected in both the sample and the associated method blank.
- Y** Laboratory analysis was from an improperly preserved sample. Data may not be accurate.
- Z** Too many colonies were present; numeric value represents the filtration volume.

Project Narrative



Environmental Testing Laboratories, Inc. is accredited through NELAC and the Florida Department of Health.



Solid samples are reported on a dry weight basis unless otherwise noted.



Please refer to Section 4.0 of the ETL Quality Assurance Manual for a measure of uncertainty.



All analyses are performed using EPA or FL-DEP methods and certified to meet NELAC requirements, except where noted.



Analytical Method Summary

E87684 **Environmental Testing Laboratories Inc.**
412 W. Walcott Street, Thomasville, GA 31792
(229) 228-2592

EPA 1603

Water Bath Incubator (SM18 9222 D (MF))

Standard Methods 18th Edition



Sample Summary

Laboratory Sample ID	Client Sample ID	Matrix	End Date / Time Sampled		Grab / Composite	Percent Moisture
268991	STATION 1	AQUEOUS-Fresh	10/8/2020	8:00	G	
268992	STATION 2A	AQUEOUS-Fresh	10/8/2020	8:25	G	
268993	STATION 3A	AQUEOUS-Fresh	10/8/2020	8:45	G	
268994	STATION 3	AQUEOUS-Fresh	10/8/2020	9:10	G	
268995	STATION 6	AQUEOUS-Fresh	10/8/2020	9:45	G	

Executive Summary

Analyte	Analytical Method	Result	Units	Qualifiers	Result Comments
STATION 1 (268991)					
E-Coli	EPA 1603	220	#/100 mL	Q	
Coliform Fecal	SM18 9222 D (MF)	180	#/100 mL		
STATION 2A (268992)					
E-Coli	EPA 1603	200	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	220	#/100 mL		
STATION 3A (268993)					
E-Coli	EPA 1603	20	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	20	#/100 mL		
STATION 3 (268994)					
E-Coli	EPA 1603	80	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	160	#/100 mL		
STATION 6 (268995)					
E-Coli	EPA 1603	520	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	620	#/100 mL		



Analytical Data

Client Sample ID: STATION 1
Sample Location:
Date Collected: 10/08/2020 08:00 AM

Laboratory Sample ID: 268991
Matrix: AQUEOUS-Fresh
Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	180		#/100 mL	20	20	10/8/2020 1:50:00 PM
E-Coli	10	220	Q	#/100 mL	20	20	10/8/2020 2:10:00 PM



Analytical Data

Client Sample ID: STATION 2A

Sample Location:

Date Collected: 10/08/2020 08:25 AM

Laboratory Sample ID: 268992

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	220		#/100 mL	20	20	10/8/2020 1:50:00 PM
E-Coli	10	200		#/100 mL	20	20	10/8/2020 2:10:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Analytical Data

Client Sample ID: STATION 3A
Sample Location:
Date Collected: 10/08/2020 08:45 AM

Laboratory Sample ID: 268993
Matrix: AQUEOUS-Fresh
Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	20		#/100 mL	20	20	10/8/2020 1:50:00 PM
E-Coli	10	20		#/100 mL	20	20	10/8/2020 2:10:00 PM



Analytical Data

Client Sample ID: STATION 3

Sample Location:

Date Collected: 10/08/2020 09:10 AM

Laboratory Sample ID: 268994

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	160		#/100 mL	20	20	10/8/2020 1:50:00 PM
E-Coli	10	80		#/100 mL	20	20	10/8/2020 2:10:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Analytical Data

Client Sample ID: STATION 6

Sample Location:

Date Collected: 10/08/2020 09:45 AM

Laboratory Sample ID: 268995

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	620		#/100 mL	20	20	10/8/2020 1:50:00 PM
E-Coli	10	520		#/100 mL	20	20	10/8/2020 2:10:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Data Chronicle

Client Sample ID: STATION 1

Laboratory Sample ID: 268991

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 10/08/2020 08:00 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	10	100820 EC	10/8/2020 2:10:00 PM	10/8/2020 2:10:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	10	100820 MFC	10/8/2020 1:50:00 PM	10/8/2020 1:50:00 PM	KDM	E87684

Client Sample ID: STATION 2A

Laboratory Sample ID: 268992

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 10/08/2020 08:25 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	10	100820 EC	10/8/2020 2:10:00 PM	10/8/2020 2:10:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	10	100820 MFC	10/8/2020 1:50:00 PM	10/8/2020 1:50:00 PM	KDM	E87684

Client Sample ID: STATION 3A

Laboratory Sample ID: 268993

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 10/08/2020 08:45 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	10	100820 EC	10/8/2020 2:10:00 PM	10/8/2020 2:10:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	10	100820 MFC	10/8/2020 1:50:00 PM	10/8/2020 1:50:00 PM	KDM	E87684

Client Sample ID: STATION 3

Laboratory Sample ID: 268994

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 10/08/2020 09:10 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	10	100820 EC	10/8/2020 2:10:00 PM	10/8/2020 2:10:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	10	100820 MFC	10/8/2020 1:50:00 PM	10/8/2020 1:50:00 PM	KDM	E87684

Client Sample ID: STATION 6

Laboratory Sample ID: 268995

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 10/08/2020 09:45 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	10	100820 EC	10/8/2020 2:10:00 PM	10/8/2020 2:10:00 PM	KDM	E87684
TOT	RES	SM18 9222 D (MF)	10	100820 MFC	10/8/2020 1:50:00 PM	10/8/2020 1:50:00 PM	KDM	E87684

QUALITY ASSURANCE / QUALITY CONTROL DATA

J

Preparation Batch ID: 100820 EC
Method Batch ID: M100820 EC

Analysis Method: EPA 1603

Preparation Type: No Prep
Preparation Date: 10/8/2020 2:10:00 PM

Analyte	MDL	PQL	Result	Qual	Units	Spike Amount	% REC	% REC Low Limit	-	% REC High Limit	%RPD	% RPD Limit
---------	-----	-----	--------	------	-------	--------------	-------	-----------------	---	------------------	------	-------------

QA/QC Type: MB	Lab Sample ID: 100820 ECMB	Client Sample ID: 100820 ECMB	Date Analyzed: 10/8/2020 2:10:00 PM									
E-Coli	2.0	2.0	2.0	U	#/100 mL							

QA/QC Type: LCS	Lab Sample ID: 100820 ECLCS	Client Sample ID: 100820 ECLCS	Date Analyzed: 10/8/2020 2:10:00 PM									
E-Coli	2.0	2.0	1440		#/100 mL	1273	113	25	-	505		

QA/QC Type: LCSD	Lab Sample ID: 100820 ECLCSD	Client Sample ID: 100820 ECLCSD	Date Analyzed: 10/8/2020 2:10:00 PM									
E-Coli	2.0	2.0	1080		#/100 mL	1273	84.8	25	-	505	29	36

QA/QC Type: DUP	Lab Sample ID: 100820 ECDUP	Client Sample ID: 268991DUP	Date Analyzed: 10/8/2020 2:10:00 PM									
E-Coli	20	20	160		#/100 mL						32	46

Comments:

Preparation Batch ID: 100820 MFC
Method Batch ID: M100820 MFC

Analysis Method: SM18 9222 D (MF)

Preparation Type: No Prep
Preparation Date: 10/8/2020 1:50:00 PM

Analyte	MDL	PQL	Result	Qual	Units	Spike Amount	% REC	% REC Low Limit	-	% REC High Limit	%RPD	% RPD Limit
---------	-----	-----	--------	------	-------	--------------	-------	-----------------	---	------------------	------	-------------

QA/QC Type: MB	Lab Sample ID: 100820 MFCMB	Client Sample ID: 100820 MFCMB	Date Analyzed: 10/8/2020 1:50:00 PM									
Coliform Fecal	2.0	2.0	2.0	U	#/100 mL							

QA/QC Type: LCS	Lab Sample ID: 100820 MFCLCS	Client Sample ID: 100820 MFCLCS	Date Analyzed: 10/8/2020 1:50:00 PM									
Coliform Fecal	2.0	2.0	1700		#/100 mL	765	222	17	-	646		

QA/QC Type: LCSD	Lab Sample ID: 100820 MFCLCSD	Client Sample ID: 100820 MFCLCSD	Date Analyzed: 10/8/2020 1:50:00 PM									
Coliform Fecal	2.0	2.0	1580		#/100 mL	765	207	17	-	646	7.3	36

QA/QC Type: DUP	Lab Sample ID: 100820 MFCDUP	Client Sample ID: 269005DUP	Date Analyzed: 10/8/2020 1:50:00 PM									
Coliform Fecal	10	10	30	S3	#/100 mL						50	36

Comments:

Chain of Custody Record

Company: TTL, Inc.						Environmental Testing Laboratories, Inc. 412 W. Walcott Street Thomasville, GA 31792-4359 229/228-2592 (telephone) www.etl-inc.com 229/228-2594 (telefax)								Page 1 of 1			
Address: 4589 Val North Dr.														Project Name: Cordelle Watershed			
Telephone Number: (229) 244-8219 Telefax Number:														Project Number:			
Sampled by [Print Name(s)] / Affiliation Melissa Norris						Analyses Requested								Project Manager:			
Sampler(s) Signature(s) Melissa Norris														Facility ID Number:			
														REQUESTED DUE DATE / /			
														Remarks		Lab Number	
Item No.	Field ID No.	Sample Date Time		Grab or Composite	Matrix (see Codes)	Number of Containers	Fecal	E. Coli									
1	Station 1	10-8-20	0800	Grab	SW	2	X	X									268991
2	Station 2A		0825			2	X	X									992
3	Station 3A		0845			2	X	X									993
4	Station 3		0910			2	X	X									994
5	Station 6		0945			2	X	X									995
Shipment Method				Total Number of Containers												← Preservatives (see Codes) ICE: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Out:	/ /	Via:		Item No.	Relinquished by / Affiliation		Date	Time	Accepted by / Affiliation				Date	Time			
Returned:	/ /	Via:		1-5	Melissa Norris Tygi		10-8-20	10:40	Tygi				10/8/20	16:40			
Additional Comments:																	
Cooler Number(s) / Temperature(s) (°C) Ice / 3.6						Sampling Kit Number		Received in Lab By: PCR				10-8-20 13:30					
MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water WW = Wastewater O = Other (specify)																	
PRESERVATIVE CODES: H = Hydrochloric acid S = Sulfuric acid N = Nitric Na = Sodium Hydroxide O = Other (specify)																	
PRESERVATIVE CODES: SOIL VOCs MS = Methanol / Sodium Bisulfate MD = Methanol / DI Water																	
ETL PROJECT NO.														20-3702			

Project Receipt Summary

20-3702

Project Details

Client: TTL, INC.

Project Name: CORDELE WATERSHED

Shipping and Receiving

Date/Time Received: 10/8/2020 1:30:00 PM If present, were cooler custody seals intact?

Sampling Personnel: NORRIS ☐ Yes ☐ No ☒ N/A

Shipping Method: Laboratory Courier If present, were sample bottle custody seals intact

Shipping Tracking Number: ☐ Yes ☐ No ☒ N/A

Thermal Preservation

Cooler Temp Method: Sample Temperature Were cooler temperatures in compliance? (0.1-6.0C)

Thermometer ID: 16032413 ☒ Yes ☐ No ☐ N/A

Number of Coolers: 1 Cooler Temperatures: 3.6

Chain of Custody

Was the chain-of-custody received in coolers? ☒ Yes ☐ No ☐ N/A

Was the chain-of-custody signed and properly relinquished? ☒ Yes ☐ No ☐ N/A

Does the chain-of-custody agree with samples and analyses? ☒ Yes ☐ No ☐ N/A

Container Receipt

Were samples received in appropriate bottleneare for analyses? ☒ Yes ☐ No ☐ N/A

Was sufficient volume submitted for analyses requested? ☒ Yes ☐ No ☐ N/A

Were samples received within method holding times? ☒ Yes ☐ No ☐ N/A

Were VOA vials received with zero headspace? ☐ Yes ☐ No ☒ N/A

Were aqueous samples received at an acceptable pH? ☒ Yes ☐ No ☐ N/A

pH Test Strip Manufacturer / Lot #: MQUANT-HC989495

Comments

I certify I have answered the questions contained herein to the best of my knowledge and have affixed labels with unique IDs onto each sample container received. I certify any discrepancies regarding the samples as received by the laboratory have been documented completely in the comments section of this form.

BR

Brandon Ray



ENVIRONMENTAL TESTING LABORATORIES, INC.

Project Receipt Summary

20-3702

Project Sample Detail

Lab Sample ID	Client Sample ID	Matrix	TRPH			MaVPH		
			SPLP	Speciation	MaEPH			
268991	STATION 1	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
268991-E1 (E-Coil)								
268991-E2 (Fecal)								
268992	STATION 2A	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
268992-E1 (E-Coil)								
268992-E2 (Fecal)								
268993	STATION 3A	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
268993-E1 (E-Coil)								
268993-E2 (Fecal)								
268994	STATION 3	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
268994-E1 (E-Coil)								
268994-E2 (Fecal)								
268995	STATION 6	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
268995-E1 (E-Coil)								
268995-E2 (Fecal)								

Project Receipt Summary

20-3702

Project Bottle Count Summary

Container Type	Preservative	Number of Containers
Sterile Bottle w/ Thiosulfate Pill	STERILE	10
Total		10

FINAL

ANALYTICAL REPORT

ETL PROJECT ID: 20-3808

10/16/2020 - Revision 0

**MELISSA NORRIS
TTL, INC.
3202 GILLIONVILLE RD
ALBANY, GA 31721-
TEL: (229) 432-5805
FAX: (229) 432-7018**

**CLIENT PROJECT NAME: CORDELE WATERSHED
CLIENT PROJECT ID:
FACILITY ID:**

Enclosed are the analytical results for sample(s) received by Environmental Testing Laboratories on October 15, 2020. Results reported herein are reported on an as received basis and conform to current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Sample analyses performed by Environmental Testing Laboratories, Inc. (ETL) unless otherwise noted. ETL is accredited through NELAC and the Florida Department of Health, Certification #E87684. Scope of analyses: RCRA/CERCLA Metals, General Chemistry, Extractable Organics, and Volatile Organics. Effective Dates: February 14, 2002 through June 30, 2021.

This report shall not be reproduced, except in full, without the written consent of Environmental Testing Laboratories, Inc. This report has been signed and authorized by the signatory using an electronic signature and is intended to be the legally binding equivalent of a traditionally handwritten signature.

Authorized for release by:



ENVIRONMENTAL TESTING LABORATORIES INC

412 W. Walcott Street | Thomasville, GA 31792 | Phone: (229)-228-2592 | Fax: (229)-228-2594

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Sub-Contracted Data	K

Laboratory Qualifiers

- !** Data deviate from historically established concentration ranges.
- #** Surrogate compound inadvertently omitted.
- \$** Due to dilution, surrogate compound was not detected.
- *** Not reported due to interference
- ?** Data are rejected as should not be used.
- A** Value reported is the arithmetic mean (average) of two or more determinations.
- B** Results based upon colony counts outside the acceptable range.
- D** Measurement made in the field.
- E** Extra samples were taken at composite stations.
- F** When reporting species, F indicates the female sex.
- H** Value based on field kit determination; results may not be accurate.
- I** The reported value is between the laboratory method detection limit and the laboratory practical
- J** Estimated value.
- K** Off-scale low. Actual value is known to be less than the value given.
- L** Off-scale high. Actual value is known to be greater than the value given.
- M** Presence of material is verified but not quantified; the actual value is less than the value given.
- N** Presumptive evidence of presence of material.
- O** Sampled, but analysis lost or not performed.
- Q** Sample held beyond the accepted holding time.
- R** Significant rain in the past 48 hours.
- S1** Surrogate recovery reported is outside of laboratory established QA/QC Limits
- S2** Analyte recovery reported is outside of laboratory established QA/QC Limits
- S3** Analyte precision reported is outside of laboratory established QA/QC Limits
- T** Value reported is less than the laboratory method detection limit.
- U** Compound was analyzed for but not detected.
- V** Indicates that the analyte was detected in both the sample and the associated method blank.
- Y** Laboratory analysis was from an improperly preserved sample. Data may not be accurate.
- Z** Too many colonies were present; numeric value represents the filtration volume.

Project Narrative



Environmental Testing Laboratories, Inc. is accredited through NELAC and the Florida Department of Health.



Solid samples are reported on a dry weight basis unless otherwise noted.



Please refer to Section 4.0 of the ETL Quality Assurance Manual for a measure of uncertainty.



All analyses are performed using EPA or FL-DEP methods and certified to meet NELAC requirements, except where noted.



Analytical Method Summary

E87684 **Environmental Testing Laboratories Inc.**
412 W. Walcott Street, Thomasville, GA 31792
(229) 228-2592

EPA 1603

Water Bath Incubator (SM18 9222 D (MF))

Standard Methods 18th Edition



Sample Summary

Laboratory Sample ID	Client Sample ID	Matrix	End Date / Time Sampled		Grab / Composite	Percent Moisture
269353	STATION 1	AQUEOUS-Fresh	10/15/2020	8:30	G	
269354	STATION 2A	AQUEOUS-Fresh	10/15/2020	9:10	G	
269355	STATION 3A	AQUEOUS-Fresh	10/15/2020	9:25	G	
269356	STATION 3	AQUEOUS-Fresh	10/15/2020	9:35	G	
269357	STATION 6	AQUEOUS-Fresh	10/15/2020	9:50	G	

Executive Summary

Analyte	Analytical Method	Result	Units	Qualifiers	Result Comments
STATION 1 (269353)					
E-Coli	EPA 1603	170	#/100 mL	Q	
Coliform Fecal	SM18 9222 D (MF)	260	#/100 mL		
STATION 2A (269354)					
E-Coli	EPA 1603	340	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	440	#/100 mL		
STATION 3A (269355)					
E-Coli	EPA 1603	600	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	760	#/100 mL		
STATION 3 (269356)					
E-Coli	EPA 1603	590	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	720	#/100 mL		
STATION 6 (269357)					
E-Coli	EPA 1603	600	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	1000	#/100 mL		



Analytical Data

Client Sample ID: STATION 1

Sample Location:

Date Collected: 10/15/2020 08:30 AM

Laboratory Sample ID: 269353

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	5.0	260		#/100 mL	10	10	10/15/2020 2:20:00 PM
E-Coli	2.5	170	Q	#/100 mL	5.0	5.0	10/15/2020 3:00:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Analytical Data

Client Sample ID: STATION 2A

Sample Location:

Date Collected: 10/15/2020 09:10 AM

Laboratory Sample ID: 269354

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	440		#/100 mL	20	20	10/15/2020 2:20:00 PM
E-Coli	5.0	340		#/100 mL	10	10	10/15/2020 3:00:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Analytical Data

Client Sample ID: STATION 3A

Sample Location:

Date Collected: 10/15/2020 09:25 AM

Laboratory Sample ID: 269355

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	760		#/100 mL	20	20	10/15/2020 2:20:00 PM
E-Coli	5.0	600		#/100 mL	5.0	5.0	10/15/2020 3:00:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Analytical Data

Client Sample ID: STATION 3
Sample Location:
Date Collected: 10/15/2020 09:35 AM

Laboratory Sample ID: 269356
Matrix: AQUEOUS-Fresh
Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	720		#/100 mL	20	20	10/15/2020 2:20:00 PM
E-Coli	5.0	590		#/100 mL	10	10	10/15/2020 3:00:00 PM



Analytical Data

Client Sample ID: STATION 6

Sample Location:

Date Collected: 10/15/2020 09:50 AM

Laboratory Sample ID: 269357

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	1000		#/100 mL	20	20	10/15/2020 2:20:00 PM
E-Coli	5.0	600		#/100 mL	10	10	10/15/2020 3:00:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Data Chronicle

Client Sample ID: STATION 1

Laboratory Sample ID: 269353

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 10/15/2020 08:30 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	2.5	101520 EC	10/15/2020 3:00:00 PM	10/15/2020 3:00:00 PM	MD	E87684
TOT	RES	SM18 9222 D (MF)	5.0	101520 MFC	10/15/2020 2:20:00 PM	10/15/2020 2:20:00 PM	MD	E87684

Client Sample ID: STATION 2A

Laboratory Sample ID: 269354

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 10/15/2020 09:10 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	5.0	101520 EC	10/15/2020 3:00:00 PM	10/15/2020 3:00:00 PM	MD	E87684
TOT	RES	SM18 9222 D (MF)	10	101520 MFC	10/15/2020 2:20:00 PM	10/15/2020 2:20:00 PM	MD	E87684

Client Sample ID: STATION 3A

Laboratory Sample ID: 269355

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 10/15/2020 09:25 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	5.0	101520 EC	10/15/2020 3:00:00 PM	10/15/2020 3:00:00 PM	MD	E87684
TOT	RES	SM18 9222 D (MF)	10	101520 MFC	10/15/2020 2:20:00 PM	10/15/2020 2:20:00 PM	MD	E87684

Client Sample ID: STATION 3

Laboratory Sample ID: 269356

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 10/15/2020 09:35 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	5.0	101520 EC	10/15/2020 3:00:00 PM	10/15/2020 3:00:00 PM	MD	E87684
TOT	RES	SM18 9222 D (MF)	10	101520 MFC	10/15/2020 2:20:00 PM	10/15/2020 2:20:00 PM	MD	E87684

Client Sample ID: STATION 6

Laboratory Sample ID: 269357

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 10/15/2020 09:50 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	5.0	101520 EC	10/15/2020 3:00:00 PM	10/15/2020 3:00:00 PM	MD	E87684
TOT	RES	SM18 9222 D (MF)	10	101520 MFC	10/15/2020 2:20:00 PM	10/15/2020 2:20:00 PM	MD	E87684

QUALITY ASSURANCE / QUALITY CONTROL DATA

J

Preparation Batch ID: 101520 EC
Method Batch ID: M101520 EC

Analysis Method: EPA 1603

Preparation Type: No Prep
Preparation Date: 10/15/2020 3:00:00 PM

Analyte	MDL	PQL	Result	Qual	Units	Spike Amount	% REC	% REC Low Limit	-	% REC High Limit	%RPD	% RPD Limit
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QA/QC Type: MB	Lab Sample ID: 101520 ECMB	Client Sample ID: 101520 ECMB	Date Analyzed: 10/15/2020 3:00:00 PM
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E-Coli	2.0	2.0	2.0	U	#/100 mL
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QA/QC Type: LCS	Lab Sample ID: 101520 ECLCS	Client Sample ID: 101520 ECLCS	Date Analyzed: 10/15/2020 3:00:00 PM
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E-Coli	2.0	2.0	800	#/100 mL	1273	62.8	25	-	505
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QA/QC Type: LCSD	Lab Sample ID: 101520 ECLCSD	Client Sample ID: 101520 ECLCSD	Date Analyzed: 10/15/2020 3:00:00 PM
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E-Coli	2.0	2.0	1100	#/100 mL	1273	86.4	25	-	505	32	36
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Comments:

Preparation Batch ID: 101520 MFC
Method Batch ID: M101520 MFC

Analysis Method: SM18 9222 D (MF)

Preparation Type: No Prep
Preparation Date: 10/15/2020 2:20:00 PM

Analyte	MDL	PQL	Result	Qual	Units	Spike Amount	% REC	% REC Low Limit	-	% REC High Limit	%RPD	% RPD Limit
---------	-----	-----	--------	------	-------	--------------	-------	-----------------	---	------------------	------	-------------

QA/QC Type: MB	Lab Sample ID: 101520 MFCMB	Client Sample ID: 101520 MFCMB	Date Analyzed: 10/15/2020 2:20:00 PM
----------------	-----------------------------	--------------------------------	--------------------------------------

Coliform Fecal	2.0	2.0	2.0	U	#/100 mL
----------------	-----	-----	-----	---	----------

QA/QC Type: LCS	Lab Sample ID: 101520 MFCLCS	Client Sample ID: 101520 MFCLCS	Date Analyzed: 10/15/2020 2:20:00 PM
-----------------	------------------------------	---------------------------------	--------------------------------------


Coliform Fecal	2.0	2.0	1140	#/100 mL	765	149	17	-	646
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QA/QC Type: LCSD	Lab Sample ID: 101520 MFCLCSD	Client Sample ID: 101520 MFCLCSD	Date Analyzed: 10/15/2020 2:20:00 PM
------------------	-------------------------------	----------------------------------	--------------------------------------

Coliform Fecal	2.0	2.0	1540	#/100 mL	765	201	17	-	646	30	36
----------------	-----	-----	------	----------	-----	-----	----	---	-----	----	----

Comments:

Chain of Custody Record

Company: TTL, Inc.						Environmental Testing Laboratories, Inc.  412 W. Walcott Street Thomasville, GA 31792-4359 229/228-2592 (telephone) 229/228-2594 (telefax) www.etl-inc.com						Page 1 of 1				
Address: 4589 Val North Dr.												Project Name: Cordele Watershed				
Telephone Number: 229/244-8619 Telefax Number:						Project Number:										
Sampled by [Print Name(s)] / Affiliation Melissa Norris, TTL						Project Manager:										
Sampler(s) Signature(s)						Facility ID Number:										
						REQUESTED DUE DATE / /										
						Remarks Lab Number										
Item No.	Field ID No.	Sample Date Time		Grab or Composite	Matrix (see Codes)	Number of Containers	Fecal	E. Coli								
1	Station 1	10-15-20	0830	Grab	SW	2	X	X								269353
2	Station 2A		0910				X	X								354
3	Station 3A		0925				X	X								355
4	Station 3		0935				X	X								356
5	Station 6		0950				X	X								357
Shipment Method				Total Number of Containers		10									← Preservatives (see Codes) ICE: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Out:	/ /	Via:	Item No.	Relinquished by / Affiliation		Date	Time	Accepted by / Affiliation				Date	Time			
Returned:	/ /	Via:	1-5	Melissa Norris		10-15-20	11⁰⁰	Tyler My				10/15/20	11⁰⁰			
Additional Comments:				Tyler		10/15/20	1:45									
				Cooler Number(s) / Temperature(s) (°C)		Sampling Kit Number		Received in Lab By:								
				1/ice / 2.9				BCR		10-15-20	13:45					
MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water WW = Wastewater O = Other (specify)																
PRESERVATIVE CODES: H = Hydrochloric acid S = Sulfuric acid N = Nitric Na = Sodium Hydroxide O = Other (specify)																
PRESERVATIVE CODES: SOIL VOCs MS = Methanol / Sodium Bisulfate MD = Methanol / DI Water																
ETL PROJECT NO.												20-3808				

Project Receipt Summary

20-3808

Project Details

Client: ITL, INC.

Project Name: CORDELE WATERSHED

Shipping and Receiving

Date/Time Received: 10/15/2020 1:45:00 PM If present, were cooler custody seals intact?

Sampling Personnel: NORRIS ☐ Yes ☐ No ☒ N/A

Shipping Method: Laboratory Courier If present, were sample bottle custody seals intact

Shipping Tracking Number: ☐ Yes ☐ No ☒ N/A

Thermal Preservation

Cooler Temp Method: Sample Temperature Were cooler temperatures in compliance? (0.1-6.0C)

Thermometer ID: 16032413 ☒ Yes ☐ No ☐ N/A

Number of Coolers: 1 Cooler Temperatures: 2.9

Chain of Custody

Was the chain-of-custody received in coolers? ☒ Yes ☐ No ☐ N/A

Was the chain-of-custody signed and properly relinquished? ☒ Yes ☐ No ☐ N/A

Does the chain-of-custody agree with samples and analyses? ☒ Yes ☐ No ☐ N/A

Container Receipt

Were samples received in appropriate bottlenecks for analyses? ☒ Yes ☐ No ☐ N/A

Was sufficient volume submitted for analyses requested? ☒ Yes ☐ No ☐ N/A

Were samples received within method holding times? ☒ Yes ☐ No ☐ N/A

Were VOA vials received with zero headspace? ☐ Yes ☐ No ☒ N/A

Were aqueous samples received at an acceptable pH? ☒ Yes ☐ No ☐ N/A

pH Test Strip Manufacturer / Lot #: MQUANT-HC989495

Comments

I certify I have answered the questions contained herein to the best of my knowledge and have affixed labels with unique IDs onto each sample container received. I certify any discrepancies regarding the samples as received by the laboratory have been documented completely in the comments section of this form.

BCR

Brandon Ray



ENVIRONMENTAL TESTING LABORATORIES, INC.

Project Receipt Summary

20-3808

Project Sample Detail

Lab Sample ID	Client Sample ID	Matrix	TRPH	MaVPH
			SPLP Speciation	MaEPH
269353	STATION 1	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>
269353-E1 (E-Coli)				
269353-E2 (Fecal)				
269354	STATION 2A	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>
269354-E1 (E-Coli)				
269354-E2 (Fecal)				
269355	STATION 3A	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>
269355-E1 (E-Coli)				
269355-E2 (Fecal)				
269356	STATION 3	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>
269356-E1 (E-Coli)				
269356-E2 (Fecal)				
269357	STATION 6	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>
269357-E1 (E-Coli)				
269357-E2 (Fecal)				

Project Receipt Summary

20-3808

Project Bottle Count Summary

Container Type	Preservative	Number of Containers
Sterile Bottle w/ Thiosulfate Pill	STERILE	10
Total		10

FINAL **ANALYTICAL REPORT**

ETL PROJECT ID: 20-3879

10/23/2020 - Revision 0

**MELISSA NORRIS
TTL, INC.
3202 GILLIONVILLE RD
ALBANY, GA 31721-
TEL: (229) 432-5805
FAX: (229) 432-7018**

**CLIENT PROJECT NAME: CORDELE WATERSHED
CLIENT PROJECT ID: 000200601075.00
FACILITY ID:**

Enclosed are the analytical results for sample(s) received by Environmental Testing Laboratories on October 22, 2020. Results reported herein are reported on an as received basis and conform to current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Sample analyses performed by Environmental Testing Laboratories, Inc. (ETL) unless otherwise noted. ETL is accredited through NELAC and the Florida Department of Health, Certification #E87684. Scope of analyses: RCRA/CERCLA Metals, General Chemistry, Extractable Organics, and Volatile Organics. Effective Dates: February 14, 2002 through June 30, 2021.

This report shall not be reproduced, except in full, without the written consent of Environmental Testing Laboratories, Inc. This report has been signed and authorized by the signatory using an electronic signature and is intended to be the legally binding equivalent of a traditionally handwritten signature.

Authorized for release by:



ENVIRONMENTAL TESTING LABORATORIES INC

412 W. Walcott Street | Thomasville, GA 31792 | Phone: (229)-228-2592 | Fax: (229)-228-2594

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Laboratory Qualifiers

- !** Data deviate from historically established concentration ranges.
- #** Surrogate compound inadvertently omitted.
- \$** Due to dilution, surrogate compound was not detected.
- *** Not reported due to interference
- ?** Data are rejected as should not be used.
- A** Value reported is the arithmetic mean (average) of two or more determinations.
- B** Results based upon colony counts outside the acceptable range.
- D** Measurement made in the field.
- E** Extra samples were taken at composite stations.
- F** When reporting species, F indicates the female sex.
- H** Value based on field kit determination; results may not be accurate.
- I** The reported value is between the laboratory method detection limit and the laboratory practical
- J** Estimated value.
- K** Off-scale low. Actual value is known to be less than the value given.
- L** Off-scale high. Actual value is known to be greater than the value given.
- M** Presence of material is verified but not quantified; the actual value is less than the value given.
- N** Presumptive evidence of presence of material.
- O** Sampled, but analysis lost or not performed.
- Q** Sample held beyond the accepted holding time.
- R** Significant rain in the past 48 hours.
- S1** Surrogate recovery reported is outside of laboratory established QA/QC Limits
- S2** Analyte recovery reported is outside of laboratory established QA/QC Limits
- S3** Analyte precision reported is outside of laboratory established QA/QC Limits
- T** Value reported is less than the laboratory method detection limit.
- U** Compound was analyzed for but not detected.
- V** Indicates that the analyte was detected in both the sample and the associated method blank.
- Y** Laboratory analysis was from an improperly preserved sample. Data may not be accurate.
- Z** Too many colonies were present; numeric value represents the filtration volume.

Project Narrative



Environmental Testing Laboratories, Inc. is accredited through NELAC and the Florida Department of Health.



Solid samples are reported on a dry weight basis unless otherwise noted.



Please refer to Section 4.0 of the ETL Quality Assurance Manual for a measure of uncertainty.



All analyses are performed using EPA or FL-DEP methods and certified to meet NELAC requirements, except where noted.



Analytical Method Summary

E87684 **Environmental Testing Laboratories Inc.**
412 W. Walcott Street, Thomasville, GA 31792
(229) 228-2592

EPA 1603

Water Bath Incubator (SM18 9222 D (MF))

Standard Methods 18th Edition



Sample Summary

Laboratory Sample ID	Client Sample ID	Matrix	End Date / Time Sampled		Grab / Composite	Percent Moisture
269624	STATION 1	AQUEOUS-Fresh	10/22/2020	8:15	G	
269625	STATION 2A	AQUEOUS-Fresh	10/22/2020	8:45	G	
269626	STATION 3A	AQUEOUS-Fresh	10/22/2020	9:00	G	
269627	STATION 3	AQUEOUS-Fresh	10/22/2020	9:15	G	

Executive Summary

Analyte	Analytical Method	Result	Units	Qualifiers	Result Comments
STATION 1 (269624)					
E-Coli	EPA 1603	170	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	160	#/100 mL		
STATION 2A (269625)					
E-Coli	EPA 1603	80	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	100	#/100 mL		
STATION 3A (269626)					
E-Coli	EPA 1603	1200	#/100 mL	B	
Coliform Fecal	SM18 9222 D (MF)	1400	#/100 mL	B	
STATION 3 (269627)					
E-Coli	EPA 1603	280	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	320	#/100 mL		

Analytical Data

Client Sample ID: STATION 1

Laboratory Sample ID: 269624

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 10/22/2020 08:15 AM

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	160		#/100 mL	20	20	10/22/2020 2:10:00 PM
E-Coli	5.0	170		#/100 mL	10	10	10/22/2020 2:40:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor

Environmental Testing Laboratories, Inc.



Analytical Data

Client Sample ID: STATION 2A

Sample Location:

Date Collected: 10/22/2020 08:45 AM

Laboratory Sample ID: 269625

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	100		#/100 mL	20	20	10/22/2020 2:10:00 PM
E-Coli	5.0	80		#/100 mL	10	10	10/22/2020 2:40:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Analytical Data

Client Sample ID: STATION 3A
Sample Location:
Date Collected: 10/22/2020 09:00 AM

Laboratory Sample ID: 269626
Matrix: AQUEOUS-Fresh
Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	1400	B	#/100 mL	20	20	10/22/2020 2:10:00 PM
E-Coli	2.5	1200	B	#/100 mL	5.0	5.0	10/22/2020 2:40:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Analytical Data

Client Sample ID: STATION 3

Sample Location:

Date Collected: 10/22/2020 09:15 AM

Laboratory Sample ID: 269627

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	320		#/100 mL	20	20	10/22/2020 2:10:00 PM
E-Coli	5.0	280		#/100 mL	10	10	10/22/2020 2:40:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Data Chronicle

Client Sample ID: STATION 1**Laboratory Sample ID: 269624****Sample Location:****Matrix: AQUEOUS-Fresh****Date Collected: 10/22/2020 08:15 AM****Percent Moisture:**

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	5.0	102220 EC	10/22/2020 2:40:00 PM	10/22/2020 2:40:00 PM	MD	E87684
TOT	RES	SM18 9222 D (MF)	10	102220 MFC	10/22/2020 2:10:00 PM	10/22/2020 2:10:00 PM	MD	E87684

Client Sample ID: STATION 2A**Laboratory Sample ID: 269625****Sample Location:****Matrix: AQUEOUS-Fresh****Date Collected: 10/22/2020 08:45 AM****Percent Moisture:**

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	5.0	102220 EC	10/22/2020 2:40:00 PM	10/22/2020 2:40:00 PM	MD	E87684
TOT	RES	SM18 9222 D (MF)	10	102220 MFC	10/22/2020 2:10:00 PM	10/22/2020 2:10:00 PM	MD	E87684

Client Sample ID: STATION 3A**Laboratory Sample ID: 269626****Sample Location:****Matrix: AQUEOUS-Fresh****Date Collected: 10/22/2020 09:00 AM****Percent Moisture:**

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	2.5	102220 EC	10/22/2020 2:40:00 PM	10/22/2020 2:40:00 PM	MD	E87684
TOT	RES	SM18 9222 D (MF)	10	102220 MFC	10/22/2020 2:10:00 PM	10/22/2020 2:10:00 PM	MD	E87684

Client Sample ID: STATION 3**Laboratory Sample ID: 269627****Sample Location:****Matrix: AQUEOUS-Fresh****Date Collected: 10/22/2020 09:15 AM****Percent Moisture:**

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	5.0	102220 EC	10/22/2020 2:40:00 PM	10/22/2020 2:40:00 PM	MD	E87684
TOT	RES	SM18 9222 D (MF)	10	102220 MFC	10/22/2020 2:10:00 PM	10/22/2020 2:10:00 PM	MD	E87684

QUALITY ASSURANCE / QUALITY CONTROL DATA

J

Preparation Batch ID: 102220 EC
Method Batch ID: M102220 EC

Analysis Method: EPA 1603

Preparation Type: No Prep
Preparation Date: 10/22/2020 2:40:00 PM

Analyte	MDL	PQL	Result	Qual	Units	Spike Amount	% REC	% REC Low Limit	-	% REC High Limit	%RPD	% RPD Limit
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QA/QC Type: MB	Lab Sample ID: 102220 ECMB	Client Sample ID: 102220 ECMB	Date Analyzed: 10/22/2020 2:40:00 PM
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E-Coli	2.0	2.0	2.0	U	#/100 mL
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QA/QC Type: LCS	Lab Sample ID: 102220 ECLCS	Client Sample ID: 102220 ECLCS	Date Analyzed: 10/22/2020 2:40:00 PM
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E-Coli	2.0	2.0	1290	#/100 mL	1273	101	17	-	646
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QA/QC Type: LCSD	Lab Sample ID: 102220 ECLCSD	Client Sample ID: 102220 ECLCSD	Date Analyzed: 10/22/2020 2:40:00 PM
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E-Coli	2.0	2.0	1160	#/100 mL	1273	91.1	17	-	646	11	36
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Comments:

Preparation Batch ID: 102220 MFC
Method Batch ID: M102220 MFC

Analysis Method: SM18 9222 D (MF)

Preparation Type: No Prep
Preparation Date: 10/22/2020 2:10:00 PM

Analyte	MDL	PQL	Result	Qual	Units	Spike Amount	% REC	% REC Low Limit	-	% REC High Limit	%RPD	% RPD Limit
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QA/QC Type: MB	Lab Sample ID: 102220 MFCMB	Client Sample ID: 102220 MFCMB	Date Analyzed: 10/22/2020 2:10:00 PM
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Coliform Fecal	2.0	2.0	2.0	U	#/100 mL
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QA/QC Type: LCS	Lab Sample ID: 102220 MFCLCS	Client Sample ID: 102220 MFCLCS	Date Analyzed: 10/22/2020 2:10:00 PM
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Coliform Fecal	2.0	2.0	1280	#/100 mL	765	167	17	-	646
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QA/QC Type: LCSD	Lab Sample ID: 102220 MFCLCSD	Client Sample ID: 102220 MFCLCSD	Date Analyzed: 10/22/2020 2:10:00 PM
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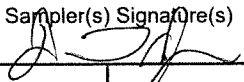
Coliform Fecal	2.0	2.0	1180	#/100 mL	765	154	17	-	646	8.1	36
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QA/QC Type: DUP	Lab Sample ID: 102220 MFCDDUP	Client Sample ID: 269658DUP	Date Analyzed: 10/22/2020 2:10:00 PM
-----------------	-------------------------------	-----------------------------	--------------------------------------

Coliform Fecal	10	10	710	B	#/100 mL					9.4	36
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Comments:

Chain of Custody Record

Company: <u>TTL, Inc</u>						Environmental Testing Laboratories, Inc.  412 W. Walcott Street Thomasville, GA 31792-4359 229/228-2592 (telephone) 229/228-2594 (telefax) www.etl-inc.com						Page <u>1</u> of <u>1</u>																																																																																												
Address: <u>4589 Val North Dr. Valdosta GA 31602</u>												Project Name: <u>Cordele Watershed</u>																																																																																												
Telephone Number: <u>229-244-8619</u> Telefax Number:						Project Number: <u>000200601075.00</u>																																																																																																		
Sampled by [Print Name(s)] / Affiliation <u>David Jones / TTL, Inc.</u>						Analyses Requested <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:5%;">E. Coli</td> <td style="width:5%;">Fecal Coliforms</td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> </tr> <tr> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>						E. Coli	Fecal Coliforms															✓	✓																Project Manager: <u>Melissa Norris</u>																																																											
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Shipment Method				Total Number of Containers		← Preservatives (see Codes) ICE: <input type="checkbox"/> Yes <input type="checkbox"/> No																																																																																																		
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Returned:	/ /	Via:				<u>David Jones / TTL</u>			<u>10-22-20</u>	<u>1045</u>	<u>[Signature]</u>			<u>10/22/20</u>	<u>1045</u>																																																																																									
Additional Comments:																																																																																																								
			Cooler Number(s) / Temperature(s) (°C)			Sampling Kit Number			Received in Lab By:																																																																																															
			<u>1/ice/4.6</u>						<u>BCR</u>			<u>10-22-20</u>	<u>13:45</u>																																																																																											
MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water WW = Wastewater O = Other (specify) PRESERVATIVE CODES: H = Hydrochloric acid S = Sulfuric acid N = Nitric Na = Sodium Hydroxide O = Other (specify) PRESERVATIVE CODES: SOIL VOCS MS = Methanol / Sodium Bisulfate MD = Methanol / DI Water																																																																																																								
ETL PROJECT NO.												<u>20-3879</u>																																																																																												

Project Receipt Summary

20-3879

Project Details

Client: ITL, INC.

Project Name: CORDELE WATERSHED

Shipping and Receiving

Date/Time Received: 10/22/2020 1:45:00 PM If present, were cooler custody seals intact?

Sampling Personnel: JONES ☐ Yes ☐ No ☒ N/A

Shipping Method: Laboratory Courier If present, were sample bottle custody seals intact

Shipping Tracking Number: ☐ Yes ☐ No ☒ N/A

Thermal Preservation

Cooler Temp Method: Sample Temperature Were cooler temperatures in compliance? (0.1-6.0C)

Thermometer ID: 16032413 ☒ Yes ☐ No ☐ N/A

Number of Coolers: 1 Cooler Temperatures: 4.6

Chain of Custody

Was the chain-of-custody received in coolers? ☒ Yes ☐ No ☐ N/A

Was the chain-of-custody signed and properly relinquished? ☒ Yes ☐ No ☐ N/A

Does the chain-of-custody agree with samples and analyses? ☒ Yes ☐ No ☐ N/A

Container Receipt

Were samples received in appropriate bottleware for analyses? ☒ Yes ☐ No ☐ N/A

Was sufficient volume submitted for analyses requested? ☒ Yes ☐ No ☐ N/A

Were samples received within method holding times? ☒ Yes ☐ No ☐ N/A

Were VOA vials received with zero headspace? ☐ Yes ☐ No ☒ N/A

Were aqueous samples received at an acceptable pH? ☒ Yes ☐ No ☐ N/A

pH Test Strip Manufacturer / Lot #: MOQUANT-HC989495

Comments

I certify I have answered the questions contained herein to the best of my knowledge and have affixed labels with unique IDs onto each sample container received. I certify any discrepancies regarding the samples as received by the laboratory have been documented completely in the comments section of this form.

BR

Brandon Ray

Project Receipt Summary

20-3879

Project Sample Detail						
Lab Sample ID	Client Sample ID	Matrix	TRPH MaVPH SPLP Speciation MaEPH			
269624	STATION 1	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
269624-E1 (E-Coli/FECAL)						
269625	STATION 2A	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
269625-E1 (E-Coli/FECAL)						
269626	STATION 3A	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
269626-E1 (E-Coli/FECAL)						
269627	STATION 3	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
269627-E1 (E-Coli/FECAL)						

Project Receipt Summary

20-3879

Project Bottle Count Summary

Container Type	Preservative	Number of Containers
Sterile Bottle w/ Thiosulfate Pill	STERILE	4
Total		4

FINAL **ANALYTICAL REPORT**

ETL PROJECT ID: 20-3967

10/30/2020 - Revision 0

**MELISSA NORRIS
TTL, INC.
3202 GILLIONVILLE RD
ALBANY, GA 31721-
TEL: (229) 432-5805
FAX: (229) 432-7018**

**CLIENT PROJECT NAME: CORDELE WATERSHED
CLIENT PROJECT ID: 000200601075.00
FACILITY ID:**

Enclosed are the analytical results for sample(s) received by Environmental Testing Laboratories on October 29, 2020. Results reported herein are reported on an as received basis and conform to current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

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This report shall not be reproduced, except in full, without the written consent of Environmental Testing Laboratories, Inc. This report has been signed and authorized by the signatory using an electronic signature and is intended to be the legally binding equivalent of a traditionally handwritten signature.

Authorized for release by:



ENVIRONMENTAL TESTING LABORATORIES INC

412 W. Walcott Street | Thomasville, GA 31792 | Phone: (229)-228-2592 | Fax: (229)-228-2594

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- Q** Sample held beyond the accepted holding time.
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- S1** Surrogate recovery reported is outside of laboratory established QA/QC Limits
- S2** Analyte recovery reported is outside of laboratory established QA/QC Limits
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- T** Value reported is less than the laboratory method detection limit.
- U** Compound was analyzed for but not detected.
- V** Indicates that the analyte was detected in both the sample and the associated method blank.
- Y** Laboratory analysis was from an improperly preserved sample. Data may not be accurate.
- Z** Too many colonies were present; numeric value represents the filtration volume.

Project Narrative



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All analyses are performed using EPA or FL-DEP methods and certified to meet NELAC requirements, except where noted.



Analytical Method Summary

E87684 **Environmental Testing Laboratories Inc.**
412 W. Walcott Street, Thomasville, GA 31792
(229) 228-2592

EPA 1603

Water Bath Incubator (SM18 9222 D (MF))

Standard Methods 18th Edition



Sample Summary

Laboratory Sample ID	Client Sample ID	Matrix	End Date / Time Sampled		Grab / Composite	Percent Moisture
269885	STATION 1	AQUEOUS-Fresh	10/29/2020	8:10	G	
269886	STATION 2A	AQUEOUS-Fresh	10/29/2020	8:30	G	
269887	STATION 3A	AQUEOUS-Fresh	10/29/2020	8:40	G	
269888	STATION 3	AQUEOUS-Fresh	10/29/2020	8:50	G	
269889	STATION 6	AQUEOUS-Fresh	10/29/2020	9:10	G	

Executive Summary

Analyte	Analytical Method	Result	Units	Qualifiers	Result Comments
STATION 1 (269885)					
E-Coli	EPA 1603	340	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	300	#/100 mL		
STATION 2A (269886)					
E-Coli	EPA 1603	370	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	220	#/100 mL		
STATION 3A (269887)					
E-Coli	EPA 1603	2900	#/100 mL	B	
Coliform Fecal	SM18 9222 D (MF)	4100	#/100 mL	B	
STATION 3 (269888)					
E-Coli	EPA 1603	1500	#/100 mL	B	
Coliform Fecal	SM18 9222 D (MF)	2200	#/100 mL	B	
STATION 6 (269889)					
E-Coli	EPA 1603	490	#/100 mL		
Coliform Fecal	SM18 9222 D (MF)	560	#/100 mL		



Analytical Data

Client Sample ID: STATION 1

Sample Location:

Date Collected: 10/29/2020 08:10 AM

Laboratory Sample ID: 269885

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	300		#/100 mL	20	20	10/29/2020 2:20:00 PM
E-Coli	5.0	340		#/100 mL	10	10	10/29/2020 2:35:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Analytical Data

Client Sample ID: STATION 2A

Sample Location:

Date Collected: 10/29/2020 08:30 AM

Laboratory Sample ID: 269886

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	220		#/100 mL	20	20	10/29/2020 2:20:00 PM
E-Coli	5.0	370		#/100 mL	10	10	10/29/2020 2:35:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Analytical Data

Client Sample ID: STATION 3A

Sample Location:

Date Collected: 10/29/2020 08:40 AM

Laboratory Sample ID: 269887

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	4100	B	#/100 mL	20	20	10/29/2020 2:20:00 PM
E-Coli	2.5	2900	B	#/100 mL	5.0	5.0	10/29/2020 2:35:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Analytical Data

Client Sample ID: STATION 3
Sample Location:
Date Collected: 10/29/2020 08:50 AM

Laboratory Sample ID: 269888
Matrix: AQUEOUS-Fresh
Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	2200	B	#/100 mL	20	20	10/29/2020 2:20:00 PM
E-Coli	2.5	1500	B	#/100 mL	5.0	5.0	10/29/2020 2:35:00 PM



Analytical Data

Client Sample ID: STATION 6

Sample Location:

Date Collected: 10/29/2020 09:10 AM

Laboratory Sample ID: 269889

Matrix: AQUEOUS-Fresh

Percent Moisture:

General Chemistry

Analyte	DF	Result	Qualifier	Units	MDL	PQL	Analysis Date
Coliform Fecal	10	560		#/100 mL	20	20	10/29/2020 2:20:00 PM
E-Coli	5.0	490		#/100 mL	10	10	10/29/2020 2:35:00 PM

PQL: Practical Quantitation Limit

RL: Report Limit

MDL: Method Detection Limit

DF: Dilution Factor



Data Chronicle

Client Sample ID: STATION 1

Laboratory Sample ID: 269885

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 10/29/2020 08:10 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	5.0	102920 EC	10/29/2020 2:35:00 PM	10/29/2020 2:35:00 PM	MD	E87684
TOT	RES	SM18 9222 D (MF)	10	102920 MFC	10/29/2020 2:20:00 PM	10/29/2020 2:20:00 PM	MD	E87684

Client Sample ID: STATION 2A

Laboratory Sample ID: 269886

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 10/29/2020 08:30 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	5.0	102920 EC	10/29/2020 2:35:00 PM	10/29/2020 2:35:00 PM	MD	E87684
TOT	RES	SM18 9222 D (MF)	10	102920 MFC	10/29/2020 2:20:00 PM	10/29/2020 2:20:00 PM	MD	E87684

Client Sample ID: STATION 3A

Laboratory Sample ID: 269887

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 10/29/2020 08:40 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	2.5	102920 EC	10/29/2020 2:35:00 PM	10/29/2020 2:35:00 PM	MD	E87684
TOT	RES	SM18 9222 D (MF)	10	102920 MFC	10/29/2020 2:20:00 PM	10/29/2020 2:20:00 PM	MD	E87684

Client Sample ID: STATION 3

Laboratory Sample ID: 269888

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 10/29/2020 08:50 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	2.5	102920 EC	10/29/2020 2:35:00 PM	10/29/2020 2:35:00 PM	MD	E87684
TOT	RES	SM18 9222 D (MF)	10	102920 MFC	10/29/2020 2:20:00 PM	10/29/2020 2:20:00 PM	MD	E87684

Client Sample ID: STATION 6

Laboratory Sample ID: 269889

Sample Location:

Matrix: AQUEOUS-Fresh

Date Collected: 10/29/2020 09:10 AM

Percent Moisture:

Prep	Analysis	Analytical Method	Dilution	Batch	Prepared	Analyzed	Analyst	Lab
TOT	RES	EPA 1603	5.0	102920 EC	10/29/2020 2:35:00 PM	10/29/2020 2:35:00 PM	MD	E87684
TOT	RES	SM18 9222 D (MF)	10	102920 MFC	10/29/2020 2:20:00 PM	10/29/2020 2:20:00 PM	MD	E87684

QUALITY ASSURANCE / QUALITY CONTROL DATA

J

Preparation Batch ID: 102920 EC
Method Batch ID: M102920 EC

Analysis Method: EPA 1603

Preparation Type: No Prep
Preparation Date: 10/29/2020 2:35:00 PM

Analyte	MDL	PQL	Result	Qual	Units	Spike Amount	% REC	% REC Low Limit	-	% REC High Limit	%RPD	% RPD Limit
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QA/QC Type: MB	Lab Sample ID: 102920 ECMB	Client Sample ID: 102920 ECMB	Date Analyzed: 10/29/2020 2:35:00 PM
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E-Coli	2.0	2.0	2.0	U	#/100 mL
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QA/QC Type: LCS	Lab Sample ID: 102920 ECLCS	Client Sample ID: 102920 ECLCS	Date Analyzed: 10/29/2020 2:35:00 PM
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E-Coli	2.0	2.0	1320	#/100 mL	1273	104	25	-	505
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QA/QC Type: LCSD	Lab Sample ID: 102920 ECLCSD	Client Sample ID: 102920 ECLCSD	Date Analyzed: 10/29/2020 2:35:00 PM
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E-Coli	2.0	2.0	1270	#/100 mL	1273	99.8	25	-	505	3.9	36
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QA/QC Type: DUP	Lab Sample ID: 102920 ECDUP	Client Sample ID: 269885DUP	Date Analyzed: 10/29/2020 2:35:00 PM
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E-Coli	10	10	320	#/100 mL						6.1	46
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Comments:

Preparation Batch ID: 102920 MFC
Method Batch ID: M102920 MFC

Analysis Method: SM18 9222 D (MF)

Preparation Type: No Prep
Preparation Date: 10/29/2020 2:20:00 PM

Analyte	MDL	PQL	Result	Qual	Units	Spike Amount	% REC	% REC Low Limit	-	% REC High Limit	%RPD	% RPD Limit
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QA/QC Type: MB	Lab Sample ID: 102920 MFCMB	Client Sample ID: 102920 MFCMB	Date Analyzed: 10/29/2020 2:20:00 PM
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Coliform Fecal	2.0	2.0	2.0	U	#/100 mL
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QA/QC Type: LCS	Lab Sample ID: 102920 MFCLCS	Client Sample ID: 102920 MFCLCS	Date Analyzed: 10/29/2020 2:20:00 PM
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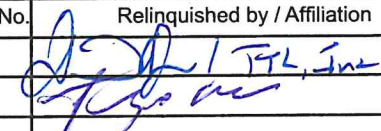

Coliform Fecal	2.0	2.0	1460	#/100 mL	765	191	17	-	646
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QA/QC Type: LCSD	Lab Sample ID: 102920 MFCLCSD	Client Sample ID: 102920 MFCLCSD	Date Analyzed: 10/29/2020 2:20:00 PM
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Coliform Fecal	2.0	2.0	880	S3	#/100 mL	765	115	17	-	646	50	36
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Comments:

Chain of Custody Record

Company: <u>TTL, Inc.</u>						Environmental Testing Laboratories, Inc.  412 W. Walcott Street Thomasville, GA 31792-4359 229/228-2592 (telephone) 229/228-2594 (telefax) www.etl-inc.com						Page <u>1</u> of <u>1</u>																																		
Address: <u>4589 Val North Dr. Valdosta, GA 31602</u>												Project Name: <u>Cordele Watershed</u>																																		
Telephone Number: <u>229-244-8619</u> Telefax Number:						Project Number: <u>000200601075.00</u>																																								
Sampled by [Print Name(s)] / Affiliation <u>David Jones / TTL, Inc.</u>						Analyses Requested <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:5%;">F. Coli</td> <td style="width:5%;">Fecal Coliforms</td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> <td style="width:5%;"></td> </tr> <tr> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>						F. Coli	Fecal Coliforms															✓	✓																Project Manager: <u>Melissa Norris</u>	
F. Coli	Fecal Coliforms																																													
✓	✓																																													
Sampler(s) Signature(s) 						Facility ID Number:						REQUESTED DUE DATE / /																																		
Item No.	Field ID No.	Sample Date Time		Grab or Composite	Matrix (see Codes)	Number of Containers											Remarks	Lab Number																												
1	Station 1	10-29-20	0810	Grab	SW	2	✓	✓										269885																												
2	Station 2A	1	0830	1	1	2	✓	✓										886																												
3	Station 3A	1	0840	1	1	2	✓	✓										887																												
4	Station 3	1	0850	1	1	2	✓	✓										888																												
5	Station 6	1	0910	1	1	2	✓	✓										889																												
Shipment Method				Total Number of Containers														← Preservatives (see Codes) ICE: <input type="checkbox"/> Yes <input type="checkbox"/> No																												
Out:	/ /	Via:		Item No.	Relinquished by / Affiliation		Date	Time	Accepted by / Affiliation				Date	Time																																
Returned:	/ /	Via:			 / TTL, Inc.		10-29-20	1107					10/29/20	1100																																
Additional Comments:						10/29/20		200																																						
				Cooler Number(s) / Temperature(s) (°C)		Sampling Kit Number		Received in Lab By:																																						
				1/ice/2.4				BCR		10-29-20	14:00																																			
MATRIX CODES:		A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water WW = Wastewater O = Other (specify)																																												
PRESERVATIVE CODES:		H = Hydrochloric acid S = Sulfuric acid N = Nitric Na = Sodium Hydroxide O = Other (specify)																																												
PRESERVATIVE CODES:		SOIL VOCS MS = Methanol / Sodium Bisulfate MD = Methanol / DI Water																																												
ETL PROJECT NO.												20-3967																																		

Project Receipt Summary

20-3967

Project Details

Client: TTL INC.

Project Name: CORDELE WATERSHED

Shipping and Receiving

Date/Time Received: 10/29/2020 2:00:00 PM If present, were cooler custody seals intact?

Sampling Personnel: JONES ☐ Yes ☐ No ☒ N/A

Shipping Method: Laboratory Courier If present, were sample bottle custody seals intact

Shipping Tracking Number: ☐ Yes ☐ No ☒ N/A

Thermal Preservation

Cooler Temp Method: Sample Temperature Were cooler temperatures in compliance? (0.1-6.0C)

Thermometer ID: 16032413 ☒ Yes ☐ No ☐ N/A

Number of Coolers: 1 Cooler Temperatures: 2.4

Chain of Custody

Was the chain-of-custody received in coolers? ☒ Yes ☐ No ☐ N/A

Was the chain-of-custody signed and properly relinquished? ☒ Yes ☐ No ☐ N/A

Does the chain-of-custody agree with samples and analyses? ☒ Yes ☐ No ☐ N/A

Container Receipt

Were samples received in appropriate bottleware for analyses? ☒ Yes ☐ No ☐ N/A

Was sufficient volume submitted for analyses requested? ☒ Yes ☐ No ☐ N/A

Were samples received within method holding times? ☒ Yes ☐ No ☐ N/A

Were VOA vials received with zero headspace? ☐ Yes ☐ No ☒ N/A

Were aqueous samples received at an acceptable pH? ☒ Yes ☐ No ☐ N/A

pH Test Strip Manufacturer / Lot #: MQUANT-HC989495

Comments

I certify I have answered the questions contained herein to the best of my knowledge and have affixed labels with unique IDs onto each sample container received. I certify any discrepancies regarding the samples as received by the laboratory have been documented completely in the comments section of this form.

BR

Brandon Ray

Project Receipt Summary

20-3967

Project Sample Detail

Lab Sample ID	Client Sample ID	Matrix	TRPH MaVPH SPLP Speciation MaEPH		
269885	STATION 1	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
269885-E1 (E-Coli)					
269885-E2 (Fecal)					
269886	STATION 2A	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
269886-E1 (E-Coli)					
269886-E2 (Fecal)					
269887	STATION 3A	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
269887-E1 (E-Coli)					
269887-E2 (Fecal)					
269888	STATION 3	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
269888-E1 (E-Coli)					
269888-E2 (Fecal)					
269889	STATION 6	AQUEOUS-Fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
269889-E1 (E-Coli)					
269889-E2 (Fecal)					



Project Receipt Summary

20-3967

Project Bottle Count Summary

Container Type	Preservative	Number of Containers
Sterile Bottle w/ Thiosulfate Pill	STERILE	10
Total		10



Analytical Report 661595

for

TTL, Inc.

Project Manager: Jim Smith

Cordele Watershed

00190601252.00

06.03.2020

Collected By: Client



1600 Oakbrook Dr., Suite 565, Norcross, GA 30093

Ph:(770) 449-8800

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-32), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (TX104704295-19-23), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-20-17)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-22)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-20-7)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)



06.03.2020

Project Manager: **Jim Smith**

TTL, Inc.

4589 Val North Drive

Valdosta, GA 31602

Reference: XENCO Report No(s): **661595**

Cordele Watershed

Project Address: GA

Jim Smith:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 661595. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 661595 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

A handwritten signature in black ink, appearing to read 'John Andros', is written over a horizontal line.

John Andros

Lab Manager

A Small Business and Minority Company

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico



CASE NARRATIVE

Client Name: TTL, Inc.

Project Name: Cordele Watershed

Project ID: 00190601252.00
Work Order Number(s): 661595

Report Date: 06.03.2020
Date Received: 05.14.2020

Sample receipt non conformances and comments:

The analyses for BOD, Nitrate, Nitrite and ortho-Phosphorus were subcontracted to an outside lab. The subcontractor lab report has been appended to the end of the Xenco report.

Sample receipt non conformances and comments per sample:

None

Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit. **ND** Not Detected.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation



Hits Summary 661595

TTL, Inc., Valdosta, GA
Cordele Watershed

Sample Id : **Station 1**
Lab Sample Id : 661595-001

Matrix : Surface Water
Date Collected : 05.13.2020 08:05
Date Received : 05.14.2020 09:25

% Moisture :

Analytical Method : Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3126848

Prep Method: SW3010A
Date Prep: 05.19.2020 09:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Zinc	7440-66-6	5.70	ug/L	05.24.2020 00:04		1

Analytical Method : Dissolved Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3126597

Prep Method: SW3010A
Date Prep: 05.18.2020 10:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Zinc, Dissolved	7440-66-6	4.17	ug/L	05.20.2020 19:34		1

Analytical Method : Hardness, Total by SM2340B
Seq Number : 3126943

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Total Hardness (as CaCO ₃)	471-34-1	95	mg/L	05.24.2020 00:04		1

Analytical Method : TSS by SM2540D
Seq Number : 3126329

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
TSS, Total Suspended Solids	TSS	16.7	mg/L	05.19.2020 09:23		1



Hits Summary 661595

TTL, Inc., Valdosta, GA
Cordele Watershed

Sample Id : **Station 2A**
Lab Sample Id : 661595-002

Matrix : Surface Water
Date Collected : 05.13.2020 08:45
Date Received : 05.14.2020 09:25

% Moisture :

Analytical Method : Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3126848

Prep Method: SW3010A
Date Prep: 05.19.2020 09:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Zinc	7440-66-6	10.2	ug/L	05.24.2020 00:07		1

Analytical Method : Dissolved Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3126597

Prep Method: SW3010A
Date Prep: 05.18.2020 10:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Zinc, Dissolved	7440-66-6	3.88	ug/L	05.20.2020 19:37		1

Analytical Method : Hardness, Total by SM2340B
Seq Number : 3126943

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Total Hardness (as CaCO3)	471-34-1	35	mg/L	05.24.2020 00:07		1

Analytical Method : Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2
Seq Number : 3126563

Prep Method: E351.2P
Date Prep: 05.19.2020 13:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Nitrogen, Total Kjeldahl	7727-37-9	0.528	mg/L	05.20.2020 14:44		1

Analytical Method : TSS by SM2540D
Seq Number : 3126329

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
TSS, Total Suspended Solids	TSS	22.7	mg/L	05.19.2020 09:23		1

Analytical Method : Total Phosphorus by EPA 365.1
Seq Number : 3126414

Prep Method: E365.1_P
Date Prep: 05.18.2020 15:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Phosphorus, Total (as P)	7723-14-0	0.0554	mg/L	05.19.2020 14:14		1



Hits Summary 661595

TTL, Inc., Valdosta, GA
Cordele Watershed

Sample Id : **Station 3A**
Lab Sample Id : 661595-003

Matrix : Surface Water
Date Collected : 05.13.2020 09:05
Date Received : 05.14.2020 09:25

% Moisture :

Analytical Method : Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3126848

Prep Method: SW3010A
Date Prep: 05.19.2020 09:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Copper	7440-50-8	2.63	ug/L	05.24.2020 00:22		1
Zinc	7440-66-6	55.7	ug/L	05.24.2020 00:22		1

Analytical Method : Dissolved Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3126597

Prep Method: SW3010A
Date Prep: 05.18.2020 10:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Copper, Dissolved	7440-50-8	2.01	ug/L	05.20.2020 19:40		1
Zinc, Dissolved	7440-66-6	24.8	ug/L	05.20.2020 19:40		1

Analytical Method : Hardness, Total by SM2340B
Seq Number : 3126943

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Total Hardness (as CaCO3)	471-34-1	120	mg/L	05.24.2020 00:22		1

Analytical Method : Nitrogen Ammonia by EPA 350.1
Seq Number : 3126403

Prep Method: E350.1P
Date Prep: 05.18.2020 12:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Nitrogen, Ammonia (as N)	7664-41-7	0.820	mg/L	05.18.2020 16:40		1

Analytical Method : Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2
Seq Number : 3126563

Prep Method: E351.2P
Date Prep: 05.19.2020 13:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Nitrogen, Total Kjeldahl	7727-37-9	1.42	mg/L	05.20.2020 14:45		1

Analytical Method : TSS by SM2540D
Seq Number : 3126329

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
TSS, Total Suspended Solids	TSS	17.0	mg/L	05.19.2020 09:23		1



Hits Summary 661595

TTL, Inc., Valdosta, GA

Cordele Watershed

Sample Id : **Station 3A**

Lab Sample Id : 661595-003

Matrix : Surface Water

Date Collected : 05.13.2020 09:05

Date Received : 05.14.2020 09:25

% Moisture :

Analytical Method : Total Phosphorus by EPA 365.1

Seq Number : 3126414

Prep Method: E365.1_P

Date Prep: 05.18.2020 15:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Phosphorus, Total (as P)	7723-14-0	0.0514	mg/L	05.19.2020 14:15		1



Hits Summary 661595

TTL, Inc., Valdosta, GA
Cordele Watershed

Sample Id : **Station 3**
Lab Sample Id : 661595-004

Matrix : Surface Water
Date Collected : 05.13.2020 09:25
Date Received : 05.14.2020 09:25

% Moisture :

Analytical Method : Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3126848

Prep Method: SW3010A
Date Prep: 05.19.2020 09:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Zinc	7440-66-6	5.86	ug/L	05.24.2020 00:25		1

Analytical Method : Dissolved Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3126597

Prep Method: SW3010A
Date Prep: 05.18.2020 10:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Zinc, Dissolved	7440-66-6	2.29	ug/L	05.20.2020 19:43		1

Analytical Method : Hardness, Total by SM2340B
Seq Number : 3126943

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Total Hardness (as CaCO3)	471-34-1	91	mg/L	05.24.2020 00:25		1

Analytical Method : Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2
Seq Number : 3126563

Prep Method: E351.2P
Date Prep: 05.19.2020 13:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Nitrogen, Total Kjeldahl	7727-37-9	0.747	mg/L	05.20.2020 14:46		1

Analytical Method : TSS by SM2540D
Seq Number : 3126329

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
TSS, Total Suspended Solids	TSS	5.00	mg/L	05.19.2020 09:23		1

Analytical Method : Total Phosphorus by EPA 365.1
Seq Number : 3126414

Prep Method: E365.1_P
Date Prep: 05.18.2020 15:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Phosphorus, Total (as P)	7723-14-0	0.0222	mg/L	05.19.2020 14:16		1



Hits Summary 661595

TTL, Inc., Valdosta, GA
Cordele Watershed

Sample Id : **Station 6**
Lab Sample Id : 661595-005

Matrix : Surface Water
Date Collected : 05.13.2020 09:50
Date Received : 05.14.2020 09:25

% Moisture :

Analytical Method : Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3126848

Prep Method: SW3010A
Date Prep: 05.19.2020 09:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Copper	7440-50-8	1.15	ug/L	05.24.2020 00:28		1
Lead	7439-92-1	1.16	ug/L	05.24.2020 00:28		1
Zinc	7440-66-6	8.80	ug/L	05.24.2020 00:28		1

Analytical Method : Dissolved Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3126597

Prep Method: SW3010A
Date Prep: 05.18.2020 10:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Zinc, Dissolved	7440-66-6	4.28	ug/L	05.20.2020 19:46		1

Analytical Method : Hardness, Total by SM2340B
Seq Number : 3126943

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Total Hardness (as CaCO3)	471-34-1	27	mg/L	05.24.2020 00:28		1

Analytical Method : Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2
Seq Number : 3126563

Prep Method: E351.2P
Date Prep: 05.19.2020 13:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Nitrogen, Total Kjeldahl	7727-37-9	1.18	mg/L	05.20.2020 14:50		1

Analytical Method : TSS by SM2540D
Seq Number : 3126329

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
TSS, Total Suspended Solids	TSS	8.33	mg/L	05.19.2020 09:23		1

Analytical Method : Total Phosphorus by EPA 365.1
Seq Number : 3126414

Prep Method: E365.1_P
Date Prep: 05.18.2020 15:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Phosphorus, Total (as P)	7723-14-0	0.0328	mg/L	05.19.2020 14:16		1



Certificate of Analytical Results 661595

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id: **Station 1**
Lab Sample Id: 661595-001

Matrix: Surface Water
Date Collected: 05.13.2020 08:05

Date Received: 05.14.2020 09:25

Analytical Method: TSS by SM2540D

Tech: KBU

Analyst: KBU

Seq Number: 3126329

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
TSS, Total Suspended Solids	16.7	4.00		mg/L	05.19.2020 09:23	1

Analytical Method: Total Phosphorus by EPA 365.1

Tech: KCS

Analyst: KCS

Seq Number: 3126414

Date Prep: 05.18.2020 15:00

Prep Method: E365.1_P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Phosphorus, Total (as P)	ND	0.0200	U	mg/L	05.19.2020 14:11	1

Analytical Method: Chemical Oxygen Demand by HACH 8000

Tech: TAH

Analyst: TAH

Seq Number: 3126412

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
COD - Chemical Oxygen Demand	ND	10.0	U	mg/L	05.19.2020 15:58	1

Analytical Method: Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Seq Number: 3126848

Date Prep: 05.19.2020 09:00

Prep Method: SW3010A

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium	ND	1.00	U	ug/L	05.24.2020 00:04	1
Copper	ND	1.00	U	ug/L	05.24.2020 00:04	1
Lead	ND	1.00	U	ug/L	05.24.2020 00:04	1
Zinc	5.70	1.00		ug/L	05.24.2020 00:04	1

Project: Cordele Watershed



Certificate of Analytical Results 661595

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id: **Station 1**
Lab Sample Id: 661595-001

Matrix: Surface Water
Date Collected: 05.13.2020 08:05

Date Received: 05.14.2020 09:25

Analytical Method: Dissolved Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Seq Number: 3126597

Date Prep: 05.18.2020 10:00

Prep Method: SW3010A

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium, Dissolved	ND	1.00	U	ug/L	05.20.2020 19:34	1
Copper, Dissolved	ND	1.00	U	ug/L	05.20.2020 19:34	1
Lead, Dissolved	ND	1.00	U	ug/L	05.20.2020 19:34	1
Zinc, Dissolved	4.17	1.00		ug/L	05.20.2020 19:34	1

Analytical Method: Hardness, Total by SM2340B

Tech: DEP

Analyst: DEP

Seq Number: 3126943

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Total Hardness (as CaCO3)	95	3.3		mg/L	05.24.2020 00:04	1

Analytical Method: Nitrogen Ammonia by EPA 350.1

Tech: KCS

Analyst: KCS

Seq Number: 3126403

Date Prep: 05.18.2020 12:00

Prep Method: E350.1P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Ammonia (as N)	ND	0.100	U	mg/L	05.18.2020 16:34	1

Analytical Method: Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2

Tech: KCS

Analyst: KCS

Seq Number: 3126563

Date Prep: 05.19.2020 13:00

Prep Method: E351.2P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Total Kjeldahl	ND	0.500	U	mg/L	05.20.2020 14:43	1

Project: Cordele Watershed



Certificate of Analytical Results 661595

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id: **Station 2A**
Lab Sample Id: 661595-002

Matrix: Surface Water
Date Collected: 05.13.2020 08:45

Date Received: 05.14.2020 09:25

Analytical Method: TSS by SM2540D

Tech: KBU

Analyst: KBU

Seq Number: 3126329

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
TSS, Total Suspended Solids	22.7	4.00		mg/L	05.19.2020 09:23	1

Analytical Method: Total Phosphorus by EPA 365.1

Tech: KCS

Analyst: KCS

Seq Number: 3126414

Date Prep: 05.18.2020 15:00

Prep Method: E365.1_P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Phosphorus, Total (as P)	0.0554	0.0200		mg/L	05.19.2020 14:14	1

Analytical Method: Chemical Oxygen Demand by HACH 8000

Tech: TAH

Analyst: TAH

Seq Number: 3126412

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
COD - Chemical Oxygen Demand	ND	10.0	U	mg/L	05.19.2020 15:58	1

Analytical Method: Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Seq Number: 3126848

Date Prep: 05.19.2020 09:00

Prep Method: SW3010A

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium	ND	1.00	U	ug/L	05.24.2020 00:07	1
Copper	ND	1.00	U	ug/L	05.24.2020 00:07	1
Lead	ND	1.00	U	ug/L	05.24.2020 00:07	1
Zinc	10.2	1.00		ug/L	05.24.2020 00:07	1

Project: Cordele Watershed



Certificate of Analytical Results 661595

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id: **Station 2A**
Lab Sample Id: 661595-002

Matrix: Surface Water
Date Collected: 05.13.2020 08:45

Date Received: 05.14.2020 09:25

Analytical Method: Dissolved Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Seq Number: 3126597

Date Prep: 05.18.2020 10:00

Prep Method: SW3010A

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium, Dissolved	ND	1.00	U	ug/L	05.20.2020 19:37	1
Copper, Dissolved	ND	1.00	U	ug/L	05.20.2020 19:37	1
Lead, Dissolved	ND	1.00	U	ug/L	05.20.2020 19:37	1
Zinc, Dissolved	3.88	1.00		ug/L	05.20.2020 19:37	1

Analytical Method: Hardness, Total by SM2340B

Tech: DEP

Analyst: DEP

Seq Number: 3126943

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Total Hardness (as CaCO3)	35	3.3		mg/L	05.24.2020 00:07	1

Analytical Method: Nitrogen Ammonia by EPA 350.1

Tech: KCS

Analyst: KCS

Seq Number: 3126403

Date Prep: 05.18.2020 12:00

Prep Method: E350.1P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Ammonia (as N)	ND	0.100	U	mg/L	05.18.2020 16:37	1

Analytical Method: Nitrogen, Kjeldahl, Total (Colorimetry by EPA 351.2

Tech: KCS

Analyst: KCS

Seq Number: 3126563

Date Prep: 05.19.2020 13:00

Prep Method: E351.2P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Total Kjeldahl	0.528	0.500		mg/L	05.20.2020 14:44	1

Project: Cordele Watershed



Certificate of Analytical Results 661595

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id: **Station 3A**
Lab Sample Id: 661595-003

Matrix: Surface Water
Date Collected: 05.13.2020 09:05

Date Received: 05.14.2020 09:25

Analytical Method: TSS by SM2540D

Tech: KBU

Analyst: KBU

Seq Number: 3126329

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
TSS, Total Suspended Solids	17.0	4.00		mg/L	05.19.2020 09:23	1

Analytical Method: Total Phosphorus by EPA 365.1

Tech: KCS

Analyst: KCS

Seq Number: 3126414

Date Prep: 05.18.2020 15:00

Prep Method: E365.1_P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Phosphorus, Total (as P)	0.0514	0.0200		mg/L	05.19.2020 14:15	1

Analytical Method: Chemical Oxygen Demand by HACH 8000

Tech: TAH

Analyst: TAH

Seq Number: 3126412

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
COD - Chemical Oxygen Demand	ND	10.0	U	mg/L	05.19.2020 15:58	1

Analytical Method: Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Seq Number: 3126848

Date Prep: 05.19.2020 09:00

Prep Method: SW3010A

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium	ND	1.00	U	ug/L	05.24.2020 00:22	1
Copper	2.63	1.00		ug/L	05.24.2020 00:22	1
Lead	ND	1.00	U	ug/L	05.24.2020 00:22	1
Zinc	55.7	1.00		ug/L	05.24.2020 00:22	1

Project: Cordele Watershed



Certificate of Analytical Results 661595

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id: **Station 3A**
Lab Sample Id: 661595-003

Matrix: Surface Water
Date Collected: 05.13.2020 09:05

Date Received: 05.14.2020 09:25

Analytical Method: Dissolved Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Seq Number: 3126597

Date Prep: 05.18.2020 10:00

Prep Method: SW3010A

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium, Dissolved	ND	1.00	U	ug/L	05.20.2020 19:40	1
Copper, Dissolved	2.01	1.00		ug/L	05.20.2020 19:40	1
Lead, Dissolved	ND	1.00	U	ug/L	05.20.2020 19:40	1
Zinc, Dissolved	24.8	1.00		ug/L	05.20.2020 19:40	1

Analytical Method: Hardness, Total by SM2340B

Tech: DEP

Analyst: DEP

Seq Number: 3126943

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Total Hardness (as CaCO3)	120	3.3		mg/L	05.24.2020 00:22	1

Analytical Method: Nitrogen Ammonia by EPA 350.1

Tech: KCS

Analyst: KCS

Seq Number: 3126403

Date Prep: 05.18.2020 12:00

Prep Method: E350.1P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Ammonia (as N)	0.820	0.100		mg/L	05.18.2020 16:40	1

Analytical Method: Nitrogen, Kjeldahl, Total (Colorimetry by EPA 351.2

Tech: KCS

Analyst: KCS

Seq Number: 3126563

Date Prep: 05.19.2020 13:00

Prep Method: E351.2P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Total Kjeldahl	1.42	0.500		mg/L	05.20.2020 14:45	1

Project: Cordele Watershed



Certificate of Analytical Results 661595

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id: **Station 3**
Lab Sample Id: 661595-004

Matrix: Surface Water
Date Collected: 05.13.2020 09:25

Date Received: 05.14.2020 09:25

Analytical Method: TSS by SM2540D

Tech: KBU

Analyst: KBU

Seq Number: 3126329

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
TSS, Total Suspended Solids	5.00	4.00		mg/L	05.19.2020 09:23	1

Analytical Method: Total Phosphorus by EPA 365.1

Tech: KCS

Analyst: KCS

Seq Number: 3126414

Date Prep: 05.18.2020 15:00

Prep Method: E365.1_P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Phosphorus, Total (as P)	0.0222	0.0200		mg/L	05.19.2020 14:16	1

Analytical Method: Chemical Oxygen Demand by HACH 8000

Tech: TAH

Analyst: TAH

Seq Number: 3126412

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
COD - Chemical Oxygen Demand	ND	10.0	U	mg/L	05.19.2020 15:58	1

Analytical Method: Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Seq Number: 3126848

Date Prep: 05.19.2020 09:00

Prep Method: SW3010A

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium	ND	1.00	U	ug/L	05.24.2020 00:25	1
Copper	ND	1.00	U	ug/L	05.24.2020 00:25	1
Lead	ND	1.00	U	ug/L	05.24.2020 00:25	1
Zinc	5.86	1.00		ug/L	05.24.2020 00:25	1

Project: Cordele Watershed



Certificate of Analytical Results 661595

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id: **Station 3**
Lab Sample Id: 661595-004

Matrix: Surface Water
Date Collected: 05.13.2020 09:25

Date Received: 05.14.2020 09:25

Analytical Method: Dissolved Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Seq Number: 3126597

Date Prep: 05.18.2020 10:00

Prep Method: SW3010A

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium, Dissolved	ND	1.00	U	ug/L	05.20.2020 19:43	1
Copper, Dissolved	ND	1.00	U	ug/L	05.20.2020 19:43	1
Lead, Dissolved	ND	1.00	U	ug/L	05.20.2020 19:43	1
Zinc, Dissolved	2.29	1.00		ug/L	05.20.2020 19:43	1

Analytical Method: Hardness, Total by SM2340B

Tech: DEP

Analyst: DEP

Seq Number: 3126943

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Total Hardness (as CaCO3)	91	3.3		mg/L	05.24.2020 00:25	1

Analytical Method: Nitrogen Ammonia by EPA 350.1

Tech: KCS

Analyst: KCS

Seq Number: 3126403

Date Prep: 05.18.2020 12:00

Prep Method: E350.1P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Ammonia (as N)	ND	0.100	U	mg/L	05.18.2020 16:55	1

Analytical Method: Nitrogen, Kjeldahl, Total (Colorimetry by EPA 351.2

Tech: KCS

Analyst: KCS

Seq Number: 3126563

Date Prep: 05.19.2020 13:00

Prep Method: E351.2P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Total Kjeldahl	0.747	0.500		mg/L	05.20.2020 14:46	1

Project: Cordele Watershed



Certificate of Analytical Results 661595

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id: **Station 6**
Lab Sample Id: 661595-005

Matrix: Surface Water
Date Collected: 05.13.2020 09:50

Date Received: 05.14.2020 09:25

Analytical Method: TSS by SM2540D

Tech: KBU

Analyst: KBU

Seq Number: 3126329

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
TSS, Total Suspended Solids	8.33	4.00		mg/L	05.19.2020 09:23	1

Analytical Method: Total Phosphorus by EPA 365.1

Tech: KCS

Analyst: KCS

Seq Number: 3126414

Date Prep: 05.18.2020 15:00

Prep Method: E365.1_P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Phosphorus, Total (as P)	0.0328	0.0200		mg/L	05.19.2020 14:16	1

Analytical Method: Chemical Oxygen Demand by HACH 8000

Tech: TAH

Analyst: TAH

Seq Number: 3126412

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
COD - Chemical Oxygen Demand	ND	10.0	U	mg/L	05.19.2020 15:58	1

Analytical Method: Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Seq Number: 3126848

Date Prep: 05.19.2020 09:00

Prep Method: SW3010A

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium	ND	1.00	U	ug/L	05.24.2020 00:28	1
Copper	1.15	1.00		ug/L	05.24.2020 00:28	1
Lead	1.16	1.00		ug/L	05.24.2020 00:28	1
Zinc	8.80	1.00		ug/L	05.24.2020 00:28	1

Project: Cordele Watershed



Certificate of Analytical Results 661595

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id: **Station 6**
Lab Sample Id: 661595-005

Matrix: Surface Water
Date Collected: 05.13.2020 09:50

Date Received: 05.14.2020 09:25

Analytical Method: Dissolved Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Seq Number: 3126597

Date Prep: 05.18.2020 10:00

Prep Method: SW3010A

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium, Dissolved	ND	1.00	U	ug/L	05.20.2020 19:46	1
Copper, Dissolved	ND	1.00	U	ug/L	05.20.2020 19:46	1
Lead, Dissolved	ND	1.00	U	ug/L	05.20.2020 19:46	1
Zinc, Dissolved	4.28	1.00		ug/L	05.20.2020 19:46	1

Analytical Method: Hardness, Total by SM2340B

Tech: DEP

Analyst: DEP

Seq Number: 3126943

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Total Hardness (as CaCO3)	27	3.3		mg/L	05.24.2020 00:28	1

Analytical Method: Nitrogen Ammonia by EPA 350.1

Tech: KCS

Analyst: KCS

Seq Number: 3126403

Date Prep: 05.18.2020 12:00

Prep Method: E350.1P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Ammonia (as N)	ND	0.100	U	mg/L	05.18.2020 16:57	1

Analytical Method: Nitrogen, Kjeldahl, Total (Colorimetry by EPA 351.2

Tech: KCS

Analyst: KCS

Seq Number: 3126563

Date Prep: 05.19.2020 13:00

Prep Method: E351.2P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Total Kjeldahl	1.18	0.500		mg/L	05.20.2020 14:50	1

Project: Cordele Watershed



TTL, Inc.

Cordele Watershed

Analytical Method: Chemical Oxygen Demand by HACH 8000

Seq Number: 3126412

Matrix: Water

MB Sample Id: 3126412-1-BLK

LCS Sample Id: 3126412-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
COD - Chemical Oxygen Demand	<3.36	100	101	101	90-110	mg/L	05.19.2020 15:58	

Analytical Method: Chemical Oxygen Demand by HACH 8000

Seq Number: 3126412

Matrix: Surface Water

Parent Sample Id: 661544-002

MS Sample Id: 661544-002 S

MSD Sample Id: 661544-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
COD - Chemical Oxygen Demand	<3.36	100	93.0	93	94.0	94	90-110	1	20	mg/L	05.19.2020 15:58	

Analytical Method: Chemical Oxygen Demand by HACH 8000

Seq Number: 3126412

Matrix: Surface Water

Parent Sample Id: 661595-002

MS Sample Id: 661595-002 S

MSD Sample Id: 661595-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
COD - Chemical Oxygen Demand	<3.36	100	96.0	96	100	100	90-110	4	20	mg/L	05.19.2020 15:58	

Analytical Method: TSS by SM2540D

Seq Number: 3126329

Matrix: Water

MB Sample Id: 3126329-1-BLK

LCS Sample Id: 3126329-1-BKS

LCSD Sample Id: 3126329-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
TSS, Total Suspended Solids	<4.00	100	97.0	97	103	103	80-120	6	10	mg/L	05.19.2020 09:23	

Analytical Method: TSS by SM2540D

Seq Number: 3126329

Matrix: Waste Water

Parent Sample Id: 661569-001

MD Sample Id: 661569-001 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
TSS, Total Suspended Solids	146	142	3	10	mg/L	05.19.2020 09:23	

Analytical Method: TSS by SM2540D

Seq Number: 3126329

Matrix: Surface Water

Parent Sample Id: 661595-005

MD Sample Id: 661595-005 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
TSS, Total Suspended Solids	8.33	8.33	0	10	mg/L	05.19.2020 09:23	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



QC Summary 661595

TTL, Inc. Cordele Watershed

Analytical Method: Total Phosphorus by EPA 365.1

Seq Number: 3126414

Matrix: Water

Prep Method: E365.1_P

Date Prep: 05.18.2020

MB Sample Id: 7703578-1-BLK

LCS Sample Id: 7703578-1-BKS

LCSD Sample Id: 7703578-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Phosphorus, Total (as P)	<0.00520	0.250	0.242	97	0.243	97	90-110	0	20	mg/L	05.19.2020 13:54	

Analytical Method: Total Phosphorus by EPA 365.1

Seq Number: 3126414

Matrix: Water

Prep Method: E365.1_P

Date Prep: 05.18.2020

Parent Sample Id: 661580-001

MS Sample Id: 661580-001 S

MSD Sample Id: 661580-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Phosphorus, Total (as P)	<0.00520	0.250	0.253	101	0.250	100	90-110	1	20	mg/L	05.19.2020 13:59	

Analytical Method: Total Phosphorus by EPA 365.1

Seq Number: 3126414

Matrix: Surface Water

Prep Method: E365.1_P

Date Prep: 05.18.2020

Parent Sample Id: 661595-001

MS Sample Id: 661595-001 S

MSD Sample Id: 661595-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Phosphorus, Total (as P)	0.00970	0.250	0.262	101	0.260	100	90-110	1	20	mg/L	05.19.2020 14:12	

Analytical Method: Cd,Cu,Pb,Zn by SW-846 6020A

Seq Number: 3126848

Matrix: Water

Prep Method: SW3010A

Date Prep: 05.19.2020

MB Sample Id: 7703614-1-BLK

LCS Sample Id: 7703614-1-BKS

LCSD Sample Id: 7703614-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Cadmium	<0.147	100	92.8	93	93.9	94	80-120	1	20	ug/L	05.23.2020 23:23	
Copper	<0.747	100	93.3	93	94.3	94	80-120	1	20	ug/L	05.23.2020 23:23	
Lead	<0.152	100	91.4	91	91.9	92	80-120	1	20	ug/L	05.23.2020 23:23	
Zinc	<0.802	100	94.3	94	96.1	96	80-120	2	20	ug/L	05.23.2020 23:23	

Analytical Method: Cd,Cu,Pb,Zn by SW-846 6020A

Seq Number: 3126848

Matrix: Ground Water

Prep Method: SW3010A

Date Prep: 05.19.2020

Parent Sample Id: 661578-018

MS Sample Id: 661578-018 S

MSD Sample Id: 661578-018 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Cadmium	<0.147	100	92.4	92	93.4	93	75-125	1	20	ug/L	05.23.2020 23:32	
Copper	2.70	100	96.9	94	97.3	95	75-125	0	20	ug/L	05.23.2020 23:32	
Lead	3.74	100	99.6	96	99.4	96	75-125	0	20	ug/L	05.23.2020 23:32	
Zinc	220	100	332	112	323	103	75-125	3	20	ug/L	05.23.2020 23:32	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



TTL, Inc.

Cordele Watershed

Analytical Method: Dissolved Cd,Cu,Pb,Zn by SW-846 6020A

Seq Number: 3126597

Matrix: Water

Prep Method: SW3010A

Date Prep: 05.18.2020

MB Sample Id: 7703521-1-BLK

LCS Sample Id: 7703521-1-BKS

LCSD Sample Id: 7703521-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Cadmium, Dissolved	<0.147	100	93.0	93	91.3	91	80-120	2	20	ug/L	05.20.2020 19:05	
Copper, Dissolved	<0.747	100	93.3	93	92.4	92	80-120	1	20	ug/L	05.20.2020 19:05	
Lead, Dissolved	<0.152	100	92.5	93	92.0	92	80-120	1	20	ug/L	05.20.2020 19:05	
Zinc, Dissolved	<0.802	100	92.6	93	92.8	93	80-120	0	20	ug/L	05.20.2020 19:05	

Analytical Method: Dissolved Cd,Cu,Pb,Zn by SW-846 6020A

Seq Number: 3126597

Matrix: Ground Water

Prep Method: SW3010A

Date Prep: 05.18.2020

Parent Sample Id: 661467-020

MS Sample Id: 661467-020 S

MSD Sample Id: 661467-020 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Cadmium, Dissolved	0.745	100	93.3	93	94.4	94	75-125	1	20	ug/L	05.20.2020 19:14	
Copper, Dissolved	4.57	100	99.4	95	99.4	95	75-125	0	20	ug/L	05.20.2020 19:14	
Lead, Dissolved	<0.758	100	96.7	97	96.3	96	75-125	0	20	ug/L	05.20.2020 19:14	
Zinc, Dissolved	184	100	282	98	285	101	75-125	1	20	ug/L	05.20.2020 19:14	

Analytical Method: Nitrogen Ammonia by EPA 350.1

Seq Number: 3126403

Matrix: Water

Prep Method: E350.1P

Date Prep: 05.18.2020

MB Sample Id: 7703574-1-BLK

LCS Sample Id: 7703574-1-BKS

LCSD Sample Id: 7703574-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Nitrogen, Ammonia (as N)	<0.0345	1.00	0.987	99	0.987	99	90-110	0	20	mg/L	05.18.2020 16:17	

Analytical Method: Nitrogen Ammonia by EPA 350.1

Seq Number: 3126403

Matrix: Waste Water

Prep Method: E350.1P

Date Prep: 05.18.2020

Parent Sample Id: 661574-001

MS Sample Id: 661574-001 S

MSD Sample Id: 661574-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Nitrogen, Ammonia (as N)	0.596	1.00	1.57	97	1.57	97	90-110	0	20	mg/L	05.18.2020 16:26	

Analytical Method: Nitrogen, Kjeldahl, Total (Colorimetry by EPA 351.2)

Seq Number: 3126563

Matrix: Water

Prep Method: E351.2P

Date Prep: 05.19.2020

MB Sample Id: 7703686-1-BLK

LCS Sample Id: 7703686-1-BKS

LCSD Sample Id: 7703686-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Nitrogen, Total Kjeldahl	<0.0614	2.00	2.00	100	2.00	100	90-110	0	20	mg/L	05.20.2020 14:30	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



QC Summary 661595

TTL, Inc.
Cordele Watershed

Analytical Method: Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2)

Seq Number: 3126563

Matrix: Surface Water

Prep Method: E351.2P

Date Prep: 05.19.2020

Parent Sample Id: 661264-001

MS Sample Id: 661264-001 S

MSD Sample Id: 661264-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Nitrogen, Total Kjeldahl	0.684	2.00	2.78	105	2.80	106	90-110	1	20	mg/L	05.20.2020 14:33	

Analytical Method: Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2)

Seq Number: 3126563

Matrix: Surface Water

Prep Method: E351.2P

Date Prep: 05.19.2020

Parent Sample Id: 661595-004

MS Sample Id: 661595-004 S

MSD Sample Id: 661595-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Nitrogen, Total Kjeldahl	0.747	2.00	2.57	91	2.54	90	90-110	1	20	mg/L	05.20.2020 14:47	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



Chain of Custody

Houston, TX (281) 240-4200 Dallas, TX (214) 902-0300 San Antonio, TX (210) 509-3334
Midland, TX (432-704-5440) EL Paso, TX (915) 585-3443 Lubbock, TX (806) 794-1296
Hobbs, NM (575-392-7550) Phoenix, AZ (480-355-0900) Atlanta, GA (770-449-8800) Tampa, FL (813-620-2000)

Work Order No:

661595

www.xenco.com Page 1 of 1

Project Manager:	Bill to: (if different)	Same
Company Name:	Company Name:	
Address:	Address:	
City, State ZIP:	City, State ZIP:	
Phone:	Email:	

Project Name:	Turn Around	ANALYSIS REQUEST													Work Order Notes					
Project Number:	Routine <input type="checkbox"/>																			
P.O. Number:	Rush: <input type="checkbox"/>																			
Sampler's Name:	Due Date:																			
SAMPLE RECEIPT		Temp Blank	Yes	No	Wet Ice	Yes	No													
Temperature (°C):	5.5/5.7																			
Received Intact:	Yes	No																		
Cooler Custody Seals:	Yes	No	N/A																	
Sample Custody Seals:	Yes	No	N/A																	
SAMPLE IDENTIFICATION		Matrix	Date Sampled	Time Sampled	Depth															
Station 1	SW	5-13-20	0805																	
Station 2A	I	I	0845																	
Station 3A	I	I	0905																	
Station 3	I	I	0925																	
Station 6	I	I	0950																	

Total 200.7 / 6010	200.8 / 6020:	8RCRA 13PPM Texas 11	Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni Se Ag Ti U	1631 / 245.1 / 7470 / 7471 : Hg
Circle Method(s) and Metal(s) to be analyzed				

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of \$75.00 will be applied to each project and a charge of \$5 for each sample submitted to Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Melissa Norris	Fed Ex	5-13-20	FedEx	Michael McKel	5-14-20 9:35



Sample SUB-Contract#: 63755

Page 1 of 2

Date Printed: 05.14.2020 17:17

Date/Time: 05.14.2020 17:17 Created by: John Andros

Subcontractor: Analytical Environmental Services, Inc.

PO#: 661595

Delivery Priority:

Air Bill No.:

Invoice To: Invoices@xenco.com; john.andros@xenco.com

Send report to: John Andros

Address: 1600 Oakbrook Dr., Suite 565, Norcross, GA 30093
Ph:(770) 449-8800


E-Mail: john.andros@xenco.com

TAT: Standard

Sample Id	Client Sample Id	Cont #	Matrix	Sample Collection	Method	Method Name	Lab PM
661595-001	Station 1	6764	W	05.13.20 08:05	E300	Inorganic Anions by EPA 300	John Andros
661595-001	Station 1	6764	W	05.13.20 08:05	SM4500-P-E-OP	ortho-Phosphorus by SM4500-P E	John Andros
661595-001	Station 1	6764	W	05.13.20 08:05	SM5210B_BOD	BOD by SM5210B	John Andros
661595-002	Station 2A	6765	W	05.13.20 08:45	E300	Inorganic Anions by EPA 300	John Andros
661595-002	Station 2A	6765	W	05.13.20 08:45	SM4500-P-E-OP	ortho-Phosphorus by SM4500-P E	John Andros
661595-002	Station 2A	6765	W	05.13.20 08:45	SM5210B_BOD	BOD by SM5210B	John Andros
661595-003	Station 3A	6766	W	05.13.20 09:05	E300	Inorganic Anions by EPA 300	John Andros
661595-003	Station 3A	6766	W	05.13.20 09:05	SM4500-P-E-OP	ortho-Phosphorus by SM4500-P E	John Andros
661595-003	Station 3A	6766	W	05.13.20 09:05	SM5210B_BOD	BOD by SM5210B	John Andros
661595-004	Station 3	6767	W	05.13.20 09:25	E300	Inorganic Anions by EPA 300	John Andros
661595-004	Station 3	6767	W	05.13.20 09:25	SM4500-P-E-OP	ortho-Phosphorus by SM4500-P E	John Andros
661595-004	Station 3	6767	W	05.13.20 09:25	SM5210B_BOD	BOD by SM5210B	John Andros
661595-005	Station 6	6768	W	05.13.20 09:50	E300	Inorganic Anions by EPA 300	John Andros
661595-005	Station 6	6768	W	05.13.20 09:50	SM4500-P-E-OP	ortho-Phosphorus by SM4500-P E	John Andros
661595-005	Station 6	6768	W	05.13.20 09:50	SM5210B_BOD	BOD by SM5210B	John Andros

Subcontractor: Analyze for method and samples specified on COC as requested. Any deviation, must be approved by a Xenco PM.

SUB-Contracting Comments:

Relinquished By: 
John Andros

Received By:

Date/ Time Relinquished: 05.14.2020

Date/ Time Received:



Date Printed: 05.14.2020 17:17

Relinquished By: _____

Received By: _____

Date/ Time Relinquished: _____

Date/ Time Received: _____

Cooler Temperature: _____

Inter-Office Shipment

IOS Number : **63756**

Date/Time: 05.14.2020

Created by: John Andros

Please send report to: John Andros

Lab# From: **Atlanta**

Delivery Priority:

Address: 1600 Oakbrook Dr., Suite 565, Norcross, GA 30091

Lab# To: **Houston**

Air Bill No.: 770476859082

E-Mail: john.andros@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
661595-001	W	Station 1	05.13.2020 08:05	E350.1	Nitrogen Ammonia by EPA 350.1	05.25.2020	06.10.2020	JNA	NH3N	
661595-001	W	Station 1	05.13.2020 08:05	E351.2	Nitrogen, Kjeldahl, Total (Colorime by E	05.25.2020	06.10.2020	JNA	TKN	
661595-001	W	Station 1	05.13.2020 08:05	SW6020_Select	Cd,Cu,Pb,Zn by SW-846 6020A	05.25.2020	11.09.2020	JNA	CA CD CU MG PB ZN	
661595-001	W	Station 1	05.13.2020 08:05	E365.1	Total Phosphorus by EPA 365.1	05.25.2020	06.10.2020	JNA	Total Phos.	
661595-001	W	Station 1	05.13.2020 08:05	SW6020_Select_DIS	Dissolved Cd,Cu,Pb,Zn by SW-846 602	05.25.2020	11.09.2020	JNA	CD CU PB ZN	
661595-001	W	Station 1	05.13.2020 08:05	SM2540D	TSS by SM2540D	05.25.2020	05.20.2020 08:05	JNA	TSS	
661595-001	W	Station 1	05.13.2020 08:05	SM2340B	Hardness, Total by SM2340B	05.25.2020	05.20.2020 08:05	JNA	HARD	
661595-001	W	Station 1	05.13.2020 08:05	H8000	Chemical Oxygen Demand by HACH 80	05.25.2020	06.10.2020	JNA	COD	
661595-002	W	Station 2A	05.13.2020 08:45	H8000	Chemical Oxygen Demand by HACH 80	05.25.2020	06.10.2020	JNA	COD	
661595-002	W	Station 2A	05.13.2020 08:45	E365.1	Total Phosphorus by EPA 365.1	05.25.2020	06.10.2020	JNA	Total Phos.	
661595-002	W	Station 2A	05.13.2020 08:45	E350.1	Nitrogen Ammonia by EPA 350.1	05.25.2020	06.10.2020	JNA	NH3N	
661595-002	W	Station 2A	05.13.2020 08:45	SM2340B	Hardness, Total by SM2340B	05.25.2020	05.20.2020 08:45	JNA	HARD	
661595-002	W	Station 2A	05.13.2020 08:45	SM2540D	TSS by SM2540D	05.25.2020	05.20.2020 08:45	JNA	TSS	
661595-002	W	Station 2A	05.13.2020 08:45	SW6020_Select_DIS	Dissolved Cd,Cu,Pb,Zn by SW-846 602	05.25.2020	11.09.2020	JNA	CD CU PB ZN	
661595-002	W	Station 2A	05.13.2020 08:45	SW6020_Select	Cd,Cu,Pb,Zn by SW-846 6020A	05.25.2020	11.09.2020	JNA	CA CD CU MG PB ZN	
661595-002	W	Station 2A	05.13.2020 08:45	E351.2	Nitrogen, Kjeldahl, Total (Colorime by E	05.25.2020	06.10.2020	JNA	TKN	
661595-003	W	Station 3A	05.13.2020 09:05	SW6020_Select_DIS	Dissolved Cd,Cu,Pb,Zn by SW-846 602	05.25.2020	11.09.2020	JNA	CD CU PB ZN	
661595-003	W	Station 3A	05.13.2020 09:05	E351.2	Nitrogen, Kjeldahl, Total (Colorime by E	05.25.2020	06.10.2020	JNA	TKN	
661595-003	W	Station 3A	05.13.2020 09:05	E365.1	Total Phosphorus by EPA 365.1	05.25.2020	06.10.2020	JNA	Total Phos.	
661595-003	W	Station 3A	05.13.2020 09:05	SM2540D	TSS by SM2540D	05.25.2020	05.20.2020 09:05	JNA	TSS	
661595-003	W	Station 3A	05.13.2020 09:05	SW6020_Select	Cd,Cu,Pb,Zn by SW-846 6020A	05.25.2020	11.09.2020	JNA	CA CD CU MG PB ZN	
661595-003	W	Station 3A	05.13.2020 09:05	E350.1	Nitrogen Ammonia by EPA 350.1	05.25.2020	06.10.2020	JNA	NH3N	
661595-003	W	Station 3A	05.13.2020 09:05	H8000	Chemical Oxygen Demand by HACH 80	05.25.2020	06.10.2020	JNA	COD	
661595-003	W	Station 3A	05.13.2020 09:05	SM2340B	Hardness, Total by SM2340B	05.25.2020	05.20.2020 09:05	JNA	HARD	
661595-004	W	Station 3	05.13.2020 09:25	SM2340B	Hardness, Total by SM2340B	05.25.2020	05.20.2020 09:25	JNA	HARD	

Inter-Office Shipment

IOS Number : **63756**

Date/Time: 05.14.2020

Created by: John Andros

Please send report to: John Andros

Lab# From: **Atlanta**

Delivery Priority:

Address: 1600 Oakbrook Dr., Suite 565, Norcross, GA 30091

Lab# To: **Houston**

Air Bill No.: 770476859082

E-Mail: john.andros@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
661595-004	W	Station 3	05.13.2020 09:25	E365.1	Total Phosphorus by EPA 365.1	05.25.2020	06.10.2020	JNA	Total Phos.	
661595-004	W	Station 3	05.13.2020 09:25	SM2540D	TSS by SM2540D	05.25.2020	05.20.2020 09:25	JNA	TSS	
661595-004	W	Station 3	05.13.2020 09:25	H8000	Chemical Oxygen Demand by HACH 80	05.25.2020	06.10.2020	JNA	COD	
661595-004	W	Station 3	05.13.2020 09:25	SW6020_Select	Cd,Cu,Pb,Zn by SW-846 6020A	05.25.2020	11.09.2020	JNA	CA CD CU MG PB ZN	
661595-004	W	Station 3	05.13.2020 09:25	SW6020_Select_DIS	Dissolved Cd,Cu,Pb,Zn by SW-846 602	05.25.2020	11.09.2020	JNA	CD CU PB ZN	
661595-004	W	Station 3	05.13.2020 09:25	E350.1	Nitrogen Ammonia by EPA 350.1	05.25.2020	06.10.2020	JNA	NH3N	
661595-004	W	Station 3	05.13.2020 09:25	E351.2	Nitrogen, Kjeldahl, Total (Colorimetry by E	05.25.2020	06.10.2020	JNA	TKN	
661595-005	W	Station 6	05.13.2020 09:50	E351.2	Nitrogen, Kjeldahl, Total (Colorimetry by E	05.25.2020	06.10.2020	JNA	TKN	
661595-005	W	Station 6	05.13.2020 09:50	E350.1	Nitrogen Ammonia by EPA 350.1	05.25.2020	06.10.2020	JNA	NH3N	
661595-005	W	Station 6	05.13.2020 09:50	SW6020_Select_DIS	Dissolved Cd,Cu,Pb,Zn by SW-846 602	05.25.2020	11.09.2020	JNA	CD CU PB ZN	
661595-005	W	Station 6	05.13.2020 09:50	SW6020_Select	Cd,Cu,Pb,Zn by SW-846 6020A	05.25.2020	11.09.2020	JNA	CA CD CU MG PB ZN	
661595-005	W	Station 6	05.13.2020 09:50	E365.1	Total Phosphorus by EPA 365.1	05.25.2020	06.10.2020	JNA	Total Phos.	
661595-005	W	Station 6	05.13.2020 09:50	SM2540D	TSS by SM2540D	05.25.2020	05.20.2020 09:50	JNA	TSS	
661595-005	W	Station 6	05.13.2020 09:50	H8000	Chemical Oxygen Demand by HACH 80	05.25.2020	06.10.2020	JNA	COD	
661595-005	W	Station 6	05.13.2020 09:50	SM2340B	Hardness, Total by SM2340B	05.25.2020	05.20.2020 09:50	JNA	HARD	

Inter Office Shipment or Sample Comments:

Relinquished By:



John Andros

Date Relinquished: 05.14.2020

Received By:



Shadi Alshrouf

Date Received: 05.16.2020

Cooler Temperature: 1.8

Inter Office Report- Sample Receipt Checklist**Sent To:** Houston**IOS #:** 63756**Acceptable Temperature Range:** 0 - 6 degC**Air and Metal samples Acceptable Range:** Ambient**Temperature Measuring device used :** hou-068**Sent By:** John Andros**Date Sent:** 05.14.2020 05.17 PM**Received By:** Shadi Alshrouf**Date Received:** 05.16.2020 09.30 AM**Sample Receipt Checklist****Comments**

#1 *Temperature of cooler(s)?	1.8
#2 *Shipping container in good condition?	Yes
#3 *Samples received with appropriate temperature?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	N/A
#5 *Custody Seals Signed and dated for Containers/coolers	N/A
#6 *IOS present?	Yes
#7 Any missing/extra samples?	No
#8 IOS agrees with sample label(s)/matrix?	Yes
#9 Sample matrix/ properties agree with IOS?	Yes
#10 Samples in proper container/ bottle?	Yes
#11 Samples properly preserved?	Yes
#12 Sample container(s) intact?	Yes
#13 Sufficient sample amount for indicated test(s)?	Yes
#14 All samples received within hold time?	Yes

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator****NonConformance:****Corrective Action Taken:****Nonconformance Documentation****Contact:** _____ **Contacted by :** _____ **Date:** _____**Checklist reviewed by:**

Shadi Alshrouf

Date: 05.16.2020

XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: TTL, Inc.

Date/ Time Received: 05.14.2020 09.25.00 AM

Work Order #: 661595

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient



Temperature Measuring device used : ATL-123

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	5.7
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 Custody Seals intact on sample bottles?	N/A
#6 *Custody Seals Signed and dated?	Yes
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	Yes
#18 Water VOC samples have zero headspace?	N/A

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: JNA

PH Device/Lot#: 017317-003

Checklist completed by:	 _____ John Andros	Date: 05.14.2020 _____
Checklist reviewed by:	 _____ John Andros	Date: 05.14.2020 _____



ANALYTICAL ENVIRONMENTAL SERVICES, INC.

May 21, 2020

John Andros
Xenco Laboratories

1600 Oakbrook Dr. Suite 565
Norcross GA 30095

RE: Cordele

Dear John Andros:

Order No: 2005E86

Analytical Environmental Services, Inc. received 5 samples on 5/14/2020 1:15:00 PM
for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.

AES's accreditations are as follows:

-NELAP/State of Florida Laboratory ID E87582 for analysis of Non-Potable Water, Solid & Chemical Materials, Air & Emissions Volatile Organics, and Drinking Water Microbiology & Metals, effective 07/01/19-06/30/20.

State of Georgia, Department of Natural Resources ID #800 for analysis of Drinking Water Metals, effective through 06/30/20 and Total Coliforms/ E. coli, effective 04/20/20-04/24/23.

-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Metals and PCM Asbestos), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination, effective until 11/01/21.

These results relate only to the items tested as received. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Sincerely,

Ioana Pacurar
Project Manager

Client: Xenco Laboratories
Project Name: Cordele
Lab ID: 2005E86-001

Client Sample ID: STATION 1
Collection Date: 5/13/2020 8:05:00 AM
Matrix: Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Phosphorus, ortho E365.1								
Phosphorus, Total Orthophosphate (As P)	0.0320	0.0100		mg/L	R425611	1	05/14/2020 19:29	KV
Inorganic Anions by IC EPA 300.0								
Nitrogen, Nitrate (As N)	2.19	0.250		mg/L	R425688	1	05/14/2020 19:09	KV
Nitrogen, Nitrite (As N)	BRL	0.250		mg/L	R425688	1	05/14/2020 19:09	KV
Biochemical Oxygen Demand by SM5210B								
Biochemical Oxygen Demand	BRL	5.0		mg/L	297038	1	05/15/2020 06:30	EM

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

Client: Xenco Laboratories
Project Name: Cordele
Lab ID: 2005E86-002

Client Sample ID: STATION 2A
Collection Date: 5/13/2020 8:45:00 AM
Matrix: Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Phosphorus, ortho E365.1								
Phosphorus, Total Orthophosphate (As P)	0.0560	0.0100		mg/L	R425611	1	05/14/2020 19:31	KV
Inorganic Anions by IC EPA 300.0								
Nitrogen, Nitrate (As N)	0.573	0.250		mg/L	R425688	1	05/14/2020 19:25	KV
Nitrogen, Nitrite (As N)	BRL	0.250		mg/L	R425688	1	05/14/2020 19:25	KV
Biochemical Oxygen Demand by SM5210B								
Biochemical Oxygen Demand	BRL	5.0		mg/L	297038	1	05/15/2020 06:30	EM

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

Client: Xenco Laboratories
Project Name: Cordele
Lab ID: 2005E86-003

Client Sample ID: STATION 3A
Collection Date: 5/13/2020 9:05:00 AM
Matrix: Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Phosphorus, ortho E365.1								
Phosphorus, Total Orthophosphate (As P)	BRL	0.0100		mg/L	R425611	1	05/14/2020 19:34	KV
Inorganic Anions by IC EPA 300.0								
Nitrogen, Nitrate (As N)	1.12	0.250		mg/L	R425688	1	05/14/2020 19:41	KV
Nitrogen, Nitrite (As N)	BRL	0.250		mg/L	R425688	1	05/14/2020 19:41	KV
Biochemical Oxygen Demand by SM5210B								
Biochemical Oxygen Demand	BRL	5.0		mg/L	297038	1	05/15/2020 06:30	EM

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

Client: Xenco Laboratories
Project Name: Cordele
Lab ID: 2005E86-004

Client Sample ID: STATION 3
Collection Date: 5/13/2020 9:25:00 AM
Matrix: Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Phosphorus, ortho E365.1								
Phosphorus, Total Orthophosphate (As P)	0.0430	0.0100		mg/L	R425611	1	05/14/2020 19:36	KV
Inorganic Anions by IC EPA 300.0								
Nitrogen, Nitrate (As N)	1.55	0.250		mg/L	R425688	1	05/14/2020 19:57	KV
Nitrogen, Nitrite (As N)	BRL	0.250		mg/L	R425688	1	05/14/2020 19:57	KV
Biochemical Oxygen Demand by SM5210B								
Biochemical Oxygen Demand	BRL	5.0		mg/L	297038	1	05/15/2020 06:30	EM

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

Client: Xenco Laboratories
Project Name: Cordele
Lab ID: 2005E86-005

Client Sample ID: STATION 6
Collection Date: 5/13/2020 9:50:00 AM
Matrix: Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Phosphorus, ortho E365.1								
Phosphorus, Total Orthophosphate (As P)	0.0770	0.0100		mg/L	R425611	1	05/14/2020 19:38	KV
Inorganic Anions by IC EPA 300.0								
Nitrogen, Nitrate (As N)	BRL	0.250		mg/L	R425688	1	05/14/2020 20:13	KV
Nitrogen, Nitrite (As N)	BRL	0.250		mg/L	R425688	1	05/14/2020 20:13	KV
Biochemical Oxygen Demand by SM5210B								
Biochemical Oxygen Demand	BRL	5.0		mg/L	297038	1	05/15/2020 06:30	EM

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

SAMPLE/COOLER RECEIPT CHECKLIST

1. Client Name: _____

AES Work Order Number: _____

2. Carrier: FedEx ☐ UPS ☐ USPS ☐ Client ☐ Courier ☐ Other _____

	Yes	No	N/A	Details	Comments
3. Shipping container/cooler received in good condition?				damaged <input type="checkbox"/> leaking <input type="checkbox"/> other <input type="checkbox"/>	
4. Custody seals present on shipping container?					
5. Custody seals intact on shipping container?					
6. Temperature blanks present?					
7. Cooler temperature(s) within limits of 0-6°C? [See item 13 and 14 for temperature recordings.]				Cooling initiated for recently collected samples / ice present <input type="checkbox"/>	
8. Chain of Custody (COC) present?					
9. Chain of Custody signed, dated, and timed when relinquished and received?					
10. Sampler name and/or signature on COC?					
11. Were all samples received within holding time?					
12. TAT marked on the COC?				If no TAT indicated, proceeded with standard TAT per Terms & Conditions. <input type="checkbox"/>	

13. Cooler 1 Temperature _____ °C Cooler 2 Temperature _____ °C Cooler 3 Temperature _____ °C Cooler 4 Temperature _____ °C
 Cooler 5 Temperature _____ °C Cooler 6 Temperature _____ °C Cooler 7 Temperature _____ °C Cooler 8 Temperature _____ °C

15. Comments: _____

I certify that I have completed sections 1-15 (dated initials). _____

	Yes	No	N/A	Details	Comments
16. Were sample containers intact upon receipt?					
17. Custody seals present on sample containers?					
18. Custody seals intact on sample containers?					
19. Do sample container labels match the COC?				incomplete info <input type="checkbox"/> illegible <input type="checkbox"/> no label <input type="checkbox"/> other <input type="checkbox"/>	
20. Are analyses requested indicated on the COC?					
21. Were all of the samples listed on the COC received?				samples received but not listed on COC <input type="checkbox"/> samples listed on COC not received <input type="checkbox"/>	
22. Was the sample collection date/time noted?					
23. Did we receive sufficient sample volume for indicated analyses?					
24. Were samples received in appropriate containers?					
25. Were VOA samples received without headspace (< 1/4" bubble)?					
26. Were trip blanks submitted?				listed on COC <input type="checkbox"/> not listed on COC <input type="checkbox"/>	

27. Comments: _____

I certify that I have completed sections 16-27 (dated initials). _____

	Yes	No	N/A	Details	Comments
28. Have containers needing chemical preservation been checked? *					
29. Containers meet preservation guidelines?					
30. Was pH adjusted at Sample Receipt?					

I certify that I have completed sections 28-30 (dated initials). _____

Client: Xenco Laboratories
 Project Name: Cordele
 Lab Order: 2005E86

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
2005E86-001A	STATION 1	5/13/2020 8:05:00AM	Surface Water	Biochemical Oxygen Demand by SM5210		5/15/2020 6:30:00AM	05/15/2020
2005E86-001B	STATION 1	5/13/2020 8:05:00AM	Surface Water	Phosphorus, ortho			05/14/2020
2005E86-001C	STATION 1	5/13/2020 8:05:00AM	Surface Water	Inorganic Anions by IC			05/14/2020
2005E86-002A	STATION 2A	5/13/2020 8:45:00AM	Surface Water	Biochemical Oxygen Demand by SM5210		5/15/2020 6:30:00AM	05/15/2020
2005E86-002B	STATION 2A	5/13/2020 8:45:00AM	Surface Water	Phosphorus, ortho			05/14/2020
2005E86-002C	STATION 2A	5/13/2020 8:45:00AM	Surface Water	Inorganic Anions by IC			05/14/2020
2005E86-003A	STATION 3A	5/13/2020 9:05:00AM	Surface Water	Biochemical Oxygen Demand by SM5210		5/15/2020 6:30:00AM	05/15/2020
2005E86-003B	STATION 3A	5/13/2020 9:05:00AM	Surface Water	Phosphorus, ortho			05/14/2020
2005E86-003C	STATION 3A	5/13/2020 9:05:00AM	Surface Water	Inorganic Anions by IC			05/14/2020
2005E86-004A	STATION 3	5/13/2020 9:25:00AM	Surface Water	Biochemical Oxygen Demand by SM5210		5/15/2020 6:30:00AM	05/15/2020
2005E86-004B	STATION 3	5/13/2020 9:25:00AM	Surface Water	Inorganic Anions by IC			05/14/2020
2005E86-004B	STATION 3	5/13/2020 9:25:00AM	Surface Water	Phosphorus, ortho			05/14/2020
2005E86-005A	STATION 6	5/13/2020 9:50:00AM	Surface Water	Biochemical Oxygen Demand by SM5210		5/15/2020 6:30:00AM	05/15/2020
2005E86-005B	STATION 6	5/13/2020 9:50:00AM	Surface Water	Inorganic Anions by IC			05/14/2020
2005E86-005B	STATION 6	5/13/2020 9:50:00AM	Surface Water	Phosphorus, ortho			05/14/2020

Client: Xenco Laboratories
Project Name: Cordele
Workorder: 2005E86

ANALYTICAL QC SUMMARY REPORT

BatchID: 297038

Sample ID: MB-297038	Client ID:					Units: mg/L	Prep Date: 05/15/2020	Run No: 425887			
SampleType: MBLK	TestCode: Biochemical Oxygen Demand by SM5210B					BatchID: 297038	Analysis Date: 05/15/2020	Seq No: 9643028			
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Biochemical Oxygen Demand BRL 2.0

Sample ID: LCS-297038	Client ID:					Units: mg/L	Prep Date: 05/15/2020	Run No: 425887			
SampleType: LCS	TestCode: Biochemical Oxygen Demand by SM5210B					BatchID: 297038	Analysis Date: 05/15/2020	Seq No: 9643029			
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Biochemical Oxygen Demand 189.0 5.0 198.0 95.5 85 115

Sample ID: LCSD-297038	Client ID:					Units: mg/L	Prep Date: 05/15/2020	Run No: 425887			
SampleType: LCSD	TestCode: Biochemical Oxygen Demand by SM5210B					BatchID: 297038	Analysis Date: 05/15/2020	Seq No: 9643030			
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Biochemical Oxygen Demand 191.0 5.0 198.0 96.5 85 115 189.0 1.05 25

Qualifiers:	> Greater than Result value	< Less than Result value	B Analyte detected in the associated method blank
	BRL Below reporting limit	E Estimated (value above quantitation range)	H Holding times for preparation or analysis exceeded
	J Estimated value detected below Reporting Limit	N Analyte not NELAC certified	R RPD outside limits due to matrix
	Rpt Lim Reporting Limit	S Spike Recovery outside limits due to matrix	

Client: Xenco Laboratories
Project Name: Cordele
Workorder: 2005E86

ANALYTICAL QC SUMMARY REPORT

BatchID: R425611

Sample ID: MB-R425611	Client ID:					Units: mg/L	Prep Date:			Run No: 425611	
SampleType: MBLK	TestCode: Phosphorus, ortho E365.1					BatchID: R425611	Analysis Date: 05/14/2020			Seq No: 9635442	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Phosphorus, Total Orthophosphate (As BRL 0.0100

Sample ID: LCS-R425611		Client ID:		Units: mg/L		Prep Date:		Run No: 425611			
SampleType: LCS		TestCode: Phosphorus, ortho E365.1		BatchID: R425611		Analysis Date: 05/14/2020		Seq No: 9635443			
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Phosphorus, Total Orthophosphate (As 0.2300 0.0100 0.2500 92.0 90 110

Sample ID: 2005D99-001EMS	Client ID:					Units: mg/L	Prep Date:		Run No: 425611		
SampleType: MS	TestCode: Phosphorus, ortho	E365.1				BatchID: R425611	Analysis Date: 05/14/2020		Seq No: 9635469		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Phosphorus, Total Orthophosphate (As 0.2030 0.0100 0.2500 81.2 90 110 S

Sample ID: 2005D99-001EMSD	Client ID:					Units: mg/L	Prep Date:		Run No: 425611		
SampleType: MSD	TestCode: Phosphorus, ortho E365.1					BatchID: R425611	Analysis Date: 05/14/2020		Seq No: 9635470		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Phosphorus, Total Orthophosphate (As 0.2250 0.0100 0.2500 90.0 90 110 0.2030 10.3 20

Qualifiers:	>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
	BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Xenco Laboratories
 Project Name: Cordele
 Workorder: 2005E86

ANALYTICAL QC SUMMARY REPORT

BatchID: R425688

Sample ID: MB-R425688	Client ID:					Units: mg/L	Prep Date:		Run No: 425688		
SampleType: MBLK	TestCode: Inorganic Anions by IC	EPA 300.0				BatchID: R425688	Analysis Date: 05/14/2020		Seq No: 9637962		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Nitrogen, Nitrate (As N)

BRL

0.250

Nitrogen, Nitrite (As N)

BRL

0.250

Sample ID: LCS-R425688	Client ID:					Units: mg/L	Prep Date:		Run No: 425688		
SampleType: LCS	TestCode: Inorganic Anions by IC	EPA 300.0				BatchID: R425688	Analysis Date: 05/14/2020		Seq No: 9637961		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Nitrogen, Nitrate (As N)

5.131

0.250

5.000

103

90

110

Nitrogen, Nitrite (As N)

5.024

0.250

5.000

100

90

110

Sample ID: 2005E06-001AMS	Client ID:					Units: mg/L	Prep Date:		Run No: 425688		
SampleType: MS	TestCode: Inorganic Anions by IC	EPA 300.0				BatchID: R425688	Analysis Date: 05/14/2020		Seq No: 9637975		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Nitrogen, Nitrate (As N)

5.088

0.250

5.000

102

90

110

Nitrogen, Nitrite (As N)

5.159

0.250

5.000

103

90

110

Sample ID: 2005E06-001AMSD		Client ID:			Units: mg/L		Prep Date:		Run No: 425688		
SampleType: MSD		TestCode: Inorganic Anions by IC EPA 300.0			BatchID: R425688		Analysis Date: 05/14/2020		Seq No: 9637976		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Nitrogen, Nitrate (As N)

4.946

0.250

5.000

98.9

90

110

5.088

2.81

20

Nitrogen, Nitrite (As N)

5.165

0.250

5.000

103

90

110

5.159

0.118

20

Qualifiers:

> Greater than Result value

BRL Below reporting limit

J Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

< Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix

End of Report

Analytical Report 672711

for

TTL, Inc.

Project Manager: Jim Smith

Cordele Watershed

000200601075.00

09.27.2020

Collected By: Client



1600 Oakbrook Dr., Suite 565, Norcross, GA 30093

Ph:(770) 449-8800

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-38), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2020-014), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-20-26), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-20-18)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-23)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-21)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-20-8)
Xenco-Tampa: Florida (E87429), North Carolina (483)

09.27.2020

Project Manager: **Jim Smith**

TTL, Inc.

4589 Val North Drive

Valdosta, GA 31602

Reference: Eurofins Xenco, LLC Report No(s): **672711**

Cordele Watershed

Project Address:

Jim Smith:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the Eurofins Xenco, LLC Report Number(s) 672711. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by Eurofins Xenco, LLC. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 672711 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting Eurofins Xenco, LLC to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,



John Andros

Lab Manager

A Small Business and Minority Company

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

CASE NARRATIVE

Client Name: TTL, Inc.

Project Name: Cordele Watershed

Project ID: 000200601075.00
Work Order Number(s): 672711

Report Date: 09.27.2020
Date Received: 09.16.2020

Sample receipt non conformances and comments:

The analyses for BOD, ortho-Phosphorus, Nitrate and Nitrite were subcontracted to an outside lab. The subcontractor report has been appended to the end of the Eurofins Xenco report.

Sample receipt non conformances and comments per sample:

None

Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit. **ND** Not Detected.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

Hits Summary 672711

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id : **Station 1**
Lab Sample Id : 672711-001

Matrix : Surface Water
Date Collected : 09.15.2020 09:45
Date Received : 09.16.2020 11:43

% Moisture :

Analytical Method : Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3137723

Prep Method: SW3010A
Date Prep: 09.21.2020 08:35

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Copper	7440-50-8	4.54	ug/L	09.25.2020 01:45		1
Lead	7439-92-1	1.03	ug/L	09.21.2020 16:49		1
Zinc	7440-66-6	15.5	ug/L	09.21.2020 16:49		1

Analytical Method : Chemical Oxygen Demand by HACH 8000
Seq Number : 3138038

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
COD - Chemical Oxygen Demand		35.0	mg/L	09.24.2020 14:15		1

Analytical Method : Dissolved Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3137611

Prep Method: SW3010A
Date Prep: 09.20.2020 08:40

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Copper, Dissolved	7440-50-8	2.17	ug/L	09.20.2020 19:55		1
Zinc, Dissolved	7440-66-6	5.08	ug/L	09.20.2020 19:55		1

Analytical Method : Hardness, Total by SM2340B
Seq Number : 3138069

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Total Hardness (as CaCO3)	471-34-1	21	mg/L	09.21.2020 16:49		1

Analytical Method : Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2
Seq Number : 3137864

Prep Method: E351.2P
Date Prep: 09.21.2020 11:58

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Nitrogen, Total Kjeldahl	7727-37-9	0.921	mg/L	09.22.2020 20:17		1

Analytical Method : TSS by SM2540D
Seq Number : 3137544

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
TSS, Total Suspended Solids	TSS	10.3	mg/L	09.18.2020 11:54		1

Hits Summary 672711

TTL, Inc., Valdosta, GA
Cordele Watershed

Sample Id : **Station 1**
Lab Sample Id : 672711-001

Matrix : Surface Water
Date Collected : 09.15.2020 09:45
Date Received : 09.16.2020 11:43

% Moisture :

Analytical Method : Total Phosphorus by EPA 365.1
Seq Number : 3137811

Prep Method: E365.1_P
Date Prep: 09.21.2020 17:03

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Phosphorus, Total (as P)	7723-14-0	0.0819	mg/L	09.22.2020 14:32		1

Hits Summary 672711

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id : **Station 2A**
Lab Sample Id : 672711-002

Matrix : Surface Water
Date Collected : 09.15.2020 11:15
Date Received : 09.16.2020 11:43

% Moisture :

Analytical Method : Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3137723

Prep Method: SW3010A
Date Prep: 09.21.2020 08:35

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Copper	7440-50-8	4.57	ug/L	09.25.2020 01:54		1
Zinc	7440-66-6	8.62	ug/L	09.21.2020 16:52		1

Analytical Method : Chemical Oxygen Demand by HACH 8000
Seq Number : 3138038

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
COD - Chemical Oxygen Demand		23.0	mg/L	09.24.2020 14:15		1

Analytical Method : Dissolved Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3137611

Prep Method: SW3010A
Date Prep: 09.20.2020 08:40

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Copper, Dissolved	7440-50-8	2.45	ug/L	09.20.2020 19:58		1
Zinc, Dissolved	7440-66-6	7.53	ug/L	09.20.2020 19:58		1

Analytical Method : Hardness, Total by SM2340B
Seq Number : 3138069

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Total Hardness (as CaCO3)	471-34-1	15	mg/L	09.21.2020 16:52		1

Analytical Method : TSS by SM2540D
Seq Number : 3137544

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
TSS, Total Suspended Solids	TSS	6.00	mg/L	09.18.2020 11:54		1

Analytical Method : Total Phosphorus by EPA 365.1
Seq Number : 3137811

Prep Method: E365.1_P
Date Prep: 09.21.2020 17:03

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Phosphorus, Total (as P)	7723-14-0	0.0561	mg/L	09.22.2020 14:35		1

Hits Summary 672711

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id : **Station 3A**
Lab Sample Id : 672711-003

Matrix : Surface Water
Date Collected : 09.15.2020 12:10
Date Received : 09.16.2020 11:43

% Moisture :

Analytical Method : Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3137723

Prep Method: SW3010A
Date Prep: 09.21.2020 08:35

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Copper	7440-50-8	2.80	ug/L	09.21.2020 16:55		1
Lead	7439-92-1	2.32	ug/L	09.21.2020 16:55		1
Zinc	7440-66-6	11.3	ug/L	09.21.2020 16:55		1

Analytical Method : Chemical Oxygen Demand by HACH 8000
Seq Number : 3138038

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
COD - Chemical Oxygen Demand		25.0	mg/L	09.24.2020 14:15		1

Analytical Method : Dissolved Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3137611

Prep Method: SW3010A
Date Prep: 09.20.2020 08:40

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Copper, Dissolved	7440-50-8	2.82	ug/L	09.20.2020 20:01		1
Zinc, Dissolved	7440-66-6	8.18	ug/L	09.20.2020 20:01		1

Analytical Method : Hardness, Total by SM2340B
Seq Number : 3138069

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Total Hardness (as CaCO3)	471-34-1	41	mg/L	09.21.2020 16:55		1

Analytical Method : Nitrogen Ammonia by EPA 350.1
Seq Number : 3137854

Prep Method: E350.1P
Date Prep: 09.22.2020 10:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Nitrogen, Ammonia (as N)	7664-41-7	1.68	mg/L	09.22.2020 13:34		1

Analytical Method : Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2
Seq Number : 3137864

Prep Method: E351.2P
Date Prep: 09.21.2020 11:58

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Nitrogen, Total Kjeldahl	7727-37-9	2.63	mg/L	09.22.2020 20:25		1

Hits Summary 672711

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id : **Station 3A**
Lab Sample Id : 672711-003

Matrix : Surface Water
Date Collected : 09.15.2020 12:10
Date Received : 09.16.2020 11:43

% Moisture :

Analytical Method : TSS by SM2540D
Seq Number : 3137544

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
TSS, Total Suspended Solids	TSS	8.50	mg/L	09.18.2020 11:54		1

Analytical Method : Total Phosphorus by EPA 365.1
Seq Number : 3137811

Prep Method: E365.1_P
Date Prep: 09.21.2020 17:03

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Phosphorus, Total (as P)	7723-14-0	0.331	mg/L	09.22.2020 14:36		1

Hits Summary 672711

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id : **Station 3**
Lab Sample Id : 672711-004

Matrix : Surface Water
Date Collected : 09.15.2020 13:05
Date Received : 09.16.2020 11:43

% Moisture :

Analytical Method : Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3137723

Prep Method: SW3010A
Date Prep: 09.21.2020 08:35

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Copper	7440-50-8	4.12	ug/L	09.25.2020 01:57		1
Lead	7439-92-1	1.03	ug/L	09.21.2020 16:58		1
Zinc	7440-66-6	114	ug/L	09.21.2020 16:58		1

Analytical Method : Chemical Oxygen Demand by HACH 8000
Seq Number : 3138115

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
COD - Chemical Oxygen Demand		13.0	mg/L	09.25.2020 10:55		1

Analytical Method : Dissolved Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3137611

Prep Method: SW3010A
Date Prep: 09.20.2020 08:40

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Copper, Dissolved	7440-50-8	2.61	ug/L	09.20.2020 20:04		1
Zinc, Dissolved	7440-66-6	6.64	ug/L	09.20.2020 20:04		1

Analytical Method : Hardness, Total by SM2340B
Seq Number : 3138069

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Total Hardness (as CaCO3)	471-34-1	55	mg/L	09.21.2020 16:58		1

Analytical Method : Nitrogen Ammonia by EPA 350.1
Seq Number : 3137854

Prep Method: E350.1P
Date Prep: 09.22.2020 10:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Nitrogen, Ammonia (as N)	7664-41-7	0.399	mg/L	09.22.2020 17:40		1

Analytical Method : Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2
Seq Number : 3137864

Prep Method: E351.2P
Date Prep: 09.21.2020 11:58

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Nitrogen, Total Kjeldahl	7727-37-9	1.12	mg/L	09.22.2020 20:28		1

Sample Id : **Station 3**
Lab Sample Id : 672711-004

Matrix : Surface Water
Date Collected : 09.15.2020 13:05
Date Received : 09.16.2020 11:43

% Moisture :

Analytical Method : TSS by SM2540D
Seq Number : 3137544

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
TSS, Total Suspended Solids	TSS	8.00	mg/L	09.18.2020 11:54		1

Analytical Method : Total Phosphorus by EPA 365.1
Seq Number : 3137811

Prep Method: E365.1_P
Date Prep: 09.21.2020 17:03

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Phosphorus, Total (as P)	7723-14-0	0.128	mg/L	09.22.2020 14:37		1

Certificate of Analytical Results 672711

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id: **Station 1**
Lab Sample Id: 672711-001

Matrix: Surface Water
Date Collected: 09.15.2020 09:45

Date Received: 09.16.2020 11:43

Analytical Method: TSS by SM2540D

Tech: KBU

Analyst: KBU

Seq Number: 3137544

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
TSS, Total Suspended Solids	10.3	4.00		mg/L	09.18.2020 11:54	1

Analytical Method: Total Phosphorus by EPA 365.1

Tech: KCS

Analyst: KCS

Seq Number: 3137811

Date Prep: 09.21.2020 17:03

Prep Method: E365.1_P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Phosphorus, Total (as P)	0.0819	0.0200		mg/L	09.22.2020 14:32	1

Analytical Method: Chemical Oxygen Demand by HACH 8000

Tech: TAH

Analyst: TAH

Seq Number: 3138038

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
COD - Chemical Oxygen Demand	35.0	10.0		mg/L	09.24.2020 14:15	1

Analytical Method: Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Seq Number: 3137723

Date Prep: 09.21.2020 08:35

Prep Method: SW3010A

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium	ND	1.00	U	ug/L	09.21.2020 16:49	1
Copper	4.54	1.00		ug/L	09.25.2020 01:45	1
Lead	1.03	1.00		ug/L	09.21.2020 16:49	1
Zinc	15.5	1.00		ug/L	09.21.2020 16:49	1

Project: Cordele Watershed

Certificate of Analytical Results 672711

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id: **Station 1**
Lab Sample Id: 672711-001

Matrix: Surface Water
Date Collected: 09.15.2020 09:45

Date Received: 09.16.2020 11:43

Analytical Method: Dissolved Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Seq Number: 3137611

Date Prep: 09.20.2020 08:40

Prep Method: SW3010A

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium, Dissolved	ND	1.00	U	ug/L	09.20.2020 19:55	1
Copper, Dissolved	2.17	1.00		ug/L	09.20.2020 19:55	1
Lead, Dissolved	ND	1.00	U	ug/L	09.20.2020 19:55	1
Zinc, Dissolved	5.08	1.00		ug/L	09.20.2020 19:55	1

Analytical Method: Hardness, Total by SM2340B

Tech: DEP

Analyst: DEP

Seq Number: 3138069

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Total Hardness (as CaCO3)	21			mg/L	09.21.2020 16:49	1

Analytical Method: Nitrogen Ammonia by EPA 350.1

Tech: KCS

Analyst: KCS

Seq Number: 3137854

Date Prep: 09.22.2020 10:00

Prep Method: E350.1P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Ammonia (as N)	ND	0.100	U	mg/L	09.22.2020 13:16	1

Analytical Method: Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2

Tech: KCS

Analyst: KCS

Seq Number: 3137864

Date Prep: 09.21.2020 11:58

Prep Method: E351.2P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Total Kjeldahl	0.921	0.500		mg/L	09.22.2020 20:17	1

Project: Cordele Watershed

Certificate of Analytical Results 672711

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id: **Station 2A**
Lab Sample Id: 672711-002

Matrix: Surface Water
Date Collected: 09.15.2020 11:15

Date Received: 09.16.2020 11:43

Analytical Method: TSS by SM2540D

Tech: KBU

Analyst: KBU

Seq Number: 3137544

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
TSS, Total Suspended Solids	6.00	4.00		mg/L	09.18.2020 11:54	1

Analytical Method: Total Phosphorus by EPA 365.1

Tech: KCS

Analyst: KCS

Seq Number: 3137811

Date Prep: 09.21.2020 17:03

Prep Method: E365.1_P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Phosphorus, Total (as P)	0.0561	0.0200		mg/L	09.22.2020 14:35	1

Analytical Method: Chemical Oxygen Demand by HACH 8000

Tech: TAH

Analyst: TAH

Seq Number: 3138038

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
COD - Chemical Oxygen Demand	23.0	10.0		mg/L	09.24.2020 14:15	1

Analytical Method: Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Seq Number: 3137723

Date Prep: 09.21.2020 08:35

Prep Method: SW3010A

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium	ND	1.00	U	ug/L	09.21.2020 16:52	1
Copper	4.57	1.00		ug/L	09.25.2020 01:54	1
Lead	ND	1.00	U	ug/L	09.21.2020 16:52	1
Zinc	8.62	1.00		ug/L	09.21.2020 16:52	1

Project: Cordele Watershed

Certificate of Analytical Results 672711

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id: **Station 2A**
Lab Sample Id: 672711-002

Matrix: Surface Water
Date Collected: 09.15.2020 11:15

Date Received: 09.16.2020 11:43

Analytical Method: Dissolved Cd,Cu,Pb,Zn by SW-846 6020A

Prep Method: SW3010A

Tech: MLI

% Moisture:

Analyst: DEP

Date Prep: 09.20.2020 08:40

Seq Number: 3137611

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium, Dissolved	ND	1.00	U	ug/L	09.20.2020 19:58	1
Copper, Dissolved	2.45	1.00		ug/L	09.20.2020 19:58	1
Lead, Dissolved	ND	1.00	U	ug/L	09.20.2020 19:58	1
Zinc, Dissolved	7.53	1.00		ug/L	09.20.2020 19:58	1

Analytical Method: Hardness, Total by SM2340B

Tech: DEP

% Moisture:

Analyst: DEP

Seq Number: 3138069

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Total Hardness (as CaCO3)	15			mg/L	09.21.2020 16:52	1

Analytical Method: Nitrogen Ammonia by EPA 350.1

Tech: KCS

Prep Method: E350.1P

Analyst: KCS

Date Prep: 09.22.2020 10:00

Seq Number: 3137854

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Ammonia (as N)	ND	0.100	U	mg/L	09.22.2020 13:32	1

Analytical Method: Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2

Tech: KCS

Prep Method: E351.2P

Analyst: KCS

Date Prep: 09.21.2020 11:58

Seq Number: 3137864

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Total Kjeldahl	ND	0.500	U	mg/L	09.22.2020 20:18	1

Project: Cordele Watershed

Certificate of Analytical Results 672711

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id: **Station 3A**
Lab Sample Id: 672711-003

Matrix: Surface Water
Date Collected: 09.15.2020 12:10

Date Received: 09.16.2020 11:43

Analytical Method: TSS by SM2540D

Tech: KBU

Analyst: KBU

Seq Number: 3137544

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
TSS, Total Suspended Solids	8.50	4.00		mg/L	09.18.2020 11:54	1

Analytical Method: Total Phosphorus by EPA 365.1

Tech: KCS

Analyst: KCS

Seq Number: 3137811

Date Prep: 09.21.2020 17:03

Prep Method: E365.1_P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Phosphorus, Total (as P)	0.331	0.0200		mg/L	09.22.2020 14:36	1

Analytical Method: Chemical Oxygen Demand by HACH 8000

Tech: TAH

Analyst: TAH

Seq Number: 3138038

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
COD - Chemical Oxygen Demand	25.0	10.0		mg/L	09.24.2020 14:15	1

Analytical Method: Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Seq Number: 3137723

Date Prep: 09.21.2020 08:35

Prep Method: SW3010A

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium	ND	1.00	U	ug/L	09.21.2020 16:55	1
Copper	2.80	1.00		ug/L	09.21.2020 16:55	1
Lead	2.32	1.00		ug/L	09.21.2020 16:55	1
Zinc	11.3	1.00		ug/L	09.21.2020 16:55	1

Project: Cordele Watershed

Certificate of Analytical Results 672711

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id: **Station 3A**
Lab Sample Id: 672711-003

Matrix: Surface Water
Date Collected: 09.15.2020 12:10

Date Received: 09.16.2020 11:43

Analytical Method: Dissolved Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Seq Number: 3137611

Date Prep: 09.20.2020 08:40

Prep Method: SW3010A

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium, Dissolved	ND	1.00	U	ug/L	09.20.2020 20:01	1
Copper, Dissolved	2.82	1.00		ug/L	09.20.2020 20:01	1
Lead, Dissolved	ND	1.00	U	ug/L	09.20.2020 20:01	1
Zinc, Dissolved	8.18	1.00		ug/L	09.20.2020 20:01	1

Analytical Method: Hardness, Total by SM2340B

Tech: DEP

Analyst: DEP

Seq Number: 3138069

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Total Hardness (as CaCO3)	41			mg/L	09.21.2020 16:55	1

Analytical Method: Nitrogen Ammonia by EPA 350.1

Tech: KCS

Analyst: KCS

Seq Number: 3137854

Date Prep: 09.22.2020 10:00

Prep Method: E350.1P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Ammonia (as N)	1.68	0.100		mg/L	09.22.2020 13:34	1

Analytical Method: Nitrogen, Kjeldahl, Total (Colorimetry by EPA 351.2

Tech: KCS

Analyst: KCS

Seq Number: 3137864

Date Prep: 09.21.2020 11:58

Prep Method: E351.2P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Total Kjeldahl	2.63	0.500		mg/L	09.22.2020 20:25	1

Project: Cordele Watershed

Certificate of Analytical Results 672711

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id: **Station 3**
Lab Sample Id: 672711-004

Matrix: Surface Water
Date Collected: 09.15.2020 13:05

Date Received: 09.16.2020 11:43

Analytical Method: TSS by SM2540D

Tech: KBU

Analyst: KBU

Seq Number: 3137544

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
TSS, Total Suspended Solids	8.00	4.00		mg/L	09.18.2020 11:54	1

Analytical Method: Total Phosphorus by EPA 365.1

Tech: KCS

Analyst: KCS

Seq Number: 3137811

Date Prep: 09.21.2020 17:03

Prep Method: E365.1_P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Phosphorus, Total (as P)	0.128	0.0200		mg/L	09.22.2020 14:37	1

Analytical Method: Chemical Oxygen Demand by HACH 8000

Tech: TAH

Analyst: TAH

Seq Number: 3138115

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
COD - Chemical Oxygen Demand	13.0	10.0		mg/L	09.25.2020 10:55	1

Analytical Method: Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Seq Number: 3137723

Date Prep: 09.21.2020 08:35

Prep Method: SW3010A

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium	ND	1.00	U	ug/L	09.21.2020 16:58	1
Copper	4.12	1.00		ug/L	09.25.2020 01:57	1
Lead	1.03	1.00		ug/L	09.21.2020 16:58	1
Zinc	114	1.00		ug/L	09.21.2020 16:58	1

Project: Cordele Watershed

Certificate of Analytical Results 672711

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id: **Station 3**
Lab Sample Id: 672711-004

Matrix: Surface Water
Date Collected: 09.15.2020 13:05

Date Received: 09.16.2020 11:43

Analytical Method: Dissolved Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Seq Number: 3137611

Date Prep: 09.20.2020 08:40

Prep Method: SW3010A

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium, Dissolved	ND	1.00	U	ug/L	09.20.2020 20:04	1
Copper, Dissolved	2.61	1.00		ug/L	09.20.2020 20:04	1
Lead, Dissolved	ND	1.00	U	ug/L	09.20.2020 20:04	1
Zinc, Dissolved	6.64	1.00		ug/L	09.20.2020 20:04	1

Analytical Method: Hardness, Total by SM2340B

Tech: DEP

Analyst: DEP

Seq Number: 3138069

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Total Hardness (as CaCO3)	55			mg/L	09.21.2020 16:58	1

Analytical Method: Nitrogen Ammonia by EPA 350.1

Tech: KCS

Analyst: KCS

Seq Number: 3137854

Date Prep: 09.22.2020 10:00

Prep Method: E350.1P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Ammonia (as N)	0.399	0.100		mg/L	09.22.2020 17:40	1

Analytical Method: Nitrogen, Kjeldahl, Total (Colorimetry by EPA 351.2

Tech: KCS

Analyst: KCS

Seq Number: 3137864

Date Prep: 09.21.2020 11:58

Prep Method: E351.2P

% Moisture:

SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Total Kjeldahl	1.12	0.500		mg/L	09.22.2020 20:28	1

Project: Cordele Watershed

TTL, Inc.
Cordele Watershed

Analytical Method: Chemical Oxygen Demand by HACH 8000

Seq Number: 3138038 Matrix: Water
MB Sample Id: 3138038-1-BLK LCS Sample Id: 3138038-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
COD - Chemical Oxygen Demand	<3.36	100	103	103	90-110	mg/L	09.24.2020 14:15	

Analytical Method: Chemical Oxygen Demand by HACH 8000

Seq Number: 3138115 Matrix: Water
MB Sample Id: 3138115-1-BLK LCS Sample Id: 3138115-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
COD - Chemical Oxygen Demand	<3.36	100	103	103	90-110	mg/L	09.25.2020 10:55	

Analytical Method: Chemical Oxygen Demand by HACH 8000

Seq Number: 3138038 Matrix: Waste Water
Parent Sample Id: 672610-001 MS Sample Id: 672610-001 S MSD Sample Id: 672610-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
COD - Chemical Oxygen Demand	<3.36	100	98.0	98	92.0	92	90-110	6	20	mg/L	09.24.2020 14:15	

Analytical Method: Chemical Oxygen Demand by HACH 8000

Seq Number: 3138038 Matrix: Waste Water
Parent Sample Id: 672851-001 MS Sample Id: 672851-001 S MSD Sample Id: 672851-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
COD - Chemical Oxygen Demand	<3.36	100	103	103	95.0	95	90-110	8	20	mg/L	09.24.2020 14:15	

Analytical Method: Chemical Oxygen Demand by HACH 8000

Seq Number: 3138115 Matrix: Surface Water
Parent Sample Id: 672711-004 MS Sample Id: 672711-004 S MSD Sample Id: 672711-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
COD - Chemical Oxygen Demand	13.0	100	110	97	104	91	90-110	6	20	mg/L	09.25.2020 10:55	

Analytical Method: Chemical Oxygen Demand by HACH 8000

Seq Number: 3138115 Matrix: Water
Parent Sample Id: 673154-001 MS Sample Id: 673154-001 S MSD Sample Id: 673154-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
COD - Chemical Oxygen Demand	<3.36	100	100	100	96.0	96	90-110	4	20	mg/L	09.25.2020 10:55	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec

TTL, Inc.
Cordele Watershed

Analytical Method: TSS by SM2540D

Seq Number: 3137544 Matrix: Water
MB Sample Id: 3137544-1-BLK LCS Sample Id: 3137544-1-BKS LCSD Sample Id: 3137544-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
TSS, Total Suspended Solids	<4.00	100	114	114	115	115	80-120	1	10	mg/L	09.18.2020 11:54	

Analytical Method: TSS by SM2540D

Seq Number: 3137544 Matrix: Surface Water
Parent Sample Id: 672596-001 MD Sample Id: 672596-001 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
TSS, Total Suspended Solids	13.5	13.5	0	10	mg/L	09.18.2020 11:54	

Analytical Method: TSS by SM2540D

Seq Number: 3137544 Matrix: Water
Parent Sample Id: 672726-001 MD Sample Id: 672726-001 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
TSS, Total Suspended Solids	76.0	78.0	3	10	mg/L	09.18.2020 11:54	

Analytical Method: Total Phosphorus by EPA 365.1

Seq Number: 3137811 Matrix: Water
MB Sample Id: 7711773-1-BLK LCS Sample Id: 7711773-1-BKS Prep Method: E365.1_P
Date Prep: 09.21.2020
LCSD Sample Id: 7711773-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Phosphorus, Total (as P)	<0.00959	0.250	0.248	99	0.248	99	90-110	0	20	mg/L	09.22.2020 14:09	

Analytical Method: Total Phosphorus by EPA 365.1

Seq Number: 3137811 Matrix: Surface Water
Parent Sample Id: 672596-002 MS Sample Id: 672596-002 S Prep Method: E365.1_P
Date Prep: 09.21.2020
MSD Sample Id: 672596-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Phosphorus, Total (as P)	0.115	0.250	0.374	104	0.379	106	90-110	1	20	mg/L	09.22.2020 14:27	

Analytical Method: Total Phosphorus by EPA 365.1

Seq Number: 3137811 Matrix: Water
Parent Sample Id: 672740-007 MS Sample Id: 672740-007 S Prep Method: E365.1_P
Date Prep: 09.21.2020
MSD Sample Id: 672740-007 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Phosphorus, Total (as P)	0.0433	0.250	0.286	97	0.288	98	90-110	1	20	mg/L	09.22.2020 14:14	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

TTL, Inc.
Cordele Watershed

Analytical Method: Cd,Cu,Pb,Zn by SW-846 6020A

Seq Number: 3137723

MB Sample Id: 7711721-1-BLK

Matrix: Water

LCS Sample Id: 7711721-1-BKS

Prep Method: SW3010A

Date Prep: 09.21.2020

LCSD Sample Id: 7711721-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Cadmium	<0.147	100	94.1	94	93.6	94	80-120	1	20	ug/L	09.21.2020 16:24	
Copper	<0.747	100	92.1	92	91.6	92	80-120	1	20	ug/L	09.21.2020 16:24	
Lead	<0.152	100	91.9	92	91.6	92	80-120	0	20	ug/L	09.21.2020 16:24	
Zinc	<0.802	100	94.2	94	93.6	94	80-120	1	20	ug/L	09.21.2020 16:24	

Analytical Method: Cd,Cu,Pb,Zn by SW-846 6020A

Seq Number: 3137723

Parent Sample Id: 672789-001

Matrix: Water

MS Sample Id: 672789-001 S

Prep Method: SW3010A

Date Prep: 09.21.2020

MSD Sample Id: 672789-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Cadmium	0.236	100	96.9	97	97.2	97	75-125	0	20	ug/L	09.21.2020 16:32	
Copper	3.25	100	100	97	100	97	75-125	0	20	ug/L	09.21.2020 16:32	
Lead	0.865	100	99.9	99	99.9	99	75-125	0	20	ug/L	09.21.2020 16:32	
Zinc	8.65	100	105	96	104	95	75-125	1	20	ug/L	09.21.2020 16:32	

Analytical Method: Dissolved Cd,Cu,Pb,Zn by SW-846 6020A

Seq Number: 3137611

MB Sample Id: 7711677-1-BLK

Matrix: Water

LCS Sample Id: 7711677-1-BKS

Prep Method: SW3010A

Date Prep: 09.20.2020

LCSD Sample Id: 7711677-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Cadmium, Dissolved	<0.147	100	97.8	98	96.4	96	80-120	1	20	ug/L	09.20.2020 18:49	
Copper, Dissolved	<0.747	100	95.3	95	94.6	95	80-120	1	20	ug/L	09.20.2020 18:49	
Lead, Dissolved	<0.152	100	95.6	96	94.5	95	80-120	1	20	ug/L	09.20.2020 18:49	
Zinc, Dissolved	<0.802	100	98.3	98	96.2	96	80-120	2	20	ug/L	09.20.2020 18:49	

Analytical Method: Dissolved Cd,Cu,Pb,Zn by SW-846 6020A

Seq Number: 3137611

Parent Sample Id: 672628-001

Matrix: Ground Water

MS Sample Id: 672628-001 S

Prep Method: SW3010A

Date Prep: 09.20.2020

MSD Sample Id: 672628-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Cadmium, Dissolved	<0.147	100	93.6	94	93.1	93	75-125	1	20	ug/L	09.20.2020 18:58	
Copper, Dissolved	1.62	100	97.8	96	97.1	95	75-125	1	20	ug/L	09.20.2020 18:58	
Lead, Dissolved	<0.152	100	94.3	94	95.6	96	75-125	1	20	ug/L	09.20.2020 18:58	
Zinc, Dissolved	3.82	100	98.3	94	96.7	93	75-125	2	20	ug/L	09.20.2020 18:58	

Analytical Method: Nitrogen Ammonia by EPA 350.1

Seq Number: 3137854

MB Sample Id: 7711877-1-BLK

Matrix: Water

LCS Sample Id: 7711877-1-BKS

Prep Method: E350.1P

Date Prep: 09.22.2020

LCSD Sample Id: 7711877-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Nitrogen, Ammonia (as N)	<0.0345	1.00	0.926	93	0.952	95	90-110	3	20	mg/L	09.22.2020 12:14	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C-A) / B$
 $RPD = 200 * | (C-E) / (C+E) |$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec

TTL, Inc.
Cordele Watershed

Analytical Method: Nitrogen Ammonia by EPA 350.1

Seq Number: 3137854

Matrix: Water

Prep Method: E350.1P

Date Prep: 09.22.2020

Parent Sample Id: 672740-001

MS Sample Id: 672740-001 S

MSD Sample Id: 672740-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Nitrogen, Ammonia (as N)	<0.0345	1.00	0.950	95	0.965	97	90-110	2	20	mg/L	09.22.2020 12:23	

Analytical Method: Nitrogen Ammonia by EPA 350.1

Seq Number: 3137854

Matrix: Water

Prep Method: E350.1P

Date Prep: 09.22.2020

Parent Sample Id: 672866-001

MS Sample Id: 672866-001 S

MSD Sample Id: 672866-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Nitrogen, Ammonia (as N)	<0.0345	1.00	0.983	98	0.986	99	90-110	0	20	mg/L	09.22.2020 13:08	

Analytical Method: Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2)

Seq Number: 3137864

Matrix: Water

Prep Method: E351.2P

Date Prep: 09.21.2020

MB Sample Id: 7711732-1-BLK

LCS Sample Id: 7711732-1-BKS

LCSD Sample Id: 7711732-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Nitrogen, Total Kjeldahl	<0.0614	2.00	2.03	102	2.03	102	90-110	0	20	mg/L	09.22.2020 19:39	

Analytical Method: Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2)

Seq Number: 3137864

Matrix: Surface Water

Prep Method: E351.2P

Date Prep: 09.21.2020

Parent Sample Id: 672596-002

MS Sample Id: 672596-002 S

MSD Sample Id: 672596-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Nitrogen, Total Kjeldahl	1.28	2.00	3.33	103	3.33	103	90-110	0	20	mg/L	09.22.2020 19:42	

Analytical Method: Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2)

Seq Number: 3137864

Matrix: Water

Prep Method: E351.2P

Date Prep: 09.21.2020

Parent Sample Id: 672866-002

MS Sample Id: 672866-002 S

MSD Sample Id: 672866-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Nitrogen, Total Kjeldahl	0.795	2.00	2.84	102	2.84	102	90-110	0	20	mg/L	09.22.2020 19:57	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec



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Work Order No: 672711

www.xenco.com Page 1 of 1

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City, State ZIP:	Albany, GA 31721	City, State ZIP:	
Phone:	229-432-5865	Email:	morris@ttlusa.com

Project Name:	Cardale Watershed	Turn Around	
Project Number:	00200601075.00	Routine	<input checked="" type="checkbox"/>
Project Location:	Cardale, GA	Rush:	
Sampler's Name:	David Jones/Anna McWhorter	Due Date:	
PO #:		Quote #:	

SAMPLE RECEIPT			
Temperature (°C):	46/48	Temp Blank:	Yes No
Received Intact:	Yes No	Wet Ice:	Yes No
Cooler Custody Seals:	Yes No N/A	Thermometer ID:	ATL-123
Sample Custody Seals:	Yes No N/A	Correction Factor:	+0.2
Total Containers:			
Lab ID	Sample Identification	Date Sampled	Time Sampled
Station 1	SW	9-5-20	0945
Station 2A	I	I	1115
Station 3A	I	I	1210
Station 3	I	I	1305

ANALYSIS REQUEST											
Pres. Code	No	No	No	No	No	No	No	No	No	No	No
Number of Containers											
Boys											
TSS											
Ammonia, TN, COD, Phos											
Cd, Cu, Pb, Zn, Henders											
Dissolved Cd, Cu, Pb, Zn											
O-Phos, NO3, NO2											

Preservative Codes											
MeOH: Me											
None: NO											
HNO3: HN											
H2SO4: H2											
HCL: HL											
NaOH: Na											
Zn Acetate+ NaOH: Zn											
TAT starts the day received by the lab, if received by 4:00pm											
Sample Comments											

Total	200.7 / 6010	200.8 / 6020:	8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Ti Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed			
TCLP / SPLP 6010: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Ti U			

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of \$75.00 will be applied to each project and a charge of \$5 for each sample submitted to Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
	FedEx	9-15-20 1730		FedEx	09/16/20 11:43

WED - 16 SEP AA
STANDARD OVERNIGHT

30093
ATL

FedEx
TRK# 8160 0274 6884
0215

XH LIYA



FID 5074294 15SEP20 VLDA 56RC6/1545/0512

CUSTODY SEAL

Date

9-15-20

Signature

A handwritten signature in dark ink, appearing to be "J. D. J.", written over a horizontal line.

Thermo
SCIENTIFIC

90009

Date Printed: 09.16.2020 15:00

Date/Time: 09.16.2020 15:00 Created by: John Andros

Subcontractor: Analytical Environmental Services, Inc.

PO#: 672711

Delivery Priority:

Air Bill No.:

Invoice To: Invoices@xenco.com; john.andros@xenco.com

Send report to: John Andros

Address: 1600 Oakbrook Dr., Suite 565, Norcross, GA 30093
Ph:(770) 449-8800


E-Mail: john.andros@xenco.com

TAT: Standard

Sample Id	Client Sample Id	Cont #	Matrix	Sample Collection	Method	Method Name	Lab PM
672711-001	Station 1	3974	W	09.15.20 09:45	E300	Inorganic Anions by EPA 300	John Andros
672711-001	Station 1	3974	W	09.15.20 09:45	SM4500-P-E-OP	ortho-Phosphorus by SM4500-P E	John Andros
672711-001	Station 1	3974	W	09.15.20 09:45	SM5210B_BOD	BOD by SM5210B	John Andros
672711-002	Station 2A	3976	W	09.15.20 11:15	E300	Inorganic Anions by EPA 300	John Andros
672711-002	Station 2A	3976	W	09.15.20 11:15	SM4500-P-E-OP	ortho-Phosphorus by SM4500-P E	John Andros
672711-002	Station 2A	3976	W	09.15.20 11:15	SM5210B_BOD	BOD by SM5210B	John Andros
672711-003	Station 3A	3978	W	09.15.20 12:10	E300	Inorganic Anions by EPA 300	John Andros
672711-003	Station 3A	3978	W	09.15.20 12:10	SM4500-P-E-OP	ortho-Phosphorus by SM4500-P E	John Andros
672711-003	Station 3A	3978	W	09.15.20 12:10	SM5210B_BOD	BOD by SM5210B	John Andros
672711-004	Station 3	3980	W	09.15.20 13:05	E300	Inorganic Anions by EPA 300	John Andros
672711-004	Station 3	3980	W	09.15.20 13:05	SM4500-P-E-OP	ortho-Phosphorus by SM4500-P E	John Andros
672711-004	Station 3	3980	W	09.15.20 13:05	SM5210B_BOD	BOD by SM5210B	John Andros

Subcontractor: Analyze for method and samples specified on COC as requested. Any deviation, must be approved by a Xenco PM.

SUB-Contracting Comments:

Relinquished By: 
John Andros

Received By:

Date/ Time Relinquished: 09.16.2020

Date/ Time Received:

Relinquished By:

Received By:

Date Printed: 09.16.2020 15:00

Date/ Time Relinquished: _____

Date/ Time Received: _____

Cooler Temperature: _____

Inter-Office Shipment

IOS Number : **70495**

Date/Time: 09.16.2020	Created by: John Andros	Please send report to: John Andros
Lab# From: Atlanta	Delivery Priority:	Address: 1600 Oakbrook Dr., Suite 565, Norcross, GA 30093
Lab# To: Houston	Air Bill No.: 771546361144	E-Mail: john.andros@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
672711-001	W	Station 1	09.15.2020 09:45	SW6020_Select_DIS	Dissolved Cd,Cu,Pb,Zn by SW-846 602	09.24.2020	03.14.2021	JNA	CD CU PB ZN	
672711-001	W	Station 1	09.15.2020 09:45	E350.1	Nitrogen Ammonia by EPA 350.1	09.24.2020	10.13.2020	JNA	NH3N	
672711-001	W	Station 1	09.15.2020 09:45	SM2340B	Hardness, Total by SM2340B	09.24.2020	09.22.2020 09:45	JNA	HARD	
672711-001	W	Station 1	09.15.2020 09:45	SM2540D	TSS by SM2540D	09.24.2020	09.22.2020 09:45	JNA	TSS	
672711-001	W	Station 1	09.15.2020 09:45	E351.2	Nitrogen, Kjeldahl, Total (Colorime by E	09.24.2020	10.13.2020	JNA	TKN	
672711-001	W	Station 1	09.15.2020 09:45	E365.1	Total Phosphorus by EPA 365.1	09.24.2020	10.13.2020	JNA	Total Phos.	
672711-001	W	Station 1	09.15.2020 09:45	SW6020_Select	Cd,Cu,Pb,Zn by SW-846 6020A	09.24.2020	03.14.2021	JNA	CA CD CU MG PB ZN	
672711-001	W	Station 1	09.15.2020 09:45	H8000	Chemical Oxygen Demand by HACH 80	09.24.2020	10.13.2020	JNA	COD	
672711-002	W	Station 2A	09.15.2020 11:15	E350.1	Nitrogen Ammonia by EPA 350.1	09.24.2020	10.13.2020	JNA	NH3N	
672711-002	W	Station 2A	09.15.2020 11:15	SM2340B	Hardness, Total by SM2340B	09.24.2020	09.22.2020 11:15	JNA	HARD	
672711-002	W	Station 2A	09.15.2020 11:15	SW6020_Select_DIS	Dissolved Cd,Cu,Pb,Zn by SW-846 602	09.24.2020	03.14.2021	JNA	CD CU PB ZN	
672711-002	W	Station 2A	09.15.2020 11:15	SW6020_Select	Cd,Cu,Pb,Zn by SW-846 6020A	09.24.2020	03.14.2021	JNA	CA CD CU MG PB ZN	
672711-002	W	Station 2A	09.15.2020 11:15	SM2540D	TSS by SM2540D	09.24.2020	09.22.2020 11:15	JNA	TSS	
672711-002	W	Station 2A	09.15.2020 11:15	H8000	Chemical Oxygen Demand by HACH 80	09.24.2020	10.13.2020	JNA	COD	
672711-002	W	Station 2A	09.15.2020 11:15	E365.1	Total Phosphorus by EPA 365.1	09.24.2020	10.13.2020	JNA	Total Phos.	
672711-002	W	Station 2A	09.15.2020 11:15	E351.2	Nitrogen, Kjeldahl, Total (Colorime by E	09.24.2020	10.13.2020	JNA	TKN	
672711-003	W	Station 3A	09.15.2020 12:10	SW6020_Select	Cd,Cu,Pb,Zn by SW-846 6020A	09.24.2020	03.14.2021	JNA	CA CD CU MG PB ZN	
672711-003	W	Station 3A	09.15.2020 12:10	E351.2	Nitrogen, Kjeldahl, Total (Colorime by E	09.24.2020	10.13.2020	JNA	TKN	
672711-003	W	Station 3A	09.15.2020 12:10	E365.1	Total Phosphorus by EPA 365.1	09.24.2020	10.13.2020	JNA	Total Phos.	
672711-003	W	Station 3A	09.15.2020 12:10	H8000	Chemical Oxygen Demand by HACH 80	09.24.2020	10.13.2020	JNA	COD	
672711-003	W	Station 3A	09.15.2020 12:10	SW6020_Select_DIS	Dissolved Cd,Cu,Pb,Zn by SW-846 602	09.24.2020	03.14.2021	JNA	CD CU PB ZN	
672711-003	W	Station 3A	09.15.2020 12:10	E350.1	Nitrogen Ammonia by EPA 350.1	09.24.2020	10.13.2020	JNA	NH3N	
672711-003	W	Station 3A	09.15.2020 12:10	SM2340B	Hardness, Total by SM2340B	09.24.2020	09.22.2020 12:10	JNA	HARD	
672711-003	W	Station 3A	09.15.2020 12:10	SM2540D	TSS by SM2540D	09.24.2020	09.22.2020 12:10	JNA	TSS	
672711-004	W	Station 3	09.15.2020 13:05	E351.2	Nitrogen, Kjeldahl, Total (Colorime by E	09.24.2020	10.13.2020	JNA	TKN	


Inter-Office Shipment

IOS Number : 70495


Date/Time: 09.16.2020	Created by: John Andros	Please send report to: John Andros
Lab# From: Atlanta	Delivery Priority:	Address: 1600 Oakbrook Dr., Suite 565, Norcross, GA 30093
Lab# To: Houston	Air Bill No.: 771546361144	E-Mail: john.andros@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
672711-004	W	Station 3	09.15.2020 13:05	E350.1	Nitrogen Ammonia by EPA 350.1	09.24.2020	10.13.2020	JNA	NH3N	
672711-004	W	Station 3	09.15.2020 13:05	SW6020_Select	Cd,Cu,Pb,Zn by SW-846 6020A	09.24.2020	03.14.2021	JNA	CA CD CU MG PB ZN	
672711-004	W	Station 3	09.15.2020 13:05	SM2340B	Hardness, Total by SM2340B	09.24.2020	09.22.2020 13:05	JNA	HARD	
672711-004	W	Station 3	09.15.2020 13:05	SW6020_Select_DIS	Dissolved Cd,Cu,Pb,Zn by SW-846 602	09.24.2020	03.14.2021	JNA	CD CU PB ZN	
672711-004	W	Station 3	09.15.2020 13:05	SM2540D	TSS by SM2540D	09.24.2020	09.22.2020 13:05	JNA	TSS	
672711-004	W	Station 3	09.15.2020 13:05	E365.1	Total Phosphorus by EPA 365.1	09.24.2020	10.13.2020	JNA	Total Phos.	
672711-004	W	Station 3	09.15.2020 13:05	H8000	Chemical Oxygen Demand by HACH 8000	09.24.2020	10.13.2020	JNA	COD	

Inter Office Shipment or Sample Comments:

Relinquished By: 
 John Andros

Date Relinquished: 09.16.2020

Received By: 
 Monica Benavides

Date Received: 09.17.2020

Cooler Temperature: 1.8

Inter Office Report- Sample Receipt Checklist

Sent To: Houston

IOS #: 70495

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : HOU-203

Sent By: John Andros

Date Sent: 09.16.2020 03.00 PM

Received By: Monica Benavides

Date Received: 09.17.2020 10.00 AM

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	1.8
#2 *Shipping container in good condition?	Yes
#3 *Samples received with appropriate temperature?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 *Custody Seals Signed and dated for Containers/coolers	Yes
#6 *IOS present?	Yes
#7 Any missing/extra samples?	No
#8 IOS agrees with sample label(s)/matrix?	Yes
#9 Sample matrix/ properties agree with IOS?	Yes
#10 Samples in proper container/ bottle?	Yes
#11 Samples properly preserved?	Yes
#12 Sample container(s) intact?	Yes
#13 Sufficient sample amount for indicated test(s)?	Yes
#14 All samples received within hold time?	Yes

* Must be completed for after-hours delivery of samples prior to placing in the refrigerator

NonConformance:

Corrective Action Taken:

Nonconformance Documentation

Contact: _____ Contacted by : _____ Date: _____

Checklist reviewed by:



Monica Benavides

Date: 09.17.2020

Eurofins Xenco, LLC
Prelogin/Nonconformance Report- Sample Log-In

Client: TTL, Inc.

Date/ Time Received: 09.16.2020 11.43.00 AM

Work Order #: 672711

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient



Temperature Measuring device used : ATL-123

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	4.8
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 Custody Seals intact on sample bottles?	N/A
#6 *Custody Seals Signed and dated?	Yes
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	Yes
#18 Water VOC samples have zero headspace?	N/A

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: MCM

PH Device/Lot#: 017360-1

Checklist completed by:	 _____ John Andros	Date: <u>09.16.2020</u>
Checklist reviewed by:	 _____ John Andros	Date: <u>09.16.2020</u>



ANALYTICAL ENVIRONMENTAL SERVICES, INC.

September 23, 2020

John Andros
Eurofins Xenco, LLC

1600 Oakbrook Dr. Suite 565
Norcross GA 30095

RE: Cordele Watershed

Dear John Andros:

Order No: 2009G13

Analytical Environmental Services, Inc. received 4 samples on 9/16/2020 1:13:00 PM
for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.

AES's accreditations are as follows:

-NELAP/State of Florida Laboratory ID E87582 for analysis of Non-Potable Water, Solid & Chemical Materials, Air & Emissions Volatile Organics, and Drinking Water Microbiology & Metals, effective 07/01/20-06/30/21.

State of Georgia, Department of Natural Resources ID #800 for analysis of Drinking Water Metals, effective through 06/30/21 and Total Coliforms/ E. coli, effective 04/20/20-04/24/23.

-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Metals and PCM Asbestos), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination, effective until 11/01/21.

These results relate only to the items tested as received. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Sincerely,

Ioana Pacurar
Project Manager



Chain of Custody

1600 Oakbrook Drive, Suite 565, Norcross, GA 30093 (770-449-8800)

Work Order No: 2009G13

Project Manager:	John Andros	Bill to: (if different)	
Company Name:	Xenco Labs	Company Name:	(Same)
Address:	1600 Oakbrook Dr., Suite 565	Address:	
City, State ZIP:	Norcross, GA 30093	City, State ZIP:	
Phone:	770-449-8800	Email:	john.andros@xenco.com

www.xenco.com Page 1 of 1

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RC ☐ Superfund ☐
State of Project:
Reporting: Level II ☐ Level III ☐ PST/UST ☐ RRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	Cordele Watershed	Turn Around	
Project Number:		Routine	<input checked="" type="checkbox"/>
P.O. Number:	U5131662057	Rush:	
Sampler's Name:		Due Date:	

SAMPLE RECEIPT		Temp Blank:	Yes No	Wet Ice:	Yes No
Temperature (°C):		Thermometer ID			
Received Intact:	Yes No				
Cooler Custody Seals:	Yes No N/A	Correction Factor:			
Sample Custody Seals:	Yes No N/A	Total Containers:			

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth
Station 1	SW	9/15	0945	
Station 2A	↓	↓	1115	
Station 3A	↓	↓	1210	
Station 3	↓	↓	1305	

ANALYSIS REQUEST															
Number of Containers	BOD	ortho-Phosphorus	Nitrate (E300.0)	Nitrite (E300.0)											
	X	X	X	X											
	↓	↓	↓	↓											
	↓	↓	↓	↓											
	↓	↓	↓	↓											

Work Order Notes
TAT starts the day received by the lab, if received by 2:00 pm
Sample Comments

Total 200.7 / 6010 200.8 / 6020:	8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Ti Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed	TCLP / SPLP 6010: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Ti U

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of \$75.00 will be applied to each project and a charge of \$5 for each sample submitted to Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
John Andros	Analysis	9/16/20 1:13pm			

Client: Eurofins Xenco, LLC
Project Name: Cordele Watershed
Lab ID: 2009G13-001

Client Sample ID: STATION 1
Collection Date: 9/15/2020 9:45:00 AM
Matrix: Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Phosphorus, ortho E365.1								
Phosphorus, Total Orthophosphate (As P)	0.0340	0.0100		mg/L	R434790	1	09/16/2020 17:41	IP
Inorganic Anions by IC EPA 300.0								
Nitrogen, Nitrate (As N)	BRL	0.250		mg/L	R434784	1	09/16/2020 16:54	IP
Nitrogen, Nitrite (As N)	BRL	0.250		mg/L	R434784	1	09/16/2020 16:54	IP
Biochemical Oxygen Demand by SM5210B								
Biochemical Oxygen Demand	BRL	5.0		mg/L	302833	1	09/16/2020 17:00	EM

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

Client: Eurofins Xenco, LLC
Project Name: Cordele Watershed
Lab ID: 2009G13-002

Client Sample ID: STATION 2A
Collection Date: 9/15/2020 11:15:00 AM
Matrix: Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Phosphorus, ortho E365.1								
Phosphorus, Total Orthophosphate (As P)	0.0410	0.0100		mg/L	R434790	1	09/16/2020 17:44	IP
Inorganic Anions by IC EPA 300.0								
Nitrogen, Nitrate (As N)	BRL	0.250		mg/L	R434784	1	09/16/2020 17:05	IP
Nitrogen, Nitrite (As N)	BRL	0.250		mg/L	R434784	1	09/16/2020 17:05	IP
Biochemical Oxygen Demand by SM5210B								
Biochemical Oxygen Demand	BRL	5.0		mg/L	302833	1	09/16/2020 17:00	EM

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

Client: Eurofins Xenco, LLC
Project Name: Cordele Watershed
Lab ID: 2009G13-003

Client Sample ID: STATION 3A
Collection Date: 9/15/2020 12:10:00 PM
Matrix: Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Phosphorus, ortho E365.1								
Phosphorus, Total Orthophosphate (As P)	0.236	0.0100		mg/L	R434790	1	09/16/2020 17:46	IP
Inorganic Anions by IC EPA 300.0								
Nitrogen, Nitrate (As N)	1.95	0.250		mg/L	R434784	1	09/16/2020 17:15	IP
Nitrogen, Nitrite (As N)	BRL	0.250		mg/L	R434784	1	09/16/2020 17:15	IP
Biochemical Oxygen Demand by SM5210B								
Biochemical Oxygen Demand	BRL	5.0		mg/L	302833	1	09/16/2020 17:00	EM

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

Client: Eurofins Xenco, LLC
Project Name: Cordele Watershed
Lab ID: 2009G13-004

Client Sample ID: STATION 3
Collection Date: 9/15/2020 1:05:00 PM
Matrix: Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Phosphorus, ortho E365.1								
Phosphorus, Total Orthophosphate (As P)	0.116	0.0100		mg/L	R434790	1	09/16/2020 17:48	IP
Inorganic Anions by IC EPA 300.0								
Nitrogen, Nitrate (As N)	0.652	0.250		mg/L	R434784	1	09/16/2020 17:59	IP
Nitrogen, Nitrite (As N)	BRL	0.250		mg/L	R434784	1	09/16/2020 17:59	IP
Biochemical Oxygen Demand by SM5210B								
Biochemical Oxygen Demand	BRL	5.0		mg/L	302833	1	09/16/2020 17:00	EM

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

SAMPLE/COOLER RECEIPT CHECKLIST

1. Client Name: _____

AES Work Order Number: _____

2. Carrier: FedEx ☐ UPS ☐ USPS ☐ Client ☐ Courier ☐ Other _____

	Yes	No	N/A	Details	Comments
3. Shipping container/cooler received in good condition?				damaged <input type="checkbox"/> leaking <input type="checkbox"/> other <input type="checkbox"/>	
4. Custody seals present on shipping container?					
5. Custody seals intact on shipping container?					
6. Temperature blanks present?					
7. Cooler temperature(s) within limits of 0-6°C? [See item 13 and 14 for temperature recordings.]				Cooling initiated for recently collected samples / ice present <input type="checkbox"/>	
8. Chain of Custody (COC) present?					
9. Chain of Custody signed, dated, and timed when relinquished and received?					
10. Sampler name and/or signature on COC?					
11. Were all samples received within holding time?					
12. TAT marked on the COC?				If no TAT indicated, proceeded with standard TAT per Terms & Conditions. <input type="checkbox"/>	

13. Cooler 1 Temperature _____ °C Cooler 2 Temperature _____ °C Cooler 3 Temperature _____ °C Cooler 4 Temperature _____ °C
Cooler 5 Temperature _____ °C Cooler 6 Temperature _____ °C Cooler 7 Temperature _____ °C Cooler 8 Temperature _____ °C

15. Comments: _____

I certify that I have completed sections 1-15 (dated initials). _____

	Yes	No	N/A	Details	Comments
16. Were sample containers intact upon receipt?					
17. Custody seals present on sample containers?					
18. Custody seals intact on sample containers?					
19. Do sample container labels match the COC?				incomplete info <input type="checkbox"/> illegible <input type="checkbox"/> no label <input type="checkbox"/> other <input type="checkbox"/>	
20. Are analyses requested indicated on the COC?					
21. Were all of the samples listed on the COC received?				samples received but not listed on COC <input type="checkbox"/> samples listed on COC not received <input type="checkbox"/>	
22. Was the sample collection date/time noted?					
23. Did we receive sufficient sample volume for indicated analyses?					
24. Were samples received in appropriate containers?					
25. Were VOA samples received without headspace (< 1/4" bubble)?					
26. Were trip blanks submitted?				listed on COC <input type="checkbox"/> not listed on COC <input type="checkbox"/>	

27. Comments: _____

I certify that I have completed sections 16-27 (dated initials). _____

	Yes	No	N/A	Details	Comments
28. Have containers needing chemical preservation been checked? *					
29. Containers meet preservation guidelines?					
30. Was pH adjusted at Sample Receipt?					

I certify that I have completed sections 28-30 (dated initials). _____

Client: Eurofins Xenco, LLC
 Project Name: Cordele Watershed
 Lab Order: 2009G13

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
2009G13-001A	STATION 1	9/15/2020 9:45:00AM	Surface Water	Inorganic Anions by IC			09/16/2020
2009G13-001A	STATION 1	9/15/2020 9:45:00AM	Surface Water	Phosphorus, ortho			09/16/2020
2009G13-001B	STATION 1	9/15/2020 9:45:00AM	Surface Water	Biochemical Oxygen Demand by SM5210		9/16/2020 5:00:00PM	09/16/2020
2009G13-002A	STATION 2A	9/15/2020 11:15:00AM	Surface Water	Inorganic Anions by IC			09/16/2020
2009G13-002A	STATION 2A	9/15/2020 11:15:00AM	Surface Water	Phosphorus, ortho			09/16/2020
2009G13-002B	STATION 2A	9/15/2020 11:15:00AM	Surface Water	Biochemical Oxygen Demand by SM5210		9/16/2020 5:00:00PM	09/16/2020
2009G13-003A	STATION 3A	9/15/2020 12:10:00PM	Surface Water	Inorganic Anions by IC			09/16/2020
2009G13-003A	STATION 3A	9/15/2020 12:10:00PM	Surface Water	Phosphorus, ortho			09/16/2020
2009G13-003B	STATION 3A	9/15/2020 12:10:00PM	Surface Water	Biochemical Oxygen Demand by SM5210		9/16/2020 5:00:00PM	09/16/2020
2009G13-004A	STATION 3	9/15/2020 1:05:00PM	Surface Water	Inorganic Anions by IC			09/16/2020
2009G13-004A	STATION 3	9/15/2020 1:05:00PM	Surface Water	Phosphorus, ortho			09/16/2020
2009G13-004B	STATION 3	9/15/2020 1:05:00PM	Surface Water	Biochemical Oxygen Demand by SM5210		9/16/2020 5:00:00PM	09/16/2020

Client: Eurofins Xenco, LLC
Project Name: Cordele Watershed
Workorder: 2009G13

ANALYTICAL QC SUMMARY REPORT

BatchID: 302833

Sample ID: MB-302833	Client ID:					Units: mg/L	Prep Date: 09/16/2020	Run No: 435011			
SampleType: MBLK	TestCode: Biochemical Oxygen Demand by SM5210B					BatchID: 302833	Analysis Date: 09/16/2020	Seq No: 9884660			
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Biochemical Oxygen Demand BRL 2.0

Sample ID: LCS-302833	Client ID:					Units: mg/L	Prep Date: 09/16/2020	Run No: 435011			
SampleType: LCS	TestCode: Biochemical Oxygen Demand by SM5210B					BatchID: 302833	Analysis Date: 09/16/2020	Seq No: 9884661			
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Biochemical Oxygen Demand 209.0 5.0 198.0 106 85 115

Sample ID: LCSD-302833	Client ID:					Units: mg/L	Prep Date: 09/16/2020	Run No: 435011			
SampleType: LCSD	TestCode: Biochemical Oxygen Demand by SM5210B					BatchID: 302833	Analysis Date: 09/16/2020	Seq No: 9884662			
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Biochemical Oxygen Demand 206.0 5.0 198.0 104 85 115 209.0 1.45 25

Qualifiers:	>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
	BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Eurofins Xenco, LLC
Project Name: Cordele Watershed
Workorder: 2009G13

ANALYTICAL QC SUMMARY REPORT**BatchID: R434784**

Sample ID: MB-R434784	Client ID:					Units: mg/L	Prep Date:			Run No: 434784	
SampleType: MBLK	TestCode: Inorganic Anions by IC	EPA 300.0				BatchID: R434784	Analysis Date: 09/16/2020			Seq No: 9879249	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Nitrogen, Nitrate (As N)

BRL

0.250

Nitrogen, Nitrite (As N)

BRL

0.250

Sample ID: LCS-R434784	Client ID:					Units: mg/L	Prep Date:		Run No: 434784		
SampleType: LCS	TestCode: Inorganic Anions by IC	EPA 300.0				BatchID: R434784	Analysis Date: 09/16/2020		Seq No: 9879248		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Nitrogen, Nitrate (As N)

5.086

0.250

5.000

102

90

110

Nitrogen, Nitrite (As N)

5.181

0.250

5.000

104

90

110

Sample ID: 2009F11-003AMS	Client ID:					Units: mg/L	Prep Date:		Run No: 434784		
SampleType: MS	TestCode: Inorganic Anions by IC	EPA 300.0				BatchID: R434784	Analysis Date: 09/16/2020		Seq No: 9879275		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Nitrogen, Nitrate (As N)

6.403

0.250

5.000

0.8894

110

90

110

S

Nitrogen, Nitrite (As N)

5.535

0.250

5.000

111

90

110

S

Sample ID: 2009G13-004AMS	Client ID: STATION 3	Units: mg/L			Prep Date:			Run No: 434784			
SampleType: MS	TestCode: Inorganic Anions by IC EPA 300.0	BatchID: R434784			Analysis Date: 09/16/2020			Seq No: 9879292			
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Nitrogen, Nitrate (As N)

6.039

0.250

5.000

0.6520

108

90

110

Nitrogen, Nitrite (As N)

5.406

0.250

5.000

108

90

110

Sample ID: 2009F11-003AMSD		Client ID:			Units: mg/L		Prep Date:		Run No: 434784		
SampleType: MSD		TestCode: Inorganic Anions by IC EPA 300.0			BatchID: R434784		Analysis Date: 09/16/2020		Seq No: 9879277		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Nitrogen, Nitrate (As N)

6.441

0.250

5.000

0.8894

111

90

110

6.403

0.596

20

S

Qualifiers: > Greater than Result value

< Less than Result value

B Analyte detected in the associated method blank

BRL Below reporting limit

E Estimated (value above quantitation range)

H Holding times for preparation or analysis exceeded

J Estimated value detected below Reporting Limit

N Analyte not NELAC certified

R RPD outside limits due to matrix

Rpt Lim Reporting Limit

S Spike Recovery outside limits due to matrix

Client: Eurofins Xenco, LLC
Project Name: Cordele Watershed
Workorder: 2009G13

ANALYTICAL QC SUMMARY REPORT

BatchID: R434784

Sample ID: 2009F11-003AMSD	Client ID:					Units: mg/L	Prep Date:		Run No: 434784		
SampleType: MSD	TestCode: Inorganic Anions by IC EPA 300.0					BatchID: R434784	Analysis Date: 09/16/2020		Seq No: 9879277		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Nitrogen, Nitrite (As N)	5.555	0.250	5.000		111	90	110	5.535	0.353	20	S
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Qualifiers:	>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
	BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Eurofins Xenco, LLC
Project Name: Cordele Watershed
Workorder: 2009G13

ANALYTICAL QC SUMMARY REPORT**BatchID: R434790**

Sample ID: MB-R434790	Client ID:					Units: mg/L	Prep Date:		Run No: 434790		
SampleType: MBLK	TestCode: Phosphorus, ortho E365.1					BatchID: R434790	Analysis Date: 09/16/2020		Seq No: 9879468		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Phosphorus, Total Orthophosphate (As BRL 0.0100

Sample ID: LCS-R434790	Client ID:					Units: mg/L	Prep Date:			Run No: 434790	
SampleType: LCS	TestCode: Phosphorus, ortho E365.1					BatchID: R434790	Analysis Date: 09/16/2020			Seq No: 9879469	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Phosphorus, Total Orthophosphate (As 0.2420 0.0100 0.2500 96.8 90 110

Sample ID: 2009F75-001EMS	Client ID:					Units: mg/L	Prep Date:		Run No: 434790		
SampleType: MS	TestCode: Phosphorus, ortho E365.1					BatchID: R434790	Analysis Date: 09/16/2020		Seq No: 9879478		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Phosphorus, Total Orthophosphate (As 0.2440 0.0100 0.2500 97.6 90 110

Sample ID: 2009G13-001AMS	Client ID: STATION 1	Units: mg/L				Prep Date:				Run No: 434790	
SampleType: MS	TestCode: Phosphorus, ortho E365.1	BatchID: R434790				Analysis Date: 09/16/2020				Seq No: 9879491	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Phosphorus, Total Orthophosphate (As 0.2810 0.0100 0.2500 0.03400 98.8 90 110

Sample ID: 2009F75-001EMSD		Client ID:			Units: mg/L		Prep Date:		Run No: 434790			
SampleType: MSD		TestCode: Phosphorus, ortho E365.1			BatchID: R434790		Analysis Date: 09/16/2020		Seq No: 9879479			
Analyte		Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Phosphorus, Total Orthophosphate (As 0.2430 0.0100 0.2500 97.2 90 110 0.2440 0.411 20

Qualifiers: > Greater than Result value
 BRL Below reporting limit
 J Estimated value detected below Reporting Limit
 Rpt Lim Reporting Limit

< Less than Result value
 E Estimated (value above quantitation range)
 N Analyte not NELAC certified
 S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank
 H Holding times for preparation or analysis exceeded
 R RPD outside limits due to matrix

End of Report

Analytical Report 675597

for

TTL, Inc.

Project Manager: Jim Smith

Cordele Watershed

000200601075.00

11.17.2020

Collected By: Client



1600 Oakbrook Dr., Suite 565, Norcross, GA 30093

Ph:(770) 449-8800

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-38), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2020-014), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-20-26), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-20-18)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-23)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-21)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-20-8)
Xenco-Tampa: Florida (E87429), North Carolina (483)

11.17.2020

Project Manager: **Jim Smith**

TTL, Inc.

4589 Val North Drive

Valdosta, GA 31602

Reference: Eurofins Xenco, LLC Report No(s): **675597**

Cordele Watershed

Project Address:

Jim Smith:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the Eurofins Xenco, LLC Report Number(s) 675597. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by Eurofins Xenco, LLC. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 675597 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting Eurofins Xenco, LLC to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,



John Andros

Lab Manager

A Small Business and Minority Company

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

CASE NARRATIVE

Client Name: *TTL, Inc.*

Project Name: *Cordele Watershed*

Project ID: 000200601075.00
Work Order Number(s): 675597

Report Date: 11.17.2020
Date Received: 10.16.2020

Sample receipt non conformances and comments:

The analyses for BOD, ortho-Phosphorus, Nitrate and Nitrite were subcontracted to an outside lab. The subcontractor report has been appended to the end of the Eurofins Xenco report.

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3140383 Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2

Lab Sample ID 675597-004 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD).

Nitrogen, Total Kjeldahl recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate.

Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 675597-001, -002, -003, -004, -005.

The Laboratory Control Sample for Nitrogen, Total Kjeldahl is within laboratory Control Limits, therefore the data was accepted.

Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit. **ND** Not Detected.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

Hits Summary 675597

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id : **Station 1**
Lab Sample Id : 675597-001

Matrix : Surface Water
Date Collected : 10.15.2020 08:30
Date Received : 10.16.2020 09:50

% Moisture :

Analytical Method : Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3140527

Prep Method: SW3010A
Date Prep: 10.23.2020 09:30

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Zinc	7440-66-6	2.58	ug/L	10.23.2020 17:08		1

Analytical Method : Chemical Oxygen Demand by HACH 8000
Seq Number : 3140500

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
COD - Chemical Oxygen Demand		25.0	mg/L	10.24.2020 13:02		1

Analytical Method : Dissolved Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3140605

Prep Method: SW3010A
Date Prep: 10.26.2020 08:30

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Zinc, Dissolved	7440-66-6	1.79	ug/L	10.26.2020 19:46		1

Analytical Method : Hardness, Total by SM2340B
Seq Number : 3140715

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Total Hardness (as CaCO3)	471-34-1	100	mg/L	10.23.2020 17:08		1

Analytical Method : Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2
Seq Number : 3140383

Prep Method: E351.2P
Date Prep: 10.21.2020 12:37

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Nitrogen, Total Kjeldahl	7727-37-9	0.537	mg/L	10.22.2020 16:41		1

Hits Summary 675597

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id : **Station 2A**
Lab Sample Id : 675597-002

Matrix : Surface Water
Date Collected : 10.15.2020 09:10
Date Received : 10.16.2020 09:50

% Moisture :

Analytical Method : Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3140527

Prep Method: SW3010A
Date Prep: 10.23.2020 09:30

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Zinc	7440-66-6	4.23	ug/L	10.23.2020 17:11		1

Analytical Method : Chemical Oxygen Demand by HACH 8000
Seq Number : 3140500

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
COD - Chemical Oxygen Demand		18.0	mg/L	10.24.2020 13:02		1

Analytical Method : Dissolved Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3140605

Prep Method: SW3010A
Date Prep: 10.26.2020 08:30

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Zinc, Dissolved	7440-66-6	1.67	ug/L	10.26.2020 19:49		1

Analytical Method : Hardness, Total by SM2340B
Seq Number : 3140715

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Total Hardness (as CaCO3)	471-34-1	45	mg/L	10.23.2020 17:11		1

Analytical Method : TSS by SM2540D
Seq Number : 3140347

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
TSS, Total Suspended Solids	TSS	9.33	mg/L	10.22.2020 14:39		1

Analytical Method : Total Phosphorus by EPA 365.1
Seq Number : 3140357

Prep Method: E365.1_P
Date Prep: 10.21.2020 16:21

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Phosphorus, Total (as P)	7723-14-0	0.0888	mg/L	10.22.2020 12:14		1

Hits Summary 675597

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id : **Station 6**
Lab Sample Id : 675597-003

Matrix : Surface Water
Date Collected : 10.15.2020 09:50
Date Received : 10.16.2020 09:50

% Moisture :

Analytical Method : Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3140527

Prep Method: SW3010A
Date Prep: 10.23.2020 09:30

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Zinc	7440-66-6	5.24	ug/L	10.23.2020 17:14		1

Analytical Method : Chemical Oxygen Demand by HACH 8000
Seq Number : 3140500

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
COD - Chemical Oxygen Demand		11.0	mg/L	10.24.2020 13:02		1

Analytical Method : Dissolved Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3140605

Prep Method: SW3010A
Date Prep: 10.26.2020 08:30

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Zinc, Dissolved	7440-66-6	4.22	ug/L	10.27.2020 14:12		1

Analytical Method : Hardness, Total by SM2340B
Seq Number : 3140715

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Total Hardness (as CaCO3)	471-34-1	43	mg/L	10.23.2020 17:14		1

Analytical Method : Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2
Seq Number : 3140383

Prep Method: E351.2P
Date Prep: 10.21.2020 12:37

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Nitrogen, Total Kjeldahl	7727-37-9	0.553	mg/L	10.22.2020 16:43		1

Analytical Method : TSS by SM2540D
Seq Number : 3140347

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
TSS, Total Suspended Solids	TSS	15.0	mg/L	10.22.2020 14:39		1

Hits Summary 675597

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id : **Station 6**
 Lab Sample Id : 675597-003

Matrix : Surface Water
 Date Collected : 10.15.2020 09:50
 Date Received : 10.16.2020 09:50

% Moisture :

Analytical Method : Total Phosphorus by EPA 365.1
 Seq Number : 3140357

Prep Method: E365.1_P
 Date Prep: 10.21.2020 16:21

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Phosphorus, Total (as P)	7723-14-0	0.0266	mg/L	10.22.2020 12:15		1

Hits Summary 675597

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id : **Station 3**
Lab Sample Id : 675597-004

Matrix : Surface Water
Date Collected : 10.15.2020 11:50
Date Received : 10.16.2020 09:50

% Moisture :

Analytical Method : Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3140527

Prep Method: SW3010A
Date Prep: 10.23.2020 09:30

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Zinc	7440-66-6	4.26	ug/L	10.23.2020 17:17		1

Analytical Method : Chemical Oxygen Demand by HACH 8000
Seq Number : 3140500

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
COD - Chemical Oxygen Demand		10.0	mg/L	10.24.2020 13:02	J	1

Analytical Method : Dissolved Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3140605

Prep Method: SW3010A
Date Prep: 10.26.2020 08:30

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Zinc, Dissolved	7440-66-6	1.95	ug/L	10.26.2020 19:55		1

Analytical Method : Hardness, Total by SM2340B
Seq Number : 3140715

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Total Hardness (as CaCO3)	471-34-1	120	mg/L	10.23.2020 17:17		1

Analytical Method : Total Phosphorus by EPA 365.1
Seq Number : 3140357

Prep Method: E365.1_P
Date Prep: 10.21.2020 16:21

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Phosphorus, Total (as P)	7723-14-0	0.0232	mg/L	10.22.2020 12:16		1

Hits Summary 675597

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id : **Station 3A**
Lab Sample Id : 675597-005

Matrix : Surface Water
Date Collected : 10.15.2020 12:15
Date Received : 10.16.2020 09:50

% Moisture :

Analytical Method : Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3140527

Prep Method: SW3010A
Date Prep: 10.23.2020 09:30

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Copper	7440-50-8	2.23	ug/L	10.23.2020 17:20		1
Lead	7439-92-1	4.03	ug/L	10.23.2020 17:20		1
Zinc	7440-66-6	32.6	ug/L	10.23.2020 17:20		1

Analytical Method : Chemical Oxygen Demand by HACH 8000
Seq Number : 3140500

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
COD - Chemical Oxygen Demand		14.0	mg/L	10.24.2020 13:02		1

Analytical Method : Dissolved Cd,Cu,Pb,Zn by SW-846 6020A
Seq Number : 3140605

Prep Method: SW3010A
Date Prep: 10.26.2020 08:30

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Copper, Dissolved	7440-50-8	2.39	ug/L	10.26.2020 20:03		1
Zinc, Dissolved	7440-66-6	19.1	ug/L	10.26.2020 20:03		1

Analytical Method : Hardness, Total by SM2340B
Seq Number : 3140715

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Total Hardness (as CaCO3)	471-34-1	91	mg/L	10.23.2020 17:20		1

Analytical Method : Nitrogen Ammonia by EPA 350.1
Seq Number : 3140470

Prep Method: E350.1P
Date Prep: 10.23.2020 10:00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Nitrogen, Ammonia (as N)	7664-41-7	0.275	mg/L	10.23.2020 13:06		1

Analytical Method : Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2
Seq Number : 3140383

Prep Method: E351.2P
Date Prep: 10.21.2020 12:37

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Nitrogen, Total Kjeldahl	7727-37-9	0.804	mg/L	10.22.2020 16:49		1

Hits Summary 675597

TTL, Inc., Valdosta, GA Cordele Watershed

Sample Id : **Station 3A**
Lab Sample Id : 675597-005

Matrix : Surface Water
Date Collected : 10.15.2020 12:15
Date Received : 10.16.2020 09:50

% Moisture :

Analytical Method : TSS by SM2540D
Seq Number : 3140347

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
TSS, Total Suspended Solids	TSS	27.7	mg/L	10.22.2020 14:39		1

Analytical Method : Total Phosphorus by EPA 365.1
Seq Number : 3140357

Prep Method: E365.1_P
Date Prep: 10.21.2020 16:21

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
Phosphorus, Total (as P)	7723-14-0	0.0977	mg/L	10.22.2020 12:17		1

TTL, Inc., Valdosta, GA
Cordele Watershed

Sample Id: Station 1
Lab Sample Id: 675597-001

Matrix: Surface Water
Date Collected: 10.15.2020 08:30

Date Received: 10.16.2020 09:50

Analytical Method: TSS by SM2540D

Tech: KBU

Analyst: KBU

Seq Number: 3140347

% Moisture:
SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
TSS, Total Suspended Solids	ND	4.00	U	mg/L	10.22.2020 14:39	1

Analytical Method: Total Phosphorus by EPA 365.1

Tech: KCS

Analyst: KCS

Date Prep: 10.21.2020 16:21

Seq Number: 3140357

% Moisture:
SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Phosphorus, Total (as P)	ND	0.0200	U	mg/L	10.22.2020 12:13	1

Analytical Method: Chemical Oxygen Demand by HACH 8000

Tech: TAH

Analyst: TAH

Seq Number: 3140500

% Moisture:
SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
COD - Chemical Oxygen Demand	25.0	10.0		mg/L	10.24.2020 13:02	1

Analytical Method: Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Date Prep: 10.23.2020 09:30

Seq Number: 3140527

% Moisture:
SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium	ND	1.00	U	ug/L	10.23.2020 17:08	1
Copper	ND	1.00	U	ug/L	10.23.2020 17:08	1
Lead	ND	1.00	U	ug/L	10.23.2020 17:08	1
Zinc	2.58	1.00		ug/L	10.23.2020 17:08	1

Project: Cordele Watershed

TTL, Inc., Valdosta, GA
Cordele Watershed

Sample Id: **Station 1**
Lab Sample Id: 675597-001

Matrix: Surface Water
Date Collected: 10.15.2020 08:30

Date Received: 10.16.2020 09:50

Analytical Method: Dissolved Cd,Cu,Pb,Zn by SW-846 6020A

Prep Method: SW3010A

Tech: MLI

Analyst: DEP

Date Prep: 10.26.2020 08:30

% Moisture:

SUB: E871002

Seq Number: 3140605

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium, Dissolved	ND	1.00	U	ug/L	10.26.2020 19:46	1
Copper, Dissolved	ND	1.00	U	ug/L	10.27.2020 14:06	1
Lead, Dissolved	ND	1.00	U	ug/L	10.26.2020 19:46	1
Zinc, Dissolved	1.79	1.00		ug/L	10.26.2020 19:46	1

Analytical Method: Hardness, Total by SM2340B

Tech: DEP

Analyst: DEP

% Moisture:

SUB: E871002

Seq Number: 3140715

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Total Hardness (as CaCO3)	100	3.3		mg/L	10.23.2020 17:08	1

Analytical Method: Nitrogen Ammonia by EPA 350.1

Prep Method: E350.1P

Tech: KCS

Analyst: KCS

Date Prep: 10.23.2020 10:00

% Moisture:

SUB: E871002

Seq Number: 3140470

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Ammonia (as N)	ND	0.100	U	mg/L	10.23.2020 12:56	1

Analytical Method: Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2

Prep Method: E351.2P

Tech: KCS

Analyst: KCS

Date Prep: 10.21.2020 12:37

% Moisture:

SUB: E871002

Seq Number: 3140383

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Total Kjeldahl	0.537	0.500		mg/L	10.22.2020 16:41	1

Project: Cordele Watershed

TTL, Inc., Valdosta, GA
Cordele Watershed

Sample Id: **Station 2A**
Lab Sample Id: 675597-002

Matrix: Surface Water
Date Collected: 10.15.2020 09:10

Date Received: 10.16.2020 09:50

Analytical Method: TSS by SM2540D

Tech: KBU

Analyst: KBU

Seq Number: 3140347

% Moisture:
SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
TSS, Total Suspended Solids	9.33	4.00		mg/L	10.22.2020 14:39	1

Analytical Method: Total Phosphorus by EPA 365.1

Tech: KCS

Analyst: KCS

Date Prep: 10.21.2020 16:21

Seq Number: 3140357

% Moisture:
SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Phosphorus, Total (as P)	0.0888	0.0200		mg/L	10.22.2020 12:14	1

Analytical Method: Chemical Oxygen Demand by HACH 8000

Tech: TAH

Analyst: TAH

Seq Number: 3140500

% Moisture:
SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
COD - Chemical Oxygen Demand	18.0	10.0		mg/L	10.24.2020 13:02	1

Analytical Method: Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Date Prep: 10.23.2020 09:30

Seq Number: 3140527

% Moisture:
SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium	ND	1.00	U	ug/L	10.23.2020 17:11	1
Copper	ND	1.00	U	ug/L	10.23.2020 17:11	1
Lead	ND	1.00	U	ug/L	10.23.2020 17:11	1
Zinc	4.23	1.00		ug/L	10.23.2020 17:11	1

Project: Cordele Watershed

TTL, Inc., Valdosta, GA
Cordele Watershed

Sample Id: Station 2A
Lab Sample Id: 675597-002

Matrix: Surface Water
Date Collected: 10.15.2020 09:10

Date Received: 10.16.2020 09:50

Analytical Method: Dissolved Cd,Cu,Pb,Zn by SW-846 6020A

Prep Method: SW3010A

Tech: MLI

Analyst: DEP

Date Prep: 10.26.2020 08:30

% Moisture:

SUB: E871002

Seq Number: 3140605

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium, Dissolved	ND	1.00	U	ug/L	10.26.2020 19:49	1
Copper, Dissolved	ND	1.00	U	ug/L	10.27.2020 14:09	1
Lead, Dissolved	ND	1.00	U	ug/L	10.26.2020 19:49	1
Zinc, Dissolved	1.67	1.00		ug/L	10.26.2020 19:49	1

Analytical Method: Hardness, Total by SM2340B

Tech: DEP

Analyst: DEP

% Moisture:

SUB: E871002

Seq Number: 3140715

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Total Hardness (as CaCO3)	45	3.3		mg/L	10.23.2020 17:11	1

Analytical Method: Nitrogen Ammonia by EPA 350.1

Prep Method: E350.1P

Tech: KCS

Analyst: KCS

Date Prep: 10.23.2020 10:00

% Moisture:

SUB: E871002

Seq Number: 3140470

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Ammonia (as N)	ND	0.100	U	mg/L	10.23.2020 12:57	1

Analytical Method: Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2

Prep Method: E351.2P

Tech: KCS

Analyst: KCS

Date Prep: 10.21.2020 12:37

% Moisture:

SUB: E871002

Seq Number: 3140383

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Total Kjeldahl	ND	0.500	U	mg/L	10.22.2020 16:42	1

Project: Cordele Watershed

TTL, Inc., Valdosta, GA
Cordele Watershed

Sample Id: **Station 6**
Lab Sample Id: 675597-003

Matrix: Surface Water
Date Collected: 10.15.2020 09:50

Date Received: 10.16.2020 09:50

Analytical Method: TSS by SM2540D

Tech: KBU

Analyst: KBU

Seq Number: 3140347

% Moisture:
SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
TSS, Total Suspended Solids	15.0	4.00		mg/L	10.22.2020 14:39	1

Analytical Method: Total Phosphorus by EPA 365.1

Tech: KCS

Analyst: KCS

Date Prep: 10.21.2020 16:21

Seq Number: 3140357

% Moisture:
SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Phosphorus, Total (as P)	0.0266	0.0200		mg/L	10.22.2020 12:15	1

Analytical Method: Chemical Oxygen Demand by HACH 8000

Tech: TAH

Analyst: TAH

Seq Number: 3140500

% Moisture:
SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
COD - Chemical Oxygen Demand	11.0	10.0		mg/L	10.24.2020 13:02	1

Analytical Method: Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Date Prep: 10.23.2020 09:30

Seq Number: 3140527

% Moisture:
SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium	ND	1.00	U	ug/L	10.23.2020 17:14	1
Copper	ND	1.00	U	ug/L	10.23.2020 17:14	1
Lead	ND	1.00	U	ug/L	10.23.2020 17:14	1
Zinc	5.24	1.00		ug/L	10.23.2020 17:14	1

Project: Cordele Watershed

TTL, Inc., Valdosta, GA
Cordele Watershed

Sample Id: **Station 6**
Lab Sample Id: 675597-003

Matrix: Surface Water
Date Collected: 10.15.2020 09:50

Date Received: 10.16.2020 09:50

Analytical Method: Dissolved Cd,Cu,Pb,Zn by SW-846 6020A

Prep Method: SW3010A

Tech: MLI

Analyst: DEP

Date Prep: 10.26.2020 08:30

% Moisture:

SUB: E871002

Seq Number: 3140605

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium, Dissolved	ND	1.00	U	ug/L	10.26.2020 19:52	1
Copper, Dissolved	ND	1.00	U	ug/L	10.27.2020 14:12	1
Lead, Dissolved	ND	1.00	U	ug/L	10.26.2020 19:52	1
Zinc, Dissolved	4.22	4.00		ug/L	10.27.2020 14:12	1

Analytical Method: Hardness, Total by SM2340B

Tech: DEP

Analyst: DEP

% Moisture:

SUB: E871002

Seq Number: 3140715

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Total Hardness (as CaCO3)	43	3.3		mg/L	10.23.2020 17:14	1

Analytical Method: Nitrogen Ammonia by EPA 350.1

Prep Method: E350.1P

Tech: KCS

Analyst: KCS

Date Prep: 10.23.2020 10:00

% Moisture:

SUB: E871002

Seq Number: 3140470

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Ammonia (as N)	ND	0.100	U	mg/L	10.23.2020 13:00	1

Analytical Method: Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2

Prep Method: E351.2P

Tech: KCS

Analyst: KCS

Date Prep: 10.21.2020 12:37

% Moisture:

SUB: E871002

Seq Number: 3140383

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Total Kjeldahl	0.553	0.500		mg/L	10.22.2020 16:43	1

Project: Cordele Watershed

TTL, Inc., Valdosta, GA
Cordele Watershed

Sample Id: **Station 3**
Lab Sample Id: 675597-004

Matrix: Surface Water
Date Collected: 10.15.2020 11:50

Date Received: 10.16.2020 09:50

Analytical Method: TSS by SM2540D

Tech: KBU

Analyst: KBU

Seq Number: 3140347

% Moisture:
SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
TSS, Total Suspended Solids	ND	4.00	U	mg/L	10.22.2020 14:39	1

Analytical Method: Total Phosphorus by EPA 365.1

Tech: KCS

Analyst: KCS

Date Prep: 10.21.2020 16:21

Seq Number: 3140357

% Moisture:
SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Phosphorus, Total (as P)	0.0232	0.0200		mg/L	10.22.2020 12:16	1

Analytical Method: Chemical Oxygen Demand by HACH 8000

Tech: TAH

Analyst: TAH

Seq Number: 3140500

% Moisture:
SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
COD - Chemical Oxygen Demand	10.0	10.0	J	mg/L	10.24.2020 13:02	1

Analytical Method: Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Date Prep: 10.23.2020 09:30

Seq Number: 3140527

% Moisture:
SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium	ND	1.00	U	ug/L	10.23.2020 17:17	1
Copper	ND	1.00	U	ug/L	10.23.2020 17:17	1
Lead	ND	1.00	U	ug/L	10.23.2020 17:17	1
Zinc	4.26	1.00		ug/L	10.23.2020 17:17	1

Project: Cordele Watershed

TTL, Inc., Valdosta, GA
Cordele Watershed

Sample Id: Station 3
Lab Sample Id: 675597-004

Matrix: Surface Water
Date Collected: 10.15.2020 11:50

Date Received: 10.16.2020 09:50

Analytical Method: Dissolved Cd,Cu,Pb,Zn by SW-846 6020A

Prep Method: SW3010A

Tech: MLI

Analyst: DEP

Date Prep: 10.26.2020 08:30

% Moisture:

SUB: E871002

Seq Number: 3140605

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium, Dissolved	ND	1.00	U	ug/L	10.26.2020 19:55	1
Copper, Dissolved	ND	1.00	U	ug/L	10.26.2020 19:55	1
Lead, Dissolved	ND	1.00	U	ug/L	10.26.2020 19:55	1
Zinc, Dissolved	1.95	1.00		ug/L	10.26.2020 19:55	1

Analytical Method: Hardness, Total by SM2340B

Tech: DEP

Analyst: DEP

% Moisture:

SUB: E871002

Seq Number: 3140715

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Total Hardness (as CaCO3)	120	3.3		mg/L	10.23.2020 17:17	1

Analytical Method: Nitrogen Ammonia by EPA 350.1

Prep Method: E350.1P

Tech: KCS

Analyst: KCS

Date Prep: 10.23.2020 10:00

% Moisture:

SUB: E871002

Seq Number: 3140470

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Ammonia (as N)	ND	0.100	U	mg/L	10.23.2020 13:03	1

Analytical Method: Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2

Prep Method: E351.2P

Tech: KCS

Analyst: KCS

Date Prep: 10.21.2020 12:37

% Moisture:

SUB: E871002

Seq Number: 3140383

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Total Kjeldahl	ND	0.500	UX	mg/L	10.22.2020 16:44	1

Project: Cordele Watershed

TTL, Inc., Valdosta, GA
Cordele Watershed

Sample Id: **Station 3A**
Lab Sample Id: 675597-005

Matrix: Surface Water
Date Collected: 10.15.2020 12:15

Date Received: 10.16.2020 09:50

Analytical Method: TSS by SM2540D

Tech: KBU

Analyst: KBU

Seq Number: 3140347

% Moisture:
SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
TSS, Total Suspended Solids	27.7	4.00		mg/L	10.22.2020 14:39	1

Analytical Method: Total Phosphorus by EPA 365.1

Tech: KCS

Analyst: KCS

Date Prep: 10.21.2020 16:21

Seq Number: 3140357

% Moisture:
SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Phosphorus, Total (as P)	0.0977	0.0200		mg/L	10.22.2020 12:17	1

Analytical Method: Chemical Oxygen Demand by HACH 8000

Tech: TAH

Analyst: TAH

Seq Number: 3140500

% Moisture:
SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
COD - Chemical Oxygen Demand	14.0	10.0		mg/L	10.24.2020 13:02	1

Analytical Method: Cd,Cu,Pb,Zn by SW-846 6020A

Tech: MLI

Analyst: DEP

Date Prep: 10.23.2020 09:30

Seq Number: 3140527

% Moisture:
SUB: E871002

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium	ND	1.00	U	ug/L	10.23.2020 17:20	1
Copper	2.23	1.00		ug/L	10.23.2020 17:20	1
Lead	4.03	1.00		ug/L	10.23.2020 17:20	1
Zinc	32.6	1.00		ug/L	10.23.2020 17:20	1

Project: Cordele Watershed

TTL, Inc., Valdosta, GA
Cordele Watershed

Sample Id: **Station 3A**
Lab Sample Id: 675597-005

Matrix: Surface Water
Date Collected: 10.15.2020 12:15

Date Received: 10.16.2020 09:50

Analytical Method: Dissolved Cd,Cu,Pb,Zn by SW-846 6020A

Prep Method: SW3010A

Tech: MLI

Analyst: DEP

Date Prep: 10.26.2020 08:30

% Moisture:

SUB: E871002

Seq Number: 3140605

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Cadmium, Dissolved	ND	1.00	U	ug/L	10.26.2020 20:03	1
Copper, Dissolved	2.39	1.00		ug/L	10.26.2020 20:03	1
Lead, Dissolved	ND	1.00	U	ug/L	10.26.2020 20:03	1
Zinc, Dissolved	19.1	1.00		ug/L	10.26.2020 20:03	1

Analytical Method: Hardness, Total by SM2340B

Tech: DEP

Analyst: DEP

% Moisture:

SUB: E871002

Seq Number: 3140715

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Total Hardness (as CaCO3)	91	3.3		mg/L	10.23.2020 17:20	1

Analytical Method: Nitrogen Ammonia by EPA 350.1

Prep Method: E350.1P

Tech: KCS

Analyst: KCS

Date Prep: 10.23.2020 10:00

% Moisture:

SUB: E871002

Seq Number: 3140470

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Ammonia (as N)	0.275	0.100		mg/L	10.23.2020 13:06	1

Analytical Method: Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2

Prep Method: E351.2P

Tech: KCS

Analyst: KCS

Date Prep: 10.21.2020 12:37

% Moisture:

SUB: E871002

Seq Number: 3140383

Parameter	Result	RL	Flag	Units	Analysis Date	Dil
Nitrogen, Total Kjeldahl	0.804	0.500		mg/L	10.22.2020 16:49	1

Project: Cordele Watershed

TTL, Inc.
Cordele Watershed

Analytical Method: Chemical Oxygen Demand by HACH 8000

Seq Number: 3140500 Matrix: Water
MB Sample Id: 3140500-1-BLK LCS Sample Id: 3140500-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
COD - Chemical Oxygen Demand	<3.36	100	97.0	97	90-110	mg/L	10.24.2020 13:02	

Analytical Method: Chemical Oxygen Demand by HACH 8000

Seq Number: 3140500 Matrix: Surface Water
Parent Sample Id: 675597-001 MS Sample Id: 675597-001 S MSD Sample Id: 675597-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
COD - Chemical Oxygen Demand	25.0	100	115	90	119	94	90-110	3	20	mg/L	10.24.2020 13:02	

Analytical Method: Chemical Oxygen Demand by HACH 8000

Seq Number: 3140500 Matrix: Water
Parent Sample Id: 675617-001 MS Sample Id: 675617-001 S MSD Sample Id: 675617-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
COD - Chemical Oxygen Demand	39.0	100	133	94	133	94	90-110	0	20	mg/L	10.24.2020 13:02	

Analytical Method: TSS by SM2540D

Seq Number: 3140347 Matrix: Water
MB Sample Id: 3140347-1-BLK LCS Sample Id: 3140347-1-BKS LCSD Sample Id: 3140347-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
TSS, Total Suspended Solids	<4.00	100	112	112	117	117	80-120	4	10	mg/L	10.22.2020 14:39	

Analytical Method: TSS by SM2540D

Seq Number: 3140347 Matrix: Waste Water
Parent Sample Id: 675410-003 MD Sample Id: 675410-003 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
TSS, Total Suspended Solids	102	104	2	10	mg/L	10.22.2020 14:39	

Analytical Method: TSS by SM2540D

Seq Number: 3140347 Matrix: Waste Water
Parent Sample Id: 675482-001 MD Sample Id: 675482-001 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
TSS, Total Suspended Solids	340	342	1	10	mg/L	10.22.2020 14:39	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec

TTL, Inc.
Cordele Watershed

Analytical Method: Total Phosphorus by EPA 365.1

Seq Number: 3140357

Matrix: Water

Prep Method: E365.1_P

Date Prep: 10.21.2020

MB Sample Id: 7713675-1-BLK

LCS Sample Id: 7713675-1-BKS

LCSD Sample Id: 7713675-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Phosphorus, Total (as P)	<0.00959	0.250	0.253	101	0.253	101	90-110	0	20	mg/L	10.22.2020 11:48	

Analytical Method: Total Phosphorus by EPA 365.1

Seq Number: 3140357

Matrix: Water

Prep Method: E365.1_P

Date Prep: 10.21.2020

Parent Sample Id: 675253-001

MS Sample Id: 675253-001 S

MSD Sample Id: 675253-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Phosphorus, Total (as P)	0.0341	0.250	0.287	101	0.287	101	90-110	0	20	mg/L	10.22.2020 11:55	

Analytical Method: Total Phosphorus by EPA 365.1

Seq Number: 3140357

Matrix: Water

Prep Method: E365.1_P

Date Prep: 10.21.2020

Parent Sample Id: 675460-003

MS Sample Id: 675460-003 S

MSD Sample Id: 675460-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Phosphorus, Total (as P)	<0.00959	0.250	0.300	120	0.297	119	90-110	1	20	mg/L	10.22.2020 12:10	X

Analytical Method: Cd,Cu,Pb,Zn by SW-846 6020A

Seq Number: 3140527

Matrix: Water

Prep Method: SW3010A

Date Prep: 10.23.2020

MB Sample Id: 7713793-1-BLK

LCS Sample Id: 7713793-1-BKS

LCSD Sample Id: 7713793-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Cadmium	<0.147	100	94.3	94	95.5	96	80-120	1	20	ug/L	10.23.2020 16:19	
Copper	<0.747	100	93.3	93	94.2	94	80-120	1	20	ug/L	10.23.2020 16:19	
Lead	<0.152	100	94.2	94	92.7	93	80-120	2	20	ug/L	10.23.2020 16:19	
Zinc	<0.802	100	95.9	96	97.3	97	80-120	1	20	ug/L	10.23.2020 16:19	

Analytical Method: Cd,Cu,Pb,Zn by SW-846 6020A

Seq Number: 3140527

Matrix: Ground Water

Prep Method: SW3010A

Date Prep: 10.23.2020

Parent Sample Id: 675658-001

MS Sample Id: 675658-001 S

MSD Sample Id: 675658-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Cadmium	<0.147	100	96.3	96	96.6	97	75-125	0	20	ug/L	10.23.2020 16:30	
Copper	<0.747	100	97.6	98	99.1	99	75-125	2	20	ug/L	10.23.2020 16:30	
Lead	0.242	100	101	101	100	100	75-125	1	20	ug/L	10.23.2020 16:30	
Zinc	4.20	100	100	96	100	96	75-125	0	20	ug/L	10.23.2020 16:30	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec

TTL, Inc.
Cordele Watershed

Analytical Method: Dissolved Cd,Cu,Pb,Zn by SW-846 6020A

Seq Number: 3140605

Matrix: Water

Prep Method: SW3010A

Date Prep: 10.26.2020

MB Sample Id: 7713887-1-BLK

LCS Sample Id: 7713887-1-BKS

LCSD Sample Id: 7713887-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Cadmium, Dissolved	<0.147	100	94.2	94	93.8	94	80-120	0	20	ug/L	10.26.2020 16:06	
Copper, Dissolved	<0.747	100	95.3	95	94.4	94	80-120	1	20	ug/L	10.26.2020 16:06	
Lead, Dissolved	<0.152	100	94.1	94	94.1	94	80-120	0	20	ug/L	10.26.2020 16:06	
Zinc, Dissolved	<0.802	100	94.2	94	93.1	93	80-120	1	20	ug/L	10.26.2020 16:06	

Analytical Method: Dissolved Cd,Cu,Pb,Zn by SW-846 6020A

Seq Number: 3140605

Matrix: Ground Water

Prep Method: SW3010A

Date Prep: 10.26.2020

Parent Sample Id: 675658-001

MS Sample Id: 675658-001 S

MSD Sample Id: 675658-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Cadmium, Dissolved	<0.147	100	96.4	96	94.6	95	75-125	2	20	ug/L	10.26.2020 16:17	
Copper, Dissolved	<0.747	100	99.9	100	97.0	97	75-125	3	20	ug/L	10.26.2020 16:17	
Lead, Dissolved	<0.152	100	101	101	99.5	100	75-125	1	20	ug/L	10.26.2020 16:17	
Zinc, Dissolved	3.39	100	96.4	93	95.2	92	75-125	1	20	ug/L	10.26.2020 16:17	

Analytical Method: Nitrogen Ammonia by EPA 350.1

Seq Number: 3140470

Matrix: Water

Prep Method: E350.1P

Date Prep: 10.23.2020

MB Sample Id: 7713824-1-BLK

LCS Sample Id: 7713824-1-BKS

LCSD Sample Id: 7713824-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Nitrogen, Ammonia (as N)	<0.0345	1.00	0.982	98	0.984	98	90-110	0	20	mg/L	10.23.2020 12:18	

Analytical Method: Nitrogen Ammonia by EPA 350.1

Seq Number: 3140470

Matrix: Waste Water

Prep Method: E350.1P

Date Prep: 10.23.2020

Parent Sample Id: 675582-001

MS Sample Id: 675582-001 S

MSD Sample Id: 675582-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Nitrogen, Ammonia (as N)	0.453	1.00	1.44	99	1.45	100	90-110	1	20	mg/L	10.23.2020 12:26	

Analytical Method: Nitrogen Ammonia by EPA 350.1

Seq Number: 3140470

Matrix: Water

Prep Method: E350.1P

Date Prep: 10.23.2020

Parent Sample Id: 675617-001

MS Sample Id: 675617-001 S

MSD Sample Id: 675617-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Nitrogen, Ammonia (as N)	<0.0345	1.00	1.09	109	1.10	110	90-110	1	20	mg/L	10.23.2020 13:12	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * | (C - E) / (C + E) |$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec

TTL, Inc.
Cordele Watershed

Analytical Method: Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2)

Seq Number: 3140383

Matrix: Water

Prep Method: E351.2P

Date Prep: 10.21.2020

MB Sample Id: 7713645-1-BLK

LCS Sample Id: 7713645-1-BKS

LCSD Sample Id: 7713645-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Nitrogen, Total Kjeldahl	<0.0614	2.00	1.90	95	1.84	92	90-110	3	20	mg/L	10.22.2020 16:23	

Analytical Method: Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2)

Seq Number: 3140383

Matrix: Water

Prep Method: E351.2P

Date Prep: 10.21.2020

Parent Sample Id: 675252-001

MS Sample Id: 675252-001 S

MSD Sample Id: 675252-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Nitrogen, Total Kjeldahl	<0.0614	2.00	1.90	95	1.90	95	90-110	0	20	mg/L	10.22.2020 16:31	

Analytical Method: Nitrogen, Kjeldahl, Total (Colorime by EPA 351.2)

Seq Number: 3140383

Matrix: Surface Water

Prep Method: E351.2P

Date Prep: 10.21.2020

Parent Sample Id: 675597-004

MS Sample Id: 675597-004 S

MSD Sample Id: 675597-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Nitrogen, Total Kjeldahl	0.441	2.00	2.19	87	2.19	87	90-110	0	20	mg/L	10.22.2020 16:47	X

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec



LOG IN: ATL

Chain of Custody

Houston, TX (281) 240-4200 Dallas, TX (214) 902-0300 San Antonio, TX (210) 509-3334
Midland, TX (432) 704-5440 El Paso, TX (915) 585-3443 Lubbock, TX (806) 794-1296 Ceresburg, NM (432) 704-5440
Phoenix, AZ (480) 355-0900 Atlanta, GA (770) 449-9800 Tampa, FL (813) 620-2000 West Palm Beach, FL (561) 689-6701

Work Order No: 675597

www.xenco.com Page 1 of 1

Project Manager:	Melissa Morris	Bill to: (if different)	
Company Name:	TTL, Inc.	Company Name:	
Address:	4589 Val North Dr.	Address:	
City, State ZIP:	Valdosta, GA 31602	City, State ZIP:	
Phone:	(229) 244-8019	Email:	mmorris@ttlusa.com

Program:	UST/PST <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund <input type="checkbox"/>
State of Project:	
Reporting Level:	Level II <input type="checkbox"/> Level III <input type="checkbox"/> PST/UST <input type="checkbox"/> TRRP <input type="checkbox"/> Level IV <input type="checkbox"/>
Deliverables:	EDD <input type="checkbox"/> ADaPT <input type="checkbox"/> Other: <input type="checkbox"/>

SAMPLE RECEIPT				Turn Around		ANALYSIS REQUEST		Preservative Codes	
Project Name:		Cordelle Watershed		Routine <input checked="" type="checkbox"/>		Pres. Code		MeOH: Me	
Project Number:		000200601075.00		Rush:				None: NO	
Project Location:		Cordelle, GA		Due Date:				HNO3: HN	
Sampler's Name:		Melissa Morris, David Jones						H2SO4: H2	
PO #:		Quote #:						HCL: HL	
Temperature (°C):		Temp/Blank: Yes No		Wet Ice: Yes No				NaOH: Na	
Received Intact: Yes No		Thermometer ID: ATL-123						Zn Acetate+ NaOH: Zn	
Cooler Custody Seals: Yes No N/A		Correction Factor: +0.2						TAT starts the day received by the lab, if received by 4:00pm	
Sample Custody Seals: Yes No N/A		Total Containers:						Sample Comments	
Lab ID	Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers			
Station 1	SW	SW	10-15-20	0830	T	6			
Station 2A				0910		6			
Station 6				0950		6			
Station 3				1150		6			
Station 3A				1215		6			

Total 200.7 / 6010	200.8 / 6020:	8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Ti Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed		TCLP / SPLP 6010: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Ti U

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of \$75.00 will be applied to each project and a charge of \$5 for each sample submitted to Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Melissa Morris	Fed Ex	10-15-20 / 1700	FedEx	Johnnie Greene	10/16/20

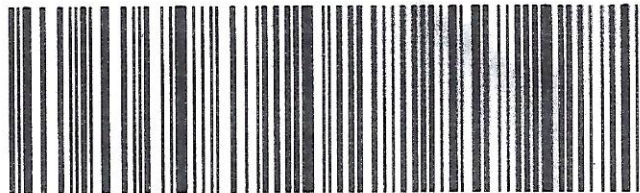
QUALITY SEAL

DATE 0-15-20

SIGNATURE *[Signature]*

QEC

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800-255-3950 • www.qecusa.com



XH LIYA

1 of 2

TRK# 3978 8266 6356

MASTER ## 0201

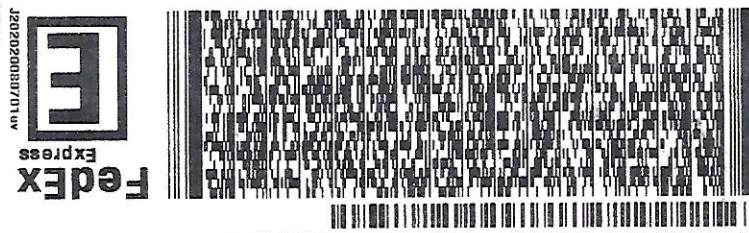
FRI - 16 OCT 4:30P

STANDARD OVERNIGHT

DSR

30093

GA-US ATL



TO RECEIVING DEPT

XENCO

1600 OAKBROOK DR

STE 565

NORCROSS GA 30093

REF: (281) 240-4200

PO: 244-8619

RT 637

ST 2

16:30

D

6356

10:16

SHIP DATE: 15OCT20

ACTWGT: 44.20 LB

CAD: 6995147/SSFE2121

DIMS: 23x13x13 IN

BILL THIRD PT

ORIGIN ID: VLDA (229) 244-8619

DAVID JONES

GEOSCENCE TTL

4589 VALNORTH DR

VALDOSTA, GA 31602

UNITED STATES US

Date Printed: 10.20.2020 15:10

Date/Time: 10.20.2020 15:10 Created by: Jhyrom Edralin

Subcontractor: Analytical Environmental Services, Inc.

Send report to: John Andros

Address: 1600 Oakbrook Dr., Suite 565, Norcross, GA 30093
Ph:(770) 449-8800

PO#: 675597

Delivery Priority:

Air Bill No.:

E-Mail: john.andros@eurofinset.com


Invoice To: Invoices@xenco.com; john.andros@eurofinset.com

TAT: Standard

Sample Id	Client Sample Id	Cont #	Matrix	Sample Collection	Method	Method Name	Lab PM
675597-001	Station 1	9431	W	10.15.20 08:30	E300	Inorganic Anions by EPA 300	John Andros
675597-001	Station 1	9431	W	10.15.20 08:30	SM4500-P-E-OP	ortho-Phosphorus by SM4500-P E	John Andros
675597-001	Station 1	9431	W	10.15.20 08:30	SM5210B_BOD	BOD by SM5210B	John Andros
675597-002	Station 2A	9433	W	10.15.20 09:10	E300	Inorganic Anions by EPA 300	John Andros
675597-002	Station 2A	9433	W	10.15.20 09:10	SM4500-P-E-OP	ortho-Phosphorus by SM4500-P E	John Andros
675597-002	Station 2A	9433	W	10.15.20 09:10	SM5210B_BOD	BOD by SM5210B	John Andros
675597-003	Station 6	9435	W	10.15.20 09:50	E300	Inorganic Anions by EPA 300	John Andros
675597-003	Station 6	9435	W	10.15.20 09:50	SM4500-P-E-OP	ortho-Phosphorus by SM4500-P E	John Andros
675597-003	Station 6	9435	W	10.15.20 09:50	SM5210B_BOD	BOD by SM5210B	John Andros
675597-004	Station 3	9437	W	10.15.20 11:50	E300	Inorganic Anions by EPA 300	John Andros
675597-004	Station 3	9437	W	10.15.20 11:50	SM4500-P-E-OP	ortho-Phosphorus by SM4500-P E	John Andros
675597-004	Station 3	9437	W	10.15.20 11:50	SM5210B_BOD	BOD by SM5210B	John Andros
675597-005	Station 3A	9465	W	10.15.20 12:15	E300	Inorganic Anions by EPA 300	John Andros
675597-005	Station 3A	9465	W	10.15.20 12:15	SM4500-P-E-OP	ortho-Phosphorus by SM4500-P E	John Andros
675597-005	Station 3A	9465	W	10.15.20 12:15	SM5210B_BOD	BOD by SM5210B	John Andros

Subcontractor: Analyze for method and samples specified on COC as requested. Any deviation, must be approved by a Xenco PM.

SUB-Contracting Comments:

Relinquished By: 
Jhyrom Edralin

Received By:

Date/ Time Relinquished: 10.20.2020

Date/ Time Received:

Date Printed: 10.20.2020 15:10

Relinquished By: _____

Received By: _____

Date/ Time Relinquished: _____

Date/ Time Received: _____

Cooler Temperature: _____

Inter-Office Shipment

IOS Number : **72044**

Date/Time: 10.20.2020	Created by: Jhyrom Edralin	Please send report to: John Andros
Lab# From: Atlanta	Delivery Priority: Fedex	Address: 1600 Oakbrook Dr., Suite 565, Norcross, GA 30091
Lab# To: Houston	Air Bill No.: 771837738254	E-Mail: john.andros@eurofinset.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
675597-001	W	Station 1	10.15.2020 08:30	E350.1	Nitrogen Ammonia by EPA 350.1	10.26.2020	11.12.2020	JNA	NH3N	
675597-001	W	Station 1	10.15.2020 08:30	E351.2	Nitrogen, Kjeldahl, Total (Colorime by E	10.26.2020	11.12.2020	JNA	TKN	
675597-001	W	Station 1	10.15.2020 08:30	SW6020_Select	Cd,Cu,Pb,Zn by SW-846 6020A	10.26.2020	04.13.2021	JNA	CA CD CU MG PB ZN	
675597-001	W	Station 1	10.15.2020 08:30	E365.1	Total Phosphorus by EPA 365.1	10.26.2020	11.12.2020	JNA	Total Phos.	
675597-001	W	Station 1	10.15.2020 08:30	SW6020_Select_DIS	Dissolved Cd,Cu,Pb,Zn by SW-846 602	10.26.2020	04.13.2021	JNA	CD CU PB ZN	
675597-001	W	Station 1	10.15.2020 08:30	SM2540D	TSS by SM2540D	10.26.2020	10.22.2020 08:30	JNA	TSS	
675597-001	W	Station 1	10.15.2020 08:30	SM2340B	Hardness, Total by SM2340B	10.26.2020	10.22.2020 08:30	JNA	HARD	
675597-001	W	Station 1	10.15.2020 08:30	H8000	Chemical Oxygen Demand by HACH 80	10.26.2020	11.12.2020	JNA	COD	
675597-002	W	Station 2A	10.15.2020 09:10	H8000	Chemical Oxygen Demand by HACH 80	10.26.2020	11.12.2020	JNA	COD	
675597-002	W	Station 2A	10.15.2020 09:10	E365.1	Total Phosphorus by EPA 365.1	10.26.2020	11.12.2020	JNA	Total Phos.	
675597-002	W	Station 2A	10.15.2020 09:10	E350.1	Nitrogen Ammonia by EPA 350.1	10.26.2020	11.12.2020	JNA	NH3N	
675597-002	W	Station 2A	10.15.2020 09:10	SM2340B	Hardness, Total by SM2340B	10.26.2020	10.22.2020 09:10	JNA	HARD	
675597-002	W	Station 2A	10.15.2020 09:10	SM2540D	TSS by SM2540D	10.26.2020	10.22.2020 09:10	JNA	TSS	
675597-002	W	Station 2A	10.15.2020 09:10	SW6020_Select_DIS	Dissolved Cd,Cu,Pb,Zn by SW-846 602	10.26.2020	04.13.2021	JNA	CD CU PB ZN	
675597-002	W	Station 2A	10.15.2020 09:10	SW6020_Select	Cd,Cu,Pb,Zn by SW-846 6020A	10.26.2020	04.13.2021	JNA	CA CD CU MG PB ZN	
675597-002	W	Station 2A	10.15.2020 09:10	E351.2	Nitrogen, Kjeldahl, Total (Colorime by E	10.26.2020	11.12.2020	JNA	TKN	
675597-003	W	Station 6	10.15.2020 09:50	SW6020_Select_DIS	Dissolved Cd,Cu,Pb,Zn by SW-846 602	10.26.2020	04.13.2021	JNA	CD CU PB ZN	
675597-003	W	Station 6	10.15.2020 09:50	E351.2	Nitrogen, Kjeldahl, Total (Colorime by E	10.26.2020	11.12.2020	JNA	TKN	
675597-003	W	Station 6	10.15.2020 09:50	E365.1	Total Phosphorus by EPA 365.1	10.26.2020	11.12.2020	JNA	Total Phos.	
675597-003	W	Station 6	10.15.2020 09:50	SM2540D	TSS by SM2540D	10.26.2020	10.22.2020 09:50	JNA	TSS	
675597-003	W	Station 6	10.15.2020 09:50	SW6020_Select	Cd,Cu,Pb,Zn by SW-846 6020A	10.26.2020	04.13.2021	JNA	CA CD CU MG PB ZN	
675597-003	W	Station 6	10.15.2020 09:50	E350.1	Nitrogen Ammonia by EPA 350.1	10.26.2020	11.12.2020	JNA	NH3N	
675597-003	W	Station 6	10.15.2020 09:50	H8000	Chemical Oxygen Demand by HACH 80	10.26.2020	11.12.2020	JNA	COD	
675597-003	W	Station 6	10.15.2020 09:50	SM2340B	Hardness, Total by SM2340B	10.26.2020	10.22.2020 09:50	JNA	HARD	
675597-004	W	Station 3	10.15.2020 11:50	SM2340B	Hardness, Total by SM2340B	10.26.2020	10.22.2020 11:50	JNA	HARD	

Inter-Office Shipment

IOS Number : **72044**

Date/Time: 10.20.2020	Created by: Jhyrom Edralin	Please send report to: John Andros
Lab# From: Atlanta	Delivery Priority: Fedex	Address: 1600 Oakbrook Dr., Suite 565, Norcross, GA 30091
Lab# To: Houston	Air Bill No.: 771837738254	E-Mail: john.andros@eurofinset.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
675597-004	W	Station 3	10.15.2020 11:50	E365.1	Total Phosphorus by EPA 365.1	10.26.2020	11.12.2020	JNA	Total Phos.	
675597-004	W	Station 3	10.15.2020 11:50	SM2540D	TSS by SM2540D	10.26.2020	10.22.2020 11:50	JNA	TSS	
675597-004	W	Station 3	10.15.2020 11:50	H8000	Chemical Oxygen Demand by HACH 80	10.26.2020	11.12.2020	JNA	COD	
675597-004	W	Station 3	10.15.2020 11:50	SW6020_Select	Cd,Cu,Pb,Zn by SW-846 6020A	10.26.2020	04.13.2021	JNA	CA CD CU MG PB ZN	
675597-004	W	Station 3	10.15.2020 11:50	SW6020_Select_DIS	Dissolved Cd,Cu,Pb,Zn by SW-846 602	10.26.2020	04.13.2021	JNA	CD CU PB ZN	
675597-004	W	Station 3	10.15.2020 11:50	E350.1	Nitrogen Ammonia by EPA 350.1	10.26.2020	11.12.2020	JNA	NH3N	
675597-004	W	Station 3	10.15.2020 11:50	E351.2	Nitrogen, Kjeldahl, Total (Colorime by E	10.26.2020	11.12.2020	JNA	TKN	
675597-005	W	Station 3A	10.15.2020 12:15	E351.2	Nitrogen, Kjeldahl, Total (Colorime by E	10.26.2020	11.12.2020	JNA	TKN	
675597-005	W	Station 3A	10.15.2020 12:15	E350.1	Nitrogen Ammonia by EPA 350.1	10.26.2020	11.12.2020	JNA	NH3N	
675597-005	W	Station 3A	10.15.2020 12:15	SW6020_Select_DIS	Dissolved Cd,Cu,Pb,Zn by SW-846 602	10.26.2020	04.13.2021	JNA	CD CU PB ZN	
675597-005	W	Station 3A	10.15.2020 12:15	SW6020_Select	Cd,Cu,Pb,Zn by SW-846 6020A	10.26.2020	04.13.2021	JNA	CA CD CU MG PB ZN	
675597-005	W	Station 3A	10.15.2020 12:15	E365.1	Total Phosphorus by EPA 365.1	10.26.2020	11.12.2020	JNA	Total Phos.	
675597-005	W	Station 3A	10.15.2020 12:15	SM2540D	TSS by SM2540D	10.26.2020	10.22.2020 12:15	JNA	TSS	
675597-005	W	Station 3A	10.15.2020 12:15	H8000	Chemical Oxygen Demand by HACH 80	10.26.2020	11.12.2020	JNA	COD	
675597-005	W	Station 3A	10.15.2020 12:15	SM2340B	Hardness, Total by SM2340B	10.26.2020	10.22.2020 12:15	JNA	HARD	

Inter Office Shipment or Sample Comments:

Relinquished By: 
Jhyrom Edralin

Date Relinquished: 10.20.2020

Received By: 
Jhyrom Edralin

Date Received: 10.20.2020

Cooler Temperature: 2.6

Inter Office Report- Sample Receipt Checklist

Sent To: Houston

IOS #: 72044

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : HOU-203

Sent By: Jhyrom Edralin

Date Sent: 10.20.2020 03.10 PM

Received By: Jhyrom Edralin

Date Received: 10.20.2020 09.30 AM

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	2.6
#2 *Shipping container in good condition?	Yes
#3 *Samples received with appropriate temperature?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	N/A
#5 *Custody Seals Signed and dated for Containers/coolers	N/A
#6 *IOS present?	Yes
#7 Any missing/extra samples?	No
#8 IOS agrees with sample label(s)/matrix?	Yes
#9 Sample matrix/ properties agree with IOS?	Yes
#10 Samples in proper container/ bottle?	Yes
#11 Samples properly preserved?	Yes
#12 Sample container(s) intact?	Yes
#13 Sufficient sample amount for indicated test(s)?	Yes
#14 All samples received within hold time?	Yes

* Must be completed for after-hours delivery of samples prior to placing in the refrigerator

NonConformance:

Corrective Action Taken:

Nonconformance Documentation

Contact: _____ Contacted by : _____ Date: _____

Checklist reviewed by:



Jhyrom Edralin

Date: 10.20.2020

Eurofins Xenco, LLC
Prelogin/Nonconformance Report- Sample Log-In

Client: TTL, Inc.

Date/ Time Received: 10.16.2020 09.50.00 AM

Work Order #: 675597

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient



Temperature Measuring device used : ATL-203

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	3.9
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 Custody Seals intact on sample bottles?	N/A
#6 *Custody Seals Signed and dated?	Yes
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	Yes
#18 Water VOC samples have zero headspace?	N/A

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: Jhyrom

PH Device/Lot#: 10BDH0601

Checklist completed by:	 Jhyrom Edralin	Date: 10.20.2020
Checklist reviewed by:	 John Andros	Date: 10.20.2020



ANALYTICAL ENVIRONMENTAL SERVICES, INC.

October 23, 2020

John Andros
Eurofins Xenco, LLC

1600 Oakbrook Dr. Suite 565
Norcross GA 30095

RE: Cordele

Dear John Andros:

Order No: 2010I96

Analytical Environmental Services, Inc. received 5 samples on 10/16/2020 1:05:00 PM
for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.

AES's accreditations are as follows:

-NELAP/State of Florida Laboratory ID E87582 for analysis of Non-Potable Water, Solid & Chemical Materials, Air & Emissions Volatile Organics, and Drinking Water Microbiology & Metals, effective 07/01/20-06/30/21.

State of Georgia, Department of Natural Resources ID #800 for analysis of Drinking Water Metals, effective through 06/30/21 and Total Coliforms/ E. coli, effective 04/20/20-04/24/23.

-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Metals and PCM Asbestos), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination, effective until 11/01/21.

These results relate only to the items tested as received. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Sincerely,

Ioana Pacurar
Project Manager



Chain of Custody

Work Order No: 2010196

1600 Oakbrook Drive, Suite 565, Norcross, GA 30093 (770-449-8800)

Project Manager:	John Andros	Bill to: (if different)	
Company Name:	Xenco Labs	Company Name:	(Same)
Address:	1600 Oakbrook Dr., Suite 565	Address:	
City, State ZIP:	Norcross, GA 30093	City, State ZIP:	
Phone:	770-449-8800	Email:	john.andros@xenco.com

www.xenco.com Page 1 of 1

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RC ☐ Superfund ☐

State of Project:

Reporting: Level II ☐ Level III ☐ PST/UST ☐ RRP ☐ Level IV ☐

Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	Cordete	Turn Around	
Project Number:		Routine <input checked="" type="checkbox"/>	
P.O. Number:	45131662057	Rush:	
Sampler's Name:		Due Date:	

SAMPLE RECEIPT		Temp Blank:	Yes No	Wet Ice:	Yes No
Temperature (°C):		Thermometer ID			
Received Intact:	Yes No				
Cooler Custody Seals:	Yes No N/A	Correction Factor:			
Sample Custody Seals:	Yes No N/A	Total Containers:			

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth
Station 1	SW	10/15	0830	
Station 2A			0910	
Station 6			0950	
Station 3			1150	
Station 3A			1215	

ANALYSIS REQUEST											
Number of Containers	BOD	Nitrate (E300)	Nitrite (E300)	ortho-Phosphorus	(3M4500-P)	E365.1					
	2	X	X	X	X						
	2	X	X	X	X						
	2	X	X	X	X						
	2	X	X	X	X						
	2	X	X	X	X						

Work Order Notes

TAT starts the day received by the lab, if received by 2:00 pm

Sample Comments

Total 200.7 / 6010 200.8 / 6020:

8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Ti Sn U V Zn

Circle Method(s) and Metal(s) to be analyzed

TCLP / SPLP 6010: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Ti U

1631 / 245.1 / 7470 / 7471 : Hg

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of \$75.00 will be applied to each project and a charge of \$5 for each sample submitted to Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
John Andros	John Andros	10/16/20			
		1:05 PM			

Client: Eurofins Xenco, LLC
Project Name: Cordele
Lab ID: 2010I96-001

Client Sample ID: STATION 1
Collection Date: 10/15/2020 8:30:00 AM
Matrix: Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Phosphorus, ortho E365.1								
Phosphorus, Total Orthophosphate (As P)	0.0280	0.0100		mg/L	R437342	1	10/16/2020 15:51	IP
Inorganic Anions by IC EPA 300.0								
Nitrogen, Nitrate (As N)	0.940	0.250		mg/L	R437763	1	10/16/2020 15:56	IP
Nitrogen, Nitrite (As N)	BRL	0.250		mg/L	R437763	1	10/16/2020 15:56	IP
Biochemical Oxygen Demand by SM5210B								
Biochemical Oxygen Demand	BRL	5.0		mg/L	304428	1	10/16/2020 14:00	RJ

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

Client:	Eurofins Xenco, LLC	Client Sample ID:	STATION 2A
Project Name:	Cordele	Collection Date:	10/15/2020 9:10:00 AM
Lab ID:	2010I96-002	Matrix:	Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Phosphorus, ortho E365.1								
Phosphorus, Total Orthophosphate (As P)	0.0320	0.0100		mg/L	R437342	1	10/16/2020 15:52	IP
Inorganic Anions by IC EPA 300.0								
Nitrogen, Nitrate (As N)	BRL	0.250		mg/L	R437763	1	10/16/2020 16:07	IP
Nitrogen, Nitrite (As N)	BRL	0.250		mg/L	R437763	1	10/16/2020 16:07	IP
Biochemical Oxygen Demand by SM5210B								
Biochemical Oxygen Demand	BRL	5.0		mg/L	304428	1	10/16/2020 14:00	RJ

Qualifiers:	* Value exceeds maximum contaminant level	E Estimated (value above quantitation range)
	BRL Below reporting limit	S Spike Recovery outside limits due to matrix
	H Holding times for preparation or analysis exceeded	Narr See case narrative
	N Analyte not NELAC certified	F Analyzed in the lab which is a deviation from the method
	B Analyte detected in the associated method blank	< Less than Result value
	> Greater than Result value	J Estimated value detected below Reporting Limit

Client: Eurofins Xenco, LLC
Project Name: Cordele
Lab ID: 2010I96-003

Client Sample ID: STATION 6
Collection Date: 10/15/2020 9:50:00 AM
Matrix: Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Phosphorus, ortho E365.1								
Phosphorus, Total Orthophosphate (As P)	0.0900	0.0100		mg/L	R437342	1	10/16/2020 15:54	IP
Inorganic Anions by IC EPA 300.0								
Nitrogen, Nitrate (As N)	BRL	0.250		mg/L	R437763	1	10/16/2020 16:18	IP
Nitrogen, Nitrite (As N)	BRL	0.250		mg/L	R437763	1	10/16/2020 16:18	IP
Biochemical Oxygen Demand by SM5210B								
Biochemical Oxygen Demand	BRL	5.0		mg/L	304428	1	10/16/2020 14:00	RJ

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

Client: Eurofins Xenco, LLC
Project Name: Cordele
Lab ID: 2010I96-004

Client Sample ID: STATION 3
Collection Date: 10/15/2020 11:50:00 AM
Matrix: Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Phosphorus, ortho E365.1								
Phosphorus, Total Orthophosphate (As P)	0.0190	0.0100		mg/L	R437342	1	10/16/2020 15:56	IP
Inorganic Anions by IC EPA 300.0								
Nitrogen, Nitrate (As N)	0.946	0.250		mg/L	R437763	1	10/16/2020 16:29	IP
Nitrogen, Nitrite (As N)	BRL	0.250		mg/L	R437763	1	10/16/2020 16:29	IP
Biochemical Oxygen Demand by SM5210B								
Biochemical Oxygen Demand	BRL	5.0		mg/L	304464	1	10/17/2020 10:40	RJ

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

Client: Eurofins Xenco, LLC
Project Name: Cordele
Lab ID: 2010I96-005

Client Sample ID: STATION 3A
Collection Date: 10/15/2020 12:15:00 PM
Matrix: Surface Water

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Phosphorus, ortho E365.1								
Phosphorus, Total Orthophosphate (As P)	0.0100	0.0100		mg/L	R437342	1	10/16/2020 15:58	IP
Inorganic Anions by IC EPA 300.0								
Nitrogen, Nitrate (As N)	0.542	0.250		mg/L	R437763	1	10/16/2020 17:01	IP
Nitrogen, Nitrite (As N)	BRL	0.250		mg/L	R437763	1	10/16/2020 17:01	IP
Biochemical Oxygen Demand by SM5210B								
Biochemical Oxygen Demand	BRL	5.0		mg/L	304464	1	10/17/2020 10:40	RJ

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- F Analyzed in the lab which is a deviation from the method
- < Less than Result value
- J Estimated value detected below Reporting Limit

SAMPLE/COOLER RECEIPT CHECKLIST

Clear

Save as

1. Client Name: **Eurofins Xenco, LLC**

AES Work Order Number: **2010196**

2. Carrier: FedEx ☐ UPS ☐ USPS ☐ Client ☒ Courier ☐ Other ☐

	Yes	No	N/A	Details	Comments
3. Shipping container/cooler received in good condition?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	damaged <input type="checkbox"/> leaking <input type="checkbox"/> other <input type="checkbox"/>	
4. Custody seals present on shipping container?	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>		
5. Custody seals intact on shipping container?	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>		
6. Temperature blanks present?	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>		
7. Cooler temperature(s) within limits of 0-6°C? [See item 13 and 14 for temperature recordings.]	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Cooling initiated for recently collected samples / ice present <input type="checkbox"/>	
8. Chain of Custody (COC) present?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>		
9. Chain of Custody signed, dated, and timed when relinquished and received?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>		
10. Sampler name and/or signature on COC?	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>		
11. Were all samples received within holding time?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>		
12. TAT marked on the COC?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	If no TAT indicated, proceeded with standard TAT per Terms & Conditions. <input type="checkbox"/>	

13. Cooler 1 Temperature 0.6 °C Cooler 2 Temperature _____ °C Cooler 3 Temperature _____ °C Cooler 4 Temperature _____ °C
 14. Cooler 5 Temperature _____ °C Cooler 6 Temperature _____ °C Cooler 7 Temperature _____ °C Cooler 8 Temperature _____ °C

15. Comments: _____

I certify that I have completed sections 1-15 (dated initials).

LM 10/16/20

	Yes	No	N/A	Details	Comments
16. Were sample containers intact upon receipt?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>		
17. Custody seals present on sample containers?	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>		
18. Custody seals intact on sample containers?	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>		
19. Do sample container labels match the COC?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	incomplete info <input type="checkbox"/> illegible <input type="checkbox"/> no label <input type="checkbox"/> other <input type="checkbox"/>	
20. Are analyses requested indicated on the COC?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>		
21. Were all of the samples listed on the COC received?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	samples received but not listed on COC <input type="checkbox"/> samples listed on COC not received <input type="checkbox"/>	
22. Was the sample collection date/time noted?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>		
23. Did we receive sufficient sample volume for indicated analyses?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>		
24. Were samples received in appropriate containers?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>		
25. Were VOA samples received without headspace (< 1/4" bubble)?	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>		
26. Were trip blanks submitted?	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	listed on COC <input type="checkbox"/> not listed on COC <input type="checkbox"/>	

27. Comments: _____

I certify that I have completed sections 16-27 (dated initials).

LM 10/16/20

This section only applies to samples where pH can be checked at Sample Receipt.

	Yes	No	N/A	Details	Comments
28. Have containers needing chemical preservation been checked? *	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>		
29. Containers meet preservation guidelines?	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>		
30. Was pH adjusted at Sample Receipt?	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>		

* Note: Certain analyses require chemical preservation but must be checked in the laboratory and not upon Sample Receipt such as Coliforms, VOCs and Oil & Grease/TPH.

This also excludes metals by EPA 200.7, 200.8 and 245.1 which will be verified between 16 and 24 hours after preservation.

I certify that I have completed sections 28-30 (dated initials).

LM 10/16/20

Client: Eurofins Xenco, LLC
Project Name: Cordele
Workorder: 2010I96

ANALYTICAL QC SUMMARY REPORT

BatchID: 304428

Sample ID: MB-304428	Client ID:					Units: mg/L	Prep Date: 10/16/2020	Run No: 437749			
SampleType: MBLK	TestCode: Biochemical Oxygen Demand by SM5210B					BatchID: 304428	Analysis Date: 10/16/2020	Seq No: 9956602			
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Biochemical Oxygen Demand BRL 5.0

Sample ID: LCS-304428	Client ID:					Units: mg/L	Prep Date: 10/16/2020	Run No: 437749			
SampleType: LCS	TestCode: Biochemical Oxygen Demand by SM5210B					BatchID: 304428	Analysis Date: 10/16/2020	Seq No: 9956605			
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Biochemical Oxygen Demand 188.0 5.0 198.0 94.9 85 115

Sample ID: LCSD-304428	Client ID:					Units: mg/L	Prep Date: 10/16/2020	Run No: 437749			
SampleType: LCSD	TestCode: Biochemical Oxygen Demand by SM5210B					BatchID: 304428	Analysis Date: 10/16/2020	Seq No: 9956611			
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Biochemical Oxygen Demand 179.0 5.0 198.0 90.4 85 115 188.0 4.90 25

Qualifiers:	>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
	BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Eurofins Xenco, LLC
Project Name: Cordele
Workorder: 2010I96

ANALYTICAL QC SUMMARY REPORT

BatchID: 304464

Sample ID: MB-304464	Client ID:					Units: mg/L	Prep Date: 10/17/2020	Run No: 437825			
SampleType: MBLK	TestCode: Biochemical Oxygen Demand by SM5210B					BatchID: 304464	Analysis Date: 10/17/2020	Seq No: 9958035			
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Biochemical Oxygen Demand BRL 2.0

Sample ID: LCS-304464	Client ID:					Units: mg/L	Prep Date: 10/17/2020	Run No: 437825			
SampleType: LCS	TestCode: Biochemical Oxygen Demand by SM5210B					BatchID: 304464	Analysis Date: 10/17/2020	Seq No: 9958036			
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Biochemical Oxygen Demand 179.0 5.0 198.0 90.4 85 115

Sample ID: LCSD-304464	Client ID:					Units: mg/L	Prep Date: 10/17/2020	Run No: 437825			
SampleType: LCSD	TestCode: Biochemical Oxygen Demand by SM5210B					BatchID: 304464	Analysis Date: 10/17/2020	Seq No: 9958037			
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Biochemical Oxygen Demand 171.0 5.0 198.0 86.4 85 115 179.0 4.57 25

Qualifiers:	>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
	BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: Eurofins Xenco, LLC
Project Name: Cordele
Workorder: 2010I96

ANALYTICAL QC SUMMARY REPORT**BatchID: R437342**

Sample ID: MB-R437342	Client ID:					Units: mg/L	Prep Date:		Run No: 437342		
SampleType: MBLK	TestCode: Phosphorus, ortho	E365.1				BatchID: R437342	Analysis Date: 10/16/2020		Seq No: 9944803		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Phosphorus, Total Orthophosphate (As BRL 0.0100

Sample ID: LCS-R437342		Client ID:				Units: mg/L		Prep Date:		Run No: 437342	
SampleType: LCS		TestCode: Phosphorus, ortho E365.1				BatchID: R437342		Analysis Date: 10/16/2020		Seq No: 9944804	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Phosphorus, Total Orthophosphate (As 0.2530 0.0100 0.2500 101 90 110

Sample ID: 2010H91-003BMS		Client ID:			Units: mg/L		Prep Date:		Run No: 437342		
SampleType: MS		TestCode: Phosphorus, ortho E365.1			BatchID: R437342		Analysis Date: 10/16/2020		Seq No: 9944831		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Phosphorus, Total Orthophosphate (As 0.2440 0.0100 0.2500 97.6 90 110

Sample ID: 2010J16-002CMS	Client ID:					Units: mg/L	Prep Date:	Run No: 437342			
SampleType: MS	TestCode: Phosphorus, ortho	E365.1					BatchID: R437342	Analysis Date: 10/16/2020	Seq No: 9944836		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Phosphorus, Total Orthophosphate (As 0.2450 0.0100 0.2500 98.0 90 110

Sample ID: 2010J16-002CMSD		Client ID:			Units: mg/L		Prep Date:		Run No: 437342		
SampleType: MSD		TestCode: Phosphorus, ortho E365.1			BatchID: R437342		Analysis Date: 10/16/2020		Seq No: 9944839		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Phosphorus, Total Orthophosphate (As 0.2330 0.0100 0.2500 93.2 90 110 0.2450 5.02 20

Qualifiers: > Greater than Result value
 BRL Below reporting limit
 J Estimated value detected below Reporting Limit
 Rpt Lim Reporting Limit

< Less than Result value
 E Estimated (value above quantitation range)
 N Analyte not NELAC certified
 S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank
 H Holding times for preparation or analysis exceeded
 R RPD outside limits due to matrix

Client: Eurofins Xenco, LLC
 Project Name: Cordele
 Workorder: 2010I96

ANALYTICAL QC SUMMARY REPORT

BatchID: R437763

Sample ID: MB-R437763	Client ID:					Units: mg/L	Prep Date:			Run No: 437763	
SampleType: MBLK	TestCode: Inorganic Anions by IC	EPA 300.0				BatchID: R437763	Analysis Date: 10/16/2020			Seq No: 9956947	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Nitrogen, Nitrate (As N)

BRL

0.250

Nitrogen, Nitrite (As N)

BRL

0.250

Sample ID: LCS-R437763	Client ID:					Units: mg/L	Prep Date:			Run No: 437763	
SampleType: LCS	TestCode: Inorganic Anions by IC	EPA 300.0				BatchID: R437763	Analysis Date: 10/16/2020			Seq No: 9956946	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Nitrogen, Nitrate (As N)

5.332

0.250

5.000

107

90

110

Nitrogen, Nitrite (As N)

5.273

0.250

5.000

105

90

110

Sample ID: 2010I30-001AMS	Client ID:					Units: mg/L	Prep Date:	Run No: 437763			
SampleType: MS	TestCode: Inorganic Anions by IC	EPA 300.0				BatchID: R437763	Analysis Date: 10/16/2020	Seq No: 9956970			
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Nitrogen, Nitrate (As N)

7.711

0.250

5.000

2.426

106

90

110

Nitrogen, Nitrite (As N)

5.250

0.250

5.000

105

90

110

Sample ID: 2010I96-001BMS	Client ID: STATION 1				Units: mg/L	Prep Date:			Run No: 437763		
SampleType: MS	TestCode: Inorganic Anions by IC	EPA 300.0			BatchID: R437763	Analysis Date: 10/16/2020			Seq No: 9956974		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Nitrogen, Nitrate (As N)

6.465

0.250

5.000

0.9400

111

90

110

S

Nitrogen, Nitrite (As N)

5.365

0.250

5.000

107

90

110

Sample ID: 2010I30-001AMSD		Client ID:				Units: mg/L		Prep Date:		Run No: 437763	
SampleType: MSD		TestCode: Inorganic Anions by IC EPA 300.0				BatchID: R437763		Analysis Date: 10/16/2020		Seq No: 9956972	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Nitrogen, Nitrate (As N)

7.725

0.250

5.000

2.426

106

90

110

7.711

0.177

20

Qualifiers: > Greater than Result value

< Less than Result value

B Analyte detected in the associated method blank

BRL Below reporting limit

E Estimated (value above quantitation range)

H Holding times for preparation or analysis exceeded

J Estimated value detected below Reporting Limit

N Analyte not NELAC certified

R RPD outside limits due to matrix

Rpt Lim Reporting Limit

S Spike Recovery outside limits due to matrix

Client: Eurofins Xenco, LLC
Project Name: Cordele
Workorder: 2010I96

ANALYTICAL QC SUMMARY REPORT

BatchID: R437763

Sample ID: 2010I30-001AMSD	Client ID:					Units: mg/L	Prep Date:		Run No: 437763		
SampleType: MSD	TestCode: Inorganic Anions by IC EPA 300.0					BatchID: R437763	Analysis Date: 10/16/2020		Seq No: 9956972		
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual

Nitrogen, Nitrite (As N)	5.268	0.250	5.000		105	90	110	5.250	0.352	20	
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Qualifiers:	>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
	BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
	J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
	Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

End of Report

Appendix G
City of Cordele Water Quality Reports 2020

Gum Creek WWTP
Above and Below Creek Samples
2020

{ Above Creek Samples }							{ Below Creek Samples }						
Date	BOD ₅	pH	D.O.	Cl ₂	Temp.	Fecal Coliform	BOD ₅	pH	D.O.	Cl ₂	Temp.	Fecal Coliform	
1-1-20	2.0	6.0	8.1	.12	12.2	133	1.4	5.9	8.0	.12	12.5	23	
1-8-20	1.8	5.6	9.3	.60	12.1	45	1.9	5.9	10.5	.05	12.8	6	
1-15-20	2.4	5.9	6.5	.01	18.3	170	2.5	5.8	7.4	.02	18.5	190	
1-22-20	2.2	6.2	11.1	.32	12.8	48	2.5	6.3	11.1	.02	10.6	18	
1-30-20	1.6	6.5	9.5	.03	13.6	120	2.3	6.8	10.0	.09	13.4	80	
2-5-20	1.9	6.2	8.5	.03	14.9	-	2.4	6.2	9.0	.00	15.4	-	
2-12-20	2.8	5.7	7.5	.02	16.8	-	2.3	5.8	8.3	.09	17.5	-	
2-19-20	2.8	5.6	7.9	.00	16.5	-	2.4	6.0	8.4	.06	16.1	-	
2-26-20	1.9	5.8	8.8	.04	15.6	-	1.9	5.5	9.5	.03	14.7	-	
3-5-20	3.3	5.2	9.4	.00	18.8	-	4.0	5.7	8.9	.00	19.5	-	
3-11-20	1.8	5.9	7.9	.00	16.9	-	3.0	6.0	8.6	.01	17.1	-	
3-19-20	5.0	6.7	6.2	.04	20.2	-	3.9	6.7	7.4	.00	20.4	-	
3-25-20	4.1	6.6	6.3	.02	21.1	-	4.0	7.1	7.1	.02	20.6	-	
4-1-20	3.2	6.3	6.7	.13	18.3	45	3.6	6.2	6.3	.10	18.3	90	
4-8-20	4.0	6.0	6.8	.12	21.1	40	3.8	6.8	8.3	.28	21.3	38	
4-15-20	3.8	5.9	6.9	.01	19.0	4010	3.0	5.9	7.3	.03	19.0	4330	
4-22-20	3.1	6.6	7.4	.05	18.0	198	2.7	6.5	7.9	.04	17.9	425	
4-29-20	2.6	6.1	7.4	.00	18.4	83	3.4	6.6	8.1	.00	18.9	103	
5-6-20	3.8	6.2	6.7	.02	21.7	-	3.9	6.7	8.5	.00	21.5	-	
5-13-20	1.2	6.8	7.5	.05	21.8	-	3.6	6.9	9.9	.28	21.0	-	
5-20-20	3.8	6.8	7.6	.07	22.2	-	4.9	6.5	7.8	.04	21.9	-	

5-27-20	2.6	6.6	6.6	.02	22.8	-	3.4	6.8	7.4	.00	22.6	-
{ Above Creek Samples }						{ Below Creek Samples }						
Date	BOD ₅	pH	D.O.	Cl ₂	Temp	Fecal Coliform	BOD ₅	pH	D.O.	Cl ₂	Temp.	Fecal Coliform
6-3-20	2.3	7.0	7.2	.10	23.9	-	3.0	7.1	9.1	.02	28.8	-
6-10-20	2.1	7.3	6.0	.00	24.1	-	2.7	7.2	6.1	.00	24.0	-
6-17-20	1.9	7.3	7.2	.00	21.1	-	2.3	7.4	7.7	.09	21.1	-
6-24-20	1.9	7.1	7.2	.13	24.2	-	2.2	7.5	6.4	.08	23.7	-
7-1-20	2.2	7.5	5.6	.03	24.5	18320	2.4	7.2	6.4	.01	24.3	2540
7-8-20	.5	6.8	6.0	.06	25.4	218	.7	6.9	7.3	.00	25.9	268
7-15-20	3.3	7.9	6.0	.04	26.1	490	3.2	7.7	6.5	.00	25.1	550
7-22-20	1.6	7.5	6.7	.17	26.4	725	1.8	7.6	8.3	.11	26.4	250
7-29-20	2.1	6.9	5.2	.05	25.2	690	2.4	7.0	6.2	.00	25.0	740
8-5-20	1.5	7.6	7.2	.01	27.1	-	1.7	7.4	8.3	.24	26.8	-
8-12-20	1.6	7.0	7.6	.15	29.6	-	2.2	7.7	10.4	.21	28.9	-
8-19-20	1.5	6.9	7.6	.01	27.4	-	1.7	7.5	8.9	.07	27.6	-
8-26-20	2.4	6.3	5.7	.02	25.7	-	2.0	7.0	6.3	.01	25.7	-
9-2-20	3.8	6.8	6.0	.16	26.7	-	2.0	7.4	7.1	.04	27.5	-
9-9-20	1.8	7.7	8.5	.02	26.2	-	1.9	7.6	8.8	.18	25.1	-
9-15-20	2.0	6.1	5.9	.13	26.2	-	2.0	7.1	5.4	.04	25.1	-
9-23-20	2.2	6.3	7.1	.00	19.7	-	2.7	6.6	7.8	.09	20.6	-
10-1-20	1.5	6.9	4.8	.01	24.4	284	1.8	7.2	8.3	.00	22.1	437
10-8-20	1.4	7.2	6.4	.00	21.1	267	1.7	7.0	7.2	.03	21.2	534
10-15-20	1.1	6.7	6.5	.06	22.6	387	1.3	7.3	7.5	.05	22.8	370
10-21-20	1.7	7.0	6.5	.00	20.7	184	2.1	7.0	7.5	.10	20.4	254
10-28-20	1.3	7.8	5.9	.11	22.9	1880	1.7	7.4	6.5	.05	22.8	260
11-4-20	1.4	6.8	9.0	.05	17.3	-	2.5	7.5	7.9	.01	19.2	-
11-11-20	0.7	6.8	4.7	.03	22.4	-	0.9	7.3	6.1	.05	22.5	-

11-18-20	2.6	6.9	6.4	.06	15.3	-	1.9	6.7	7.1	.01	15.1	-
DATE	BOD	pH	D.O.	Cl2	TEMP	FECAL	BOD	pH	D.O.	Cl2	TEMP	FECAL
11-25-20	3.3	7.6	6.3	.03	14.9	-	3.6	7.0	6.9	.04	15.6	-
12-2-20	1.7	6.7	7.2	.00	9.0	-	2.3	6.7	5.1	.00	10.9	-
12-9-20	1.4	6.8	8.7	.02	10.6	-	2.1	6.9	8.7	.04	11.9	-
12-16-20	3.0	6.7	4.9	.00	12.2	-	2.0	6.9	6.5	.01	13.1	-
12-23-20	1.4	7.0	6.6	.05	9.2	-	2.1	6.8	7.6	.04	10.9	-
12-30-20	1.5	6.9	7.6	.00	11.1	-	2.1	7.0	8.5	.00	11.7	-

Appendix H
Example Agricultural Specific Brochure

Protecting Water Quality *from* **AGRICULTURAL RUNOFF**

Clean Water Is Everybody's Business

The United States has more than 330 million acres of agricultural land that produce an abundant supply of food and other products. American agriculture is noted worldwide for its high productivity, quality, and efficiency in delivering goods to the consumer. When improperly managed however, activities from working farms and ranches can affect water quality.

In the 2000 *National Water Quality Inventory*, states reported that agricultural nonpoint source (NPS) pollution is the leading source of water quality impacts on surveyed rivers and lakes, the second largest source of impairments to wetlands, and a major contributor to contamination of surveyed estuaries and ground water. Agricultural activities that cause NPS pollution include poorly located or managed animal feeding operations; overgrazing; plowing too often or at the wrong time; and improper, excessive, or poorly timed application of pesticides, irrigation water, and fertilizer.

Pollutants that result from farming and ranching include sediment, nutrients, pathogens, pesticides, metals, and salts. Impacts from agricultural activities on surface water and ground water can be minimized by using management practices that are adapted to local conditions. Many practices designed

What Is Nonpoint Source Pollution?

Nonpoint source (NPS) pollution, unlike pollution from point sources such as industrial and sewage treatment plants, comes from many diffuse sources. Polluted runoff is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into watersheds through lakes, rivers, wetlands, coastal waters, and even our underground sources of drinking water.

Did you know that runoff from farms is the leading source of impairments to surveyed rivers and lakes?

to reduce pollution also increase productivity and save farmers and ranchers money in the long run.

There are many government programs available to help farmers and ranchers design and pay for management approaches to prevent and control NPS pollution. For example, over 40 percent of section 319 Clean Water Act grants have been used to control NPS pollution from working farms and ranches. Also, many programs funded by the U.S. Department of Agriculture and by states provide cost-share, technical assistance, and economic incentives to implement NPS pollution management practices. Many local organizations and individuals have come together to help create regional support networks to adopt technologies and practices to eliminate or reduce water quality impacts caused by agricultural activities.

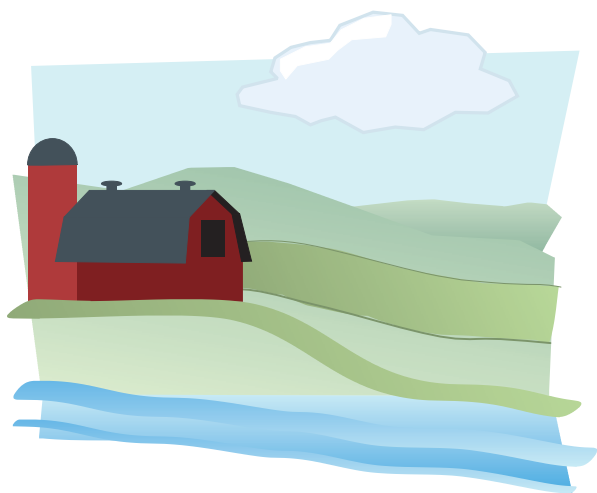
Sedimentation

The most prevalent source of agricultural water pollution is soil that is washed off fields. Rain water carries soil particles (sediment) and dumps them into nearby lakes or streams. Too much sediment can cloud the water, reducing the amount of sunlight that reaches aquatic plants. It can also clog the gills of fish or smother fish larvae.

In addition, other pollutants like fertilizers, pesticides, and heavy metals are often attached to the soil particles and wash into the water bodies, causing algal blooms and depleted oxygen, which is deadly to most aquatic life. Farmers and ranchers can reduce erosion and sedimentation by 20 to 90 percent by applying management practices that control the volume and flow rate of runoff water, keep the soil in place, and reduce soil transport.

Nutrients

Farmers apply nutrients such as phosphorus, nitrogen, and potassium in the form of chemical fertilizers, manure, and sludge. They may also grow legumes and leave crop residues to enhance production. When these sources exceed plant needs, or are applied just before it rains, nutrients can wash into aquatic ecosystems. There they can cause algae blooms, which can ruin swimming and boating opportunities, create foul taste and odor in drinking water, and kill fish by removing oxygen from the water. High concentrations of nitrate in drinking water can cause methemoglobinemia, a potentially fatal disease in infants, also known as blue baby syndrome. To combat nutrient losses, farmers can implement nutrient management plans that help maintain high yields and save money on fertilizers.



Animal Feeding Operations

By confining animals in small areas or lots, farmers and ranchers can efficiently feed and maintain livestock. But these confined areas become major sources of animal waste. An estimated 238,000 working farms and ranches in the United States are considered animal feeding operations, generating about 500 million tons of manure each year. Runoff from poorly managed facilities can carry pathogens such as bacteria and viruses, nutrients, and oxygen-demanding organics and solids that contaminate shellfishing areas and cause other water quality problems. Ground water can also be contaminated by waste seepage. Farmers and ranchers can limit discharges by storing and managing facility wastewater and runoff with appropriate waste management systems.

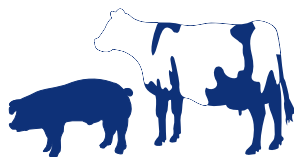
Livestock Grazing

Overgrazing exposes soils, increases erosion, encourages invasion by undesirable plants, destroys fish habitat, and may destroy streambanks and floodplain vegetation necessary for habitat and water quality filtration. To reduce the impacts of grazing on water quality, farmers and ranchers can adjust grazing intensity, keep livestock out of sensitive areas, provide

alternative sources of water and shade, and promote revegetation of ranges, pastures, and riparian zones.

Irrigation

Irrigation water is applied to supplement natural precipitation or to protect crops against freezing or wilting. Inefficient irrigation can cause water quality problems. In arid areas, for example, where rainwater does not carry minerals deep into the soil, evaporation of irrigation water can concentrate salts. Excessive irrigation can affect water quality by causing erosion, transporting nutrients, pesticides, and heavy metals, or decreasing the amount of water that flows naturally in streams and rivers. It can also cause a buildup of selenium, a toxic metal that can harm waterfowl reproduction. Farmers can reduce NPS pollution from irrigation by improving water use efficiency. They can measure actual crop needs and apply only the amount of water required. Farmers may also choose to convert irrigation systems to higher efficiency equipment.



Pesticides

Insecticides, herbicides, and fungicides are used to kill agricultural pests. These chemicals can enter and contaminate water through direct application, runoff, and atmospheric deposition. They can poison fish and wildlife, contaminate food sources, and destroy the habitat that animals use for protective cover. To reduce contamination from pesticides, farmers should use Integrated Pest Management (IPM) techniques based on the specific soils, climate, pest history, and crop conditions for a particular field. IPM encourages natural barriers and limits pesticide use and manages necessary applications to minimize pesticide movement from the field.

Farm Bill Conservation Funding

In May 2002 President Bush signed the Farm Bill, providing up to \$13 billion for conservation programs for six years. This Farm Bill represents an 80 percent increase above current levels of funding available for conservation programs designed to prevent polluted runoff. For more information, visit www.usda.gov/farmbill.

Related Publications and Web Sites

National Management Measures to Control Nonpoint Source Pollution from Agriculture

epa.gov/nps/agmm

This technical guidance and reference document is for use by state, local, and tribal managers in the implementation of nonpoint source pollution management programs. It contains information on effective, readily available, and economically achievable means of reducing pollution of surface and ground water from agriculture.

Agricultural Nonpoint Source Pollution Management Web Site

epa.gov/nps/agriculture.html

This web site features a collection of links to helpful documents, federal programs, partnerships and nongovernmental organizations that convey advice and assistance to farmers and ranchers for protecting water quality.

National Agriculture Compliance Assistance Center

epa.gov/agriculture or call toll-free: 1-888-663-2155

EPA's National Agriculture Compliance Assistance Center is the "first stop" for information about environmental requirements that affect the agricultural community.

Animal Feeding Operations (AFO) Web Sites

AFO Virtual Information Center: epa.gov/npdes/afovirtualcenter
Overview of regulations and helpful links: epa.gov/npdes/afo

Funding Sources

Searchable Catalog of Federal Funding Sources for Watershed Protection

epa.gov/watershedfunding

Agricultural Management Assistance Database

www.nrcs.usda.gov/programs/ama

Clean Water Act Section 319(h) funding (epa.gov/nps/319hfunds.html) is provided to designated state and tribal agencies to implement approved nonpoint source management programs.

Environmental Quality Incentives Program (www.nrcs.usda.gov/programs/eqip) offers financial, technical, and educational assistance to install or implement structural, vegetative, and management practices designed to conserve soil and other natural resources.

Conservation Reserve and Conservation Reserve Enhancement Programs (www.fsa.usda.gov/dafp/cepd/default.htm) implemented by the U.S. Department of Agriculture provide financial incentives to encourage farmers and ranchers to voluntarily protect soil, water, and wildlife resources.

For More Information

U.S. Environmental Protection Agency
Nonpoint Source Control Branch (4503T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
epa.gov/nps