Lower Oconee River
Watershed Management Plan

September 2018

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I. Introduction

The Watershed Management Plan for the Lower Oconee River watershed provides an outline for holistic watershed management and water quality improvement. This plan was developed through a process that engages stakeholders within the watershed to identify and recognize issues associated with water quality impairment, assess and evaluate previous efforts toward water quality improvement, and develop a plan for future efforts that includes leveraging resources, educating the public, and implementing priority Best Management Practices (BMPs). While this document is not regulatory, the ultimate goals of this plan identified by the Advisory Committee is for stakeholders and landowners within the watershed to be aware and knowledgeable of watershed issues and understand the importance of managing the landscape to minimize negative water quality impacts so as to return all impaired stream segments to meeting state water quality standards.
II. Stream Selection

The Hydraulic Unit Code (HUC)–10 0307010214 Lower Oconee River watershed is approximately 79,054 acres of primarily agricultural and forested lands and lies in parts of Laurens, Wheeler, and Montgomery Counties.

A Total Daily Maximum Load (TMDL) for biota impacted – fish community (Bio F) due to sediment was completed in 2007 for Limestone Creek, Lotts Creek, and Peterson Creek. The Total Maximum Daily Load Evaluation for Thirty-Two Stream Segments in the Oconee River Basin for Sediment recommends at 13.2% and 8% sediment load reduction for Limestone Creek and Peterson Creek, respectively. Lotts Creek’s current annual sediment load is stated to be within the allowable annual total load and has no recommendation for a reduction.

In addition a fecal coliform bacteria TMDL was completed in 2012 for the Peterson Creek segment, and in 2017 for the Limestone Creek segment. The Total Maximum Daily Load Evaluation for Four Stream Segments in the Oconee River Basin for Fecal Coliform published January 2012 recommends a 71% load reduction in fecal coliform for Peterson Creek. The Total Maximum Daily Load Evaluation for Two Stream Segments in the Oconee River Basin for Fecal Coliform published April 2017 recommends a 31% load reduction in fecal coliform for Limestone Creek.

The only TMDL Implementation Plan developed for the fecal coliform bacteria impairment in the Peterson Creek is currently the Section 7.0 Initial TMDL Implementation Plan in the 2012 TMDL. An initial TMDL Implementation Plan has also been developed for the fecal coliform bacteria impairment in Limestone Creek in Section 7.0 of the 2017 TMDL.

The GAEPD’s 2016 Integrated 305(b)/303(d) List of Waters identified two stream segments in the watershed as not meeting water quality standards for Bio F due to sediment and fecal coliform, and a third segment not meeting water quality standards for Bio F due to sediment only. The List of Waters also identifies one stream segment meeting water quality standards.

III. Formation of Advisory Committee

The development of the plan relied upon the participation of an Advisory Committee that represented the HUC-10 watershed and consisted of elected officials, property owners, state and federal agency representatives, and regional water council representatives. Technical specialists with the Natural Resources Conservation Service (NRCS), Georgia Forestry Commission (GFC), and UGA Cooperative Extension were included on the Advisory Committee to assist in the planning efforts and provide area specific information. The initial meeting was
held on July 26, 2017, to organize the group and explain the activities to be undertaken throughout the watershed planning process.

Existing watershed data, potential sources of new data, and the critical need for local input were discussed at the initial meeting. Also, maps of the watershed were reviewed, which depicted the water quality monitoring sites, overall land use in the watershed, and the segments of the stream that were impaired according to current data. Public meetings were subsequently held to inform and engage the public in the plan development process, gather additional information, and allow input into the process and plan.

IV. Source Assessment

The major impairments in the Lower Oconee River watershed as described by previous reports and sampling has been determined to be sediment and fecal coliform. Fish habitat has been impaired by the amounts of sediment present in the stream according to data in the *Total Maximum Daily Load Evaluation for Thirty-Two Stream Segments in the Oconee River Basin for Sediment* published January 2007. Also, additional TMDL evaluations have identified stream segments not meeting water quality standards for their designated use due to fecal coliform bacteria.

The report recognizes that legacy sediments remain in the stream and continue to negatively affect fish habitat. Regarding fecal coliform contamination, urban runoff, non-point sources, and municipal facilities were identified as potential sources.

Stakeholders were advised to assist in identifying any current sources of sediment loading or fecal coliform loading that may exist in the watershed area. Additionally, Pine Country RC&D staff has undertaken a visual watershed assessment to determine any current or potential loading sites.

Water quality monitoring according to an approved Sampling and Quality Assurance Plan (SQAP) was anticipated to provide data that would assist in identifying the impacts of sediment loading.

V. Assessment and Characterization of Current Condition

**Overview**

The Hydraulic Unit Code (HUC)–10 0307010214 Lower Oconee River watershed is approximately 79,054 acres of primarily agricultural and forested lands and lies in parts of
Wheeler and Montgomery Counties. Within the HUC-10 watershed, Limestone Creek, Lotts, Creek and Peterson Creek were included in GAEPD’s 2016 Integrated 305(b)/303(d) List of Waters and identified as not meeting water quality standards for Bio F due to sediment. Also, Limestone Creek and Peterson Creek were identified as impaired for fecal coliform.

**Physical and Natural Features**

**Hydrology**

The Lower Oconee River watershed is comprised of 197 miles of streams, 914 acres of lakes, and 24,875 acres of wetlands. Major streams in the watershed include Crooked Creek, Larry Creek, Limestone Creek, Lotts Creek, Mobley Mill Creek, and Peterson Creek, all tributaries of the Oconee River. All major streams have numerous tributaries throughout their respective reaches, and small ponds are scattered throughout the watershed. The majority of these small ponds are located at either the headwaters of, or adjacent to, the minor tributaries.

**Soils**

The U.S. Department of Agriculture – Natural Resources Conservation Service has published soil surveys for each county in the Lower Oconee River watershed. All of the watershed is located in the Southern Coastal Plains Major Land Resource Area (MLRA). Dominant soils of the Southern Coastal Plains MLRA have mostly Ultisols, Entisols, and Inceptisols. They are generally very deep, somewhat excessively drained to poorly drained, and loamy. Specifically within this watershed, the dominant soil types are the Troup, Pelham, Fuquay, Dothan, and Cowarts Group along with the Tifton, Dothan, and Alapaha Group - (See Map 3).

**Climate**

The Lower Oconee River watershed is characterized by mild winters and hot summers. Average annual precipitation is 46.4 inches per year. Precipitation occurs chiefly as rainfall, and about 66 percent falls in the period of March through October. Thunderstorms occur approximately 55 days each year, mostly during the period of May through August. The average winter temperature is 48.2°F with an average minimum temperature 36.8°F. Summer average temperature is 79.7°F with an average maximum temperature of 90.9°F. The growing season for the region can range from 250 to 275 days depending on temperature extremes.

**Waterbody and Watershed Conditions**

**Visual Survey**

A visual survey is used to observe problems, if present, within streams and characterize the environment in which the river flows. The survey is also useful in identifying potential sources
of water quality impairments and assessing the overall condition of the streams. The visual survey was conducted by one individual on staff with the Pine Country RC&D following Georgia Adopt-A-Stream methodologies and guidelines.

Throughout the six month sampling period, the visual survey and water quality monitoring was conducted at following location:

<table>
<thead>
<tr>
<th>Stream/River</th>
<th>Decimal Degrees Coordinates</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limestone Creek</td>
<td>-82.601872</td>
<td>Old River Road</td>
</tr>
<tr>
<td>Peterson Creek</td>
<td>-82.666049</td>
<td>GA HWY 19/S. 2nd St.</td>
</tr>
<tr>
<td>Lotts Creek</td>
<td>-82.636015</td>
<td>Clarks Bluff Road</td>
</tr>
<tr>
<td>Oconee River (Site 11)</td>
<td>-82.622455</td>
<td>Clarks Bluff Road</td>
</tr>
<tr>
<td>Oconee River (Site 12)</td>
<td>-82.556033</td>
<td>Bells Ferry Road</td>
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Low rainfall coupled with long dry periods resulted in either no flow or small stagnant pools in the upper areas of the watershed during the first four months of the sampling period. During this same time period, the lower portion of the watershed was experiencing a stream flow that was below normal levels and exhibited slow movement. Throughout the entire sampling period, all locations where a flow was present exhibited clear water with the exception of sampling locations on the Oconee River where the river appeared turbid until samples were viewed in the sampling container, which revealed little to no turbidity present.

The visual survey along with the review of current aerial photography revealed that streams within the watershed appear to have adequate vegetated buffers due to the adjacent land use predominately being forestland with only portions currently undergoing harvesting operations. Agricultural lands in close proximity to streams within the watershed appear to have adequate vegetative buffers as well, with an adequate buffer being classified as a natural or vegetative buffer exceeding 25 feet measured perpendicular from the point of wrested vegetation.

Areas that drew attention during visual assessments as potential points of sediment loading included eroded areas directly adjacent to box culvert headwalls and bridge features on paved roadways in need of stabilization as well as the volume of unpaved public and private roads and associated drainage features that directly intersected streams within the watershed. Potential contributors of fecal coliform contamination including beaver dam ponds located upstream of
certain box culverts with ducks present, animal carcasses, mainly white-tailed deer, being disposed of within or directly adjacent to the stream, agricultural livestock and/or associated runoff, and potentially, septic systems associated with single family residences located within close proximity of streams where municipal sewer systems were not available.

**Water Quality Standards**

The Lower Oconee River watershed has stream segments identified as not meeting water quality standards for their designated use due to stream sedimentation and two segments have been identified for fecal coliform impairment.

The Biota Impacted designation indicates that studies have shown a degradation of the biological populations in the stream, in this case, in the fish community within the stream segments. The general water quality criteria not being met as stated in *Georgia’s Rules and Regulations for Water Quality Control*, Chapter 391-3-6-.03(5)(c) currently states:

> All waters shall be free from material related to municipal, industrial or other discharges which produce turbidity, color, odor or other objectionable conditions which interfere with legitimate water uses.

However, the narrative criteria in *Georgia’s Rules and Regulations for Water Quality Control* are in the process of being reviewed and updated at the time of this writing.

Regarding fecal coliform, the State has determined that for a water to support its use of fishing, the maximum number of *E. coli* colony forming units (cfu) is not to exceed 200 cfu per 100 milliliters for the period of May through October, or 1,000 cfu per 100 milliliters for the period of November through April. Values in excess would be in violation of the current bacteria water quality standard set for Georgia.

**Water Quality Data**

Water quality monitoring was performed by one individual on staff with the Pine Country RC&D possessing the appropriate Georgia Adopt-A-Stream certifications and following a watershed specific SQAP. The SQAP was developed to strategically sample throughout the watershed to better identify potential sources of pollution and areas having higher impacts on water quality. (See Map 8 for Sampling Locations)

During sampling events, general observations including water flow levels, turbidity, color, and odors were documented. Ambient temperature and water temperature were recorded along with Nephelometric Turbidity Units (NTU) levels, pH, dissolved oxygen (DO), and conductivity. Additional samples were taken to be tested for settleable solids and *E. Coli* in a lab setting. Sampling sites with no water present or no flow were not sampled resulting in no data being
shown for those sampling dates in the following charts. Additionally, the Oconee River is listed as a healthy water and was sampled for comparative purposes.

Overall, water quality monitoring data reflected no current problems with sediment loading. At no time during the six month sampling period was settleable solids present above a trace amount (≥ 0.5ml/1000ml) in any sample taken, and the highest NTU levels were recorded in the Oconee River which is identified as a health water. The fecal coliform levels recorded for Limestone Creek and Peterson Creek did not exceed the current State standard at any time during the six month sampling period; however, Lotts Creek, which is currently not listed as impaired for fecal coliform, did exceed the current State standard during the month of August.
<table>
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<th>Limestone Creek</th>
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<td>1/18/2018</td>
<td>3.61</td>
<td>5.81</td>
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## Lower Oconee River Sampling Report

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<td>Monitor(s):</td>
<td>Rahn Milligan</td>
<td></td>
<td></td>
<td></td>
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<td>pH (±0.25%):</td>
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## E. coli:

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<tr>
<td>cfu/100mL:</td>
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<td>66</td>
<td>66</td>
<td>33</td>
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</tr>
</tbody>
</table>
## Lower Oconee River Sampling Report

### SITE INFORMATION
- **Site ID:** PC #9
- **Stream Name:** Peterson Creek
- **Location Description:** Peterson Creek at GA HWY 19/S. 2nd Street
- **Coordinates:** 32.169525, -82.666049
- **Monitor(s):** Rahn Milligan
- **Event Date:** 8/8/2017, 9/5/2017, 10/17/2017, 11/20/2017, 12/12/2017, 1/18/2018
- **Time Sample Collected:** 9:55 a.m., 10:20 a.m., 10:05 a.m.

### VISUAL OBSERVATIONS
- **Air Temp:** 26.6°C 25.4°C 6.0°C
- **Water Temp:** 25.4°C 8.2°C 2.9°C
- **pH (±0.25):** 6.0 6.0 6.0
- **Dissolved Oxygen (±0.6): mg/L** 5.10 7.40 9.60
- **Conductivity:** 40 60 60
- **Turbidity:** NTU 12.80 12.80 11.80 11.90 5.94 5.68
- **Settleable Solids:** mL/L ø ø ø ø ø ø

### CHEMICAL
- **E. coli:** No Sample taken, No Water present
- **No Sample taken, No Water present, No Sample taken, No Water present, No Sample taken, No Water present

### BACTERIAL
- **Plate**
  - **Colonies**
    - **Blank-** ø ø ø
    - **1-** 1 6 1
    - **2-** 2 10 ø ø
    - **3-** 1 4 ø ø
    - **Total # Colonies** 4 20 1
  - **cfu/100mL:** 133 667 33
**Lower Oconee River Sampling Report**

<table>
<thead>
<tr>
<th>SITE INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site ID: LC #10</td>
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<tr>
<td>Stream Name: Lotts Creek</td>
</tr>
<tr>
<td>Location Description: Lotts Creek at Clarks Bluff Road</td>
</tr>
<tr>
<td>Coordinates: 32.096856, -82.636015</td>
</tr>
<tr>
<td>Monitor(s): Rahn Milligan</td>
</tr>
<tr>
<td>Event Date: 8/8/2017 9/6/2017 10/17/2017 11/20/2017 12/12/2017 1/19/2018</td>
</tr>
<tr>
<td>Time Sample Collected: 10:42 a.m. 12:50 p.m. 12:50 p.m. 10:58 a.m. 10:32 a.m.</td>
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<table>
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<tbody>
<tr>
<td>Weather: Partly Cloudy Clear/Sunny Partly Cloudy Clear/Sunny</td>
</tr>
<tr>
<td>24 Hr Rainfall: 0.0&quot; 0.0&quot; 0.0&quot; 0.0&quot;</td>
</tr>
<tr>
<td>Flow Level: Low Low Low Normal Normal</td>
</tr>
<tr>
<td>Water Color: Tannic Tannic No Color No Color No Color</td>
</tr>
<tr>
<td>Water Clarity: Clear/Transparent Clear/Transparent Clear/Transparent Clear/Transparent Clear/Transparent</td>
</tr>
<tr>
<td>Water Surface: Clear Clear Clear Clear Clear</td>
</tr>
<tr>
<td>Water Odor: Natural/None Natural/None Natural/None Natural/None Natural/None</td>
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<table>
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<tbody>
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<td>Air Temp: 28.9°C 20.0°C 16.1°C 17.2°C 3.8°C</td>
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<td>Water Temp: 25.9°C 21.0°C 12.6°C 8.2°C 3.1°C</td>
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<tr>
<td>pH (±0.25): 5.0 5.5 5.5 5.5 5.5</td>
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<td>Dissolved Oxygen (±0.6): mg/L 4.30 1.80 2.60 8.20 10.20</td>
</tr>
<tr>
<td>Conductivity: μS/cm 5.5 1.90 2.50 8.00 10.40</td>
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<tr>
<td>Settleable Solids: mL/L 0 0 0 0 0</td>
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<table>
<thead>
<tr>
<th>BACTERIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. coli: Plate</td>
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<tr>
<td>3-</td>
</tr>
<tr>
<td>Total # Colonies</td>
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<tr>
<td>cfu/100mL:</td>
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## Lower Oconee River Sampling Report

<table>
<thead>
<tr>
<th>SITE INFORMATION</th>
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<tbody>
<tr>
<td>Site ID: OR #11</td>
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<tr>
<td>Stream Name: Oconee River</td>
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<tr>
<td>Location Description: Oconee River at Clarks Bluff Road</td>
</tr>
<tr>
<td>Coordinates: 32.083996 -82.622455</td>
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<tr>
<td>Monitor(s): Rahn Milligan</td>
</tr>
<tr>
<td>Event Date: 8/8/2017 9/6/2017 10/17/2017 11/20/2017 12/12/2017 1/19/2018</td>
</tr>
<tr>
<td>Time Sample Collected: 11:29 a.m. 10:20 a.m. 1:31 p.m. 1:10 p.m. 11:25 a.m. 10:55 a.m.</td>
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<table>
<thead>
<tr>
<th>VISUAL OBSERVATIONS</th>
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<tbody>
<tr>
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<td>24 Hr Rainfall: 0.0&quot; 0.0&quot; 0.0&quot; 0.0&quot; 0.0&quot; 0.0&quot;</td>
</tr>
<tr>
<td>Flow Level: Normal Normal Low Low Normal Normal</td>
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<tr>
<td>Water Clarity: Clear/Transparent Clear/Transparent Clear/Transparent Clear/Transparent Clear/Somewhat Turbid Clear/Transparent</td>
</tr>
<tr>
<td>Water Color: No Color No Color No Color No Color No Color No Color</td>
</tr>
<tr>
<td>Water Surface: Clear Clear Clear Clear Clear Clear</td>
</tr>
<tr>
<td>Water Odor: Natural/None Natural/None Natural/None Natural/None Natural/None Natural/None</td>
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<th>CHEMICAL</th>
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<tr>
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<td>Water Temp: 30.2°C 27.6°C 23.6°C 15.2°C 12.2°C 7.2°C</td>
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<td>pH (±0.25): 8.0 8.0 7.0 7.0 7.0 7.0</td>
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<tr>
<td>Dissolved Oxygen (±0.6): mg/L 6.80 7.00 6.80 6.40 7.80 8.00</td>
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<td>Conductivity: μS/cm 150 140 130 120 90 100</td>
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<td>Turbidity: NTU 8.87 9.35 9.87 11.50 9.88 10.80</td>
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<tr>
<td>Settleable Solids: mL/L 0 0 0 0 0.5 &lt;0.3</td>
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</table>

<table>
<thead>
<tr>
<th>E. coli:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate</td>
</tr>
<tr>
<td>Blank-</td>
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<td>1-</td>
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<td>2-</td>
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</tr>
<tr>
<td>Total # Colonies</td>
</tr>
<tr>
<td>cfu/100mL: Ø</td>
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# Lower Oconee River Sampling Report

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<tr>
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<tr>
<td>Location Description:</td>
<td>Oconee River at Bells Ferry Road</td>
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<td>Coordinates:</td>
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<td>8.0, 7.0, 7.0, 7.0, 7.0, 7.0</td>
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<tr>
<td>Monitor(s):</td>
<td>Rahn Milligan</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Event Date:</td>
<td>8/8/2017, 9/6/2017, 10/17/2017, 11/20/2017, 12/12/2017, 1/19/2018</td>
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## VISUAL OBSERVATIONS

<table>
<thead>
<tr>
<th>Event Date</th>
<th>Weather</th>
<th>Flow Level</th>
<th>Water Clarity</th>
<th>Water Color</th>
<th>Water Surface</th>
<th>Water Odor</th>
<th>Air Temp</th>
<th>Water Temp</th>
<th>pH (±0.25)</th>
<th>Dissolved Oxygen (±0.6) mg/L</th>
<th>Conductivity µS/cm</th>
<th>Turbidity NTU</th>
<th>Settleable Solids mL/L</th>
<th>E. coli</th>
<th>cfu/100mL</th>
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</thead>
<tbody>
<tr>
<td>8/8/2017</td>
<td>Partly Cloudy</td>
<td>Normal</td>
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<td>8.0</td>
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<td>140</td>
<td>12.10</td>
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<tr>
<td>9/6/2017</td>
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<td>23.9°C</td>
<td>27.2°C</td>
<td>8.0</td>
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<td>140</td>
<td>11.70</td>
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<tr>
<td>10/17/2017</td>
<td>Clear/Sunny</td>
<td>Low</td>
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<td>No Color</td>
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<td>10.90</td>
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<td>11/20/2017</td>
<td>Partly Cloudy</td>
<td>Low</td>
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<td>Clear</td>
<td>Natural/None</td>
<td>17.2°C</td>
<td>15.0°C</td>
<td>7.0</td>
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<td>Ø &lt; 0.3</td>
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<td>Clear/Transparent</td>
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<td>15.1°C</td>
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<td>7.0</td>
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<td>Ø &lt; 0.3</td>
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<td>1/19/2018</td>
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<td>Normal</td>
<td>Clear/Transparent</td>
<td>No Color</td>
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<td>8.8°C</td>
<td>6.9°C</td>
<td>7.0</td>
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<td>90</td>
<td>10.20</td>
<td>Ø &lt; 0.3</td>
<td>Ø</td>
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## CHEMICAL

- **Air Temp:** 31.1°C, 23.9°C, 21.1°C, 17.2°C, 15.1°C, 8.8°C
- **Water Temp:** 30.0°C, 27.2°C, 23.4°C, 15.0°C, 10.5°C, 6.9°C
- **pH (±0.25):** 8.0, 8.0, 7.0, 7.0, 7.0, 7.0
- **Dissolved Oxygen (±0.6) mg/L:** 6.70, 6.40, 6.40, 6.30, 7.60, 7.60
- **Conductivity µS/cm:** 140, 140, 130, 130, 120, 90
- **Turbidity NTU:** 12.10, 11.70, 10.90, 11.00, 12.10, 12.50
- **Settleable Solids mL/L:** Ø, Ø, Ø, Ø, Ø, <0.3
- **Turbidity NTU:** 12.10, 11.70, 10.90, 11.00, 12.10, 12.50
- **Settleable Solids mL/L:** Ø, Ø, Ø, Ø, Ø, <0.3

## BACTERIAL

### E. coli:
- **Plate** | **Colonies** | **Colonies** | **Colonies** | **Colonies** | **Colonies** | **Colonies** | **Colonies** |
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Blank-</td>
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<tr>
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<td>33</td>
<td>33</td>
<td>0</td>
<td>300</td>
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</table>
Pollutant Sources

Agricultural Land

Cropland represents approximately 7 percent of the watershed area. This land use is a potential source of sediment pollution because it is traditionally disturbed annually and is subject to impacts by high intensity summer rainfall events occurring during the growing season and cultivation activities. Agricultural operations that utilize traditional cropping techniques leave the majority of cultivated land without a cover due to chemical and mechanical control of herbaceous pests to enhance yield potential. The lack of cover results in soil movement due to wind and water erosion that can reach levels of up to 5 tons of soil per acre per year depending on soil type, terrain, and rainfall intensity.

Field borders, especially along county unpaved roads, could provide extensive benefits. However, there are very few examples of where this practice is in place at the present time. When asked, agricultural producers cited some barriers to implementation that included commodity prices, land rental rates, practice establishment requirements, or the lack of desire to implement.

Hay and pasture land represent approximately 4 percent of the watershed area, but this land use will have little impact on sediment loading.

However, potential sources of sediment pollution and fecal contamination could come from livestock having direct access to streams and waterways resulting in streambank degradation and fecal deposition as well as through runoff from adjacent fields and feeding areas. According to NRCS personnel, many of the watershed’s livestock producers have fenced livestock out of streams along with the installation of watering facilities for the livestock.

NRCS cost-share programs as well as the U.S. Fish and Wildlife, Partners for Fish and Wildlife program have been effective and useful in this effort. However, there still remain a number of producers that have not adopted these practices within the watershed. They represent a group that may be in need of educational outreach on the importance of these practices, guidance on the usage and implementation of these practices, and/or potentially need financial assistance provided for their installation within the producers’ respective operations.

Forestland

Forestland is the largest land use in the HUC-10 watershed by area representing approximately 37 percent of the watershed. It is predominantly owned by private individuals, but there are some corporate and state-owned lands as well. The forestlands management is generally driven by economic motives, and management activities include site preparation, planting, thinning, and clearcutting. Occasionally, forestland owners also incorporate pine needle (straw) harvesting within their operations. Aside from harvesting pine straw, these management
activities usually occur on a 20 to 40 year rotation, depending on landowner objectives and economic drivers, and activity on any given acre is generally very intermittent, possibly once every five to ten years.

Site preparation for tree planting is generally regarded to be the most soil disturbing activity on forestland. However, recent changes to site preparation techniques have resulted in less soil disturbance. Chemical site preparation and/or mechanical site preparation that doesn’t disturb the soil surface is now very common. Also, soil disturbance is minimized during the planting process through the use of V-blade equipped dozers coupled to planting machines which is not uncommon.

Stream crossings on forestland is the activity with the most potential to contribute to increased sediment loading, especially during road construction and timber harvesting if adequate crossing management practices have not been utilized. Additionally, off tracking of soil and mud from unpaved roadways onto paved road surfaces during harvesting operations create opportunities for increased sediment movement into waterbodies and streams during wet periods. While temporary practices such as matting or temporary timber bridges are being used throughout the watershed, more effective alternatives such as permanent stream crossings, where applicable, utilizing culverts, bridges or stabilized ford crossings have yet to be adopted on a wide scale. Timber companies have been early adopters of these practices in the watershed, but private landowners have been less eager to install the practices due to cost and the lack of available cost-share funding. However, the utilization of stream crossings is extremely important as part of an overall road maintenance program that will enhance access for timber management activities as well as recreation activities.

Residential/Urban

There is little residential and/or urban expansion in this watershed. Single family residences are most common. The only potential sources of sediment pollution would be failure to utilize or improper usage of minimal erosion control measures during construction or development activities. The failure of on-site septic systems and illicit discharges of raw sewage could be potential sources of fecal coliform loading throughout the watershed as well.

Unpaved roads

Due to the volume of unpaved roads, their numerous intersections with tributaries and waterways throughout the watershed, and their direct impacts of sedimentation observed during the visual survey, it is the Advisory Committee’s opinion that they represent the largest contributor of sediments in the watershed. They also represent the most challenging contributor to address with specific solutions. Many of the situations reviewed can be improved through technical solutions such as re-sizing culverts to avoid culvert blow-outs, installation and stabilization of plunge pools, or utilization of check dams. Other conditions require governmental/political efforts such as funding paving of problematic areas and securing
proper right-of-ways for road shoulders and drainage discharges. Additional coordination may need to be undertaken with Georgia Department of Transportation (GDOT) and others for specific financial and/or technical assistance.

VI. Recommended Management Measures

Properly designed, installed and maintained Best Management Practices (BMP) are highly effective in preventing erosion and managing the resultant sedimentation. These practices can effectively reduce current sediment loading within the watershed and expedite the natural repair of the impaired segments. While some BMPs may be used across sectors or land uses, a unique set of practices has been identified for each contributing land use. The identified practices focus primarily on sediment pollution and fecal coliform, but ancillary benefits of some practices, such as a reduction in nutrient loading, could have a direct and positive affect on dissolved oxygen levels. Also, preventing turbidity levels high enough to block sunlight from reaching aquatic plant life may reduce plant mortality and the resultant decay which will prevent oxygen depletion. Depending on the land uses and BMPs utilized, estimated sediment load reductions could be range from 1 percent to upwards of 40 percent, and fecal coliform load reductions could range from 1 percent to 99 percent.

**Agricultural**

The implementation of systems of BMPs reduces nonpoint source pollution. BMPs are defined as structural, vegetative, or managerial conservation practices which reduce or prevent detachment, transport and delivery of nonpoint source pollutants to surface or ground waters. The BMPs result in fewer nutrients and waste being delivered to the water bodies.

In traditional cultivated cropland the soil is disturbed annually as well as throughout the growing season and is subject to impacts from high intensity summer rainfall events. Due to erosion being a three step process including soil particle detachment, particle transport, and particle deposition, any measure that prevents one of these steps will be useful in minimizing or controlling sedimentation. Potential sediment pollution from agricultural cropland may be eliminated or reduced from the utilization of an individual BMP or a site specific suite of BMPs identified in the *Best Management Practices for Georgia Agriculture, Conservation Practices to Protect Surface Water Quality* published by the Georgia Soil and Water Conservation Commission. Practices specific to sediment control include the following:

- Conservation Cover
- Contour Farming
- Critical Area Planting
- Field Border
- Grade Stabilization Structure
- Crop Rotation
- Contour Buffer Strip
- Sediment Basins
- Filter Strips
- Grassed Waterways
- Conservation Tillage
- Cover Crop
- Diversions
- Forage and Biomass Planting
- Riparian Buffers
Practices specific to fecal coliform reduction other than applicable ones listed above include the following:

- Access Control
- Composting Facility
- Pipeline & Water Well
- Waste Storage Facility
- Anaerobic Digester
- Fence
- Stream Crossing
- Waste Treatment Lagoon
- Animal Mortality Facility
- Nutrient Management
- Waste Facility Closure
- Waste Transfer

Forestland

Management practices applicable to forestry operations that assist in the control of sediment include the following:

- Brush Management
- Forest Management Plans
- Grade Stabilization Structure
- Prescribed Burning
- Stream Habitat Improvement and Management
- Early Sessional Habitat Development and Management
- Forest Stand Improvement
- Herbaceous Weed Treatment
- Riparian Forest Buffers
- Stream Crossing
- Firebreaks
- Forest Trails and Landings
- Lined Waterway and Outlet
- Silvopasture Establishment
- Tree/Shrub Establishment

The Georgia Forestry Commission (GFC) is the lead State agency responsible for monitoring non-point source pollution on forestland and responding to public complaints relating to forestry activities. The GFC Water Quality Program produced Georgia’s Best Management Practices for Forestry, a manual that describes practices to minimize negative water quality impacts, illustrates BMP installation and usage, and references applicable Federal and State mandates. In addition to the manual, the GFC offers Master Timber Harvester training courses on the importance and necessity of utilizing BMPs to minimize non-point source pollution and thermal pollution. To ensure minimum BMP usage compliance, the GFC also conducts a “Silvicultural BMP Implementation and Compliance Survey” every two years. In the 2017 survey report, stream crossings, firebreaks/burning, and forest roads had the lowest statewide implementation rates of 88%, 90%, and 91% respectively. When looking specifically at the Lower Coastal Plains area, the implementation rates were 83%, 88%, and 89% respectively.

Currently, the Natural Resources Conservation Service (NRCS) offers technical assistance as well as financial assistance in the form of cost-share/incentive programs to eligible landowners to implement agricultural and silvicultural practices throughout their operations.
Residential/Urban

There is little residential and/or urban expansion within the watershed. Other than insuring that all subsequent development follows the most current *Manual for Erosion and Sediment Control in Georgia* as published by the Georgia Soil and Water Conservation Commission, and that all new residential septic systems be properly installed in accordance with current standards along with encouraging proper septic system maintenance on all existing systems, there are no specific measures recommended for this land use. These issues can only be addressed through local governments adopting an Erosion and Sedimentation Control Ordinance or through GA EPD regulatory oversight of the areas within their jurisdiction, through local health departments requiring inspections on all new septic system installations, and through public outreach and education on the importance of proper septic system maintenance.

Unpaved roads

Many of the pollution contribution components of an unpaved road can be improved upon with the usage of technical solutions such as properly sized and installed culverts, utilization of headwall, splash aprons, and plunge pools in conjunction with culverts, and properly graded road surfaces and ditches. Other conditions will require efforts on a more political level such as securing necessary right-of-ways for proper drainage/discharge feature installation or for paving repetitive problem areas. Additionally, public and political figures will need to generate public support for the usage and implementation of unpaved road BMPs that are traditionally not used to prevent unwanted opposition when public funds are allocated for that purpose. Also, coordination between Georgia Department of Transportation (GDOT), local road departments, and any other applicable entity should be undertaken to ensure efficient use of resources and maximize financial and technical assistance.

Specifically within this watershed, sediment pollution from unpaved roads may be reduced through the utilization of BMPs that are found in the *Georgia Better Back Roads Field Manual* published by the Georgia Resource Conservation and Development Council, Inc. which includes structural, vegetative, and operational management practices that may be utilized individually or in combination with others to manage and/or control the movement of sediments. Examples of these practices include:

- Culverts
- Grass Seeding
- Plunge Basins (pools)
- Sediment Basins
- Dust Control
- Headwalls
- Rock Check Dams
- Splash Aprons
- Gabions
- Matting And Blankets
- Rock Filter Dams
- Turnouts
VII. Working With The Public

To further enhance the overall effectiveness of a watershed management plan, public engagement and educational opportunities to increase public awareness of water quality problems within the watershed are critically important. Being informed and knowledgeable of the problems and the associated implications will improve overall public support for remediation and prevention of water quality degradation within the watershed. The overall objective of the educational outreach component is to provide information on current watershed conditions and how any current impairments will negatively affect overall watershed health. Additionally, the promotion of good stewardship of the resource and the usage of best management practices will be emphasized throughout these educational settings. Sector specific educational programs will also be offered to further strengthen the importance of preventing pollutant loading through the usage of best management practices that are appropriate for the situation and effective in preventing potential pollutant loading.

Specifically, Forest landowners will be encouraged to participate in landowner workshops/field days that provide current information on environmental regulations relating to water quality, silvicultural best management practice design, installation, and maintenance, and current trends and innovations in site preparation, planting, and harvesting. Agricultural producers will be encouraged to participate in producer workshops and landowner field days that will provide current information on the benefits of agricultural BMPs with specific emphasis on conservation tillage practices and irrigation water management. Livestock producers will be offered opportunities to learn about grazing land management and the usage of livestock BMPs with emphasis on water quality, streambank protection, and nutrient management. Local governments will be encouraged to participate in the Georgia Better Back Roads Training Workshops developed by the Georgia Resource Conservation and Development (RC&D) Council as well as Erosion and Sedimentation Control Certification workshops developed by the Georgia Soil and Water Conservation Commission.

The overall success of this watershed management plan will require participation and cooperation from active land users, governmental agencies and entities, and the general public. Providing opportunities for everyone to better understand water quality issues within the watershed, how those issues impact overall watershed health, ways to improve water quality and watershed health, and what programs are available to assist with water quality improvement projects will greatly increase awareness, participation, and cooperation.

VIII. Long-Term Monitoring Plan

The objective of long-term monitoring within the watershed is to determine if water quality standards are achieved following the implementation of the measures outlined in this plan. It is
important to perform instream monitoring to gauge water quality improvement as well as
determine effectiveness of remediation activities. The data collected is crucial in supporting
periodic strategic planning, identifying priority areas for remediation, and evaluating the
effectiveness of BMPs. It also allows for trends to be identified and analyzed as well as identify
any additional water quality problems should they develop.

Metrics to be monitored long-term shall include ambient temperature and water temperature,
Nephelometric Turbid Units (NTU) levels, water pH, dissolved oxygen concentration,
conductivity, settleable solids, and *E. coli* levels. All data collected shall be performed by a
Georgia Adopt-A-Stream (GA AAS) certified person following current methodologies, utilizing
GA AAS approved equipment, sampling kits, and/or supplies, and following an approved
Sampling and Quality Assurance Plan (SQAP). Samples should be taken at a minimum of once
monthly, and data evaluated to determine if additional samples are needed due to abnormal or
critical levels of any particular metric being monitored. It may also prove beneficial to monitor
specific BMP installation sites in areas that were noticed to be directly contributing to the
impairment (*i.e.* unpaved road drainage features directly discharging sediment laden waters
into streams or livestock exclusion areas) to monitor overall effectiveness of the BMPs and
make necessary changes if needed.

**IX. Implementation, Evaluation, and Revision**

**Management Strategies**

The overall effectiveness of this management plan relies on the aforementioned holistic
approach of watershed management. The approach requires that all potential pollution
sources be addressed through education/outreach to increase public and landowner awareness
of the problems; encourage the implementation and utilization of BMPs through providing
planning, technical, and financial assistance; monitor the effectiveness of the management plan
and implemented practices through long-term monitoring; and make necessary revisions to the
plan as needed.

**Management Plan**

In addition to technical assistance being provided by federal and state agencies, financial
assistance in the form of a cost-share/incentive program for the implementation of agricultural
and silvicultural BMPs coupled with cost-sharing with local governments on the implementation
of unpaved road BMPs is necessary to achieve sediment load reductions within the watershed.
The amount of funding needed to obtain current water quality standards through BMP
implementation across all sectors is not known at this time, but in addition to current federal
funding resources available, the application of funds through a Section 319(h) Federal Water
Pollution Control Act grant or series of grants targeting specific activities of the plan will be necessary for timely implementation and water quality improvement.

While landowners and local governments throughout the entire watershed will be eligible to participate in any cost-share/incentive program, priority will be given to subwatersheds based on monitoring data and impairment listings due to the fact that efforts in these areas will have the greatest impact on water quality improvement. Currently, the priority subwatersheds are Larry Creek – Oconee River, Lotts Creek, and Lotts Creek – Oconee River due to the current impaired listing of streams within them.

**Implementation Plan and Interim Milestones**

It is anticipated that the implementation of this watershed management plan will exceed five years, but smaller, more focused projects may be implemented in shorter time periods. To monitor progress of plan implementation, a series of measurable milestones have been developed, but a periodic review of accomplishments as compared to the implementation schedule will be needed to determine whether task milestones are being met. These reviews will also determine if revisions or amendments are necessary to address both progress and setbacks.

<table>
<thead>
<tr>
<th>Implementation Partners</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Ailey</td>
<td>Cash and In-Kind Contributions</td>
</tr>
<tr>
<td>City of Glenwood</td>
<td>Cash and In-Kind Contributions</td>
</tr>
<tr>
<td>City of Mount Vernon</td>
<td>Cash and In-Kind Contributions</td>
</tr>
<tr>
<td>Georgia Forestry Commission (GFC)</td>
<td>Technical Assistance, Financial Assistance, and In-Kind Contributions</td>
</tr>
<tr>
<td>Georgia Soil and Water Conservation Commission (GSWCC)</td>
<td>Technical Assistance, Financial Assistance, and In-Kind Contributions</td>
</tr>
<tr>
<td>Laurens County Commission</td>
<td>Cash and In-Kind Contributions</td>
</tr>
<tr>
<td>Montgomery County Commission</td>
<td>Cash and In-Kind Contributions</td>
</tr>
<tr>
<td>Natural Resources Conservation Service (NRCS)</td>
<td>Technical Assistance and Financial Assistance</td>
</tr>
<tr>
<td>Ohoopee River Soil and Water Conservation District</td>
<td>Technical Assistance, Financial Assistance, and In-Kind Contributions</td>
</tr>
<tr>
<td>Pine Country Resource Conservation and Development Council</td>
<td>Technical Assistance, Cash and In-Kind Contributions</td>
</tr>
<tr>
<td>University of Georgia Cooperative Extension Service</td>
<td>Technical Assistance and In-Kind Contributions</td>
</tr>
<tr>
<td>Wheeler County Commission</td>
<td>Cash and In-Kind Contributions</td>
</tr>
</tbody>
</table>
# Implementation Plan

**Goal:** Implement Best Management Practices to reduce Sediment Loads and Fecal Coliform loads in order to meet water quality standards

<table>
<thead>
<tr>
<th>Task</th>
<th>Agency Responsible</th>
<th>Funding Source</th>
<th>Measure</th>
<th>Milestone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Short</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(&lt;2 yrs)</td>
</tr>
</tbody>
</table>

| Objective 1: Reduce Sediment loads from unpaved roads within the watershed |
|---|---|---|---|---|---|
| Task 1: Develop criteria to identify critical areas of unpaved roads where unpaved roads have a direct impact on streams and waterways | Local governments, Road Departments | Local funds, Section 319(h) grant, in-kind match | Percentage of locations where unpaved roads directly impact streams and waterways identified | All | All new road construction | All new road construction |
| Task 2: Develop remediation plans for critical impact areas and prioritize implementation of plans | Local governments, Road Departments | Local funds, Section 319(h) grant, in-kind match | Percentage of remediation plans developed | 50% | 50% | All new impact areas |
| Task 3: Install BMPs | Local governments, Road Departments | Local funds, Section 319(h) grant, in-kind match | Percentage of remediation plans implemented | 50% - contingent upon funding | 50% - contingent upon funding | All new impact areas |

<p>| Objective 2: Reduce Sediment loads from agricultural lands within the watershed |
|---|---|---|---|---|---|
| Task 1: Identify agricultural producers in watershed | NRCS | In-kind | Percentage of producers | All | All new producers | All new producers |
| Task 2: Identify agricultural producers with no current Conservation Plan and assist with development of Plan | NRCS | In-kind | Number of producers identified | All | All new producers | All new producers |
| | | | Number of Conservation Plans developed | All | All new producers | All new producers |
| Task 3: Contact producers for participation in cost-share programs – target producers in priority subwatersheds | NRCS | In-kind | Number of producers identified within priority subwatersheds | All | All new producers | All new producers |
| | | | Number of applications submitted for cost-share program in priority subwatersheds | 10 | 5 | 5 |
| Task 4: Install BMPs | NRCS, Producer | Percentage of land area of | 50 | 25 | 25 |</p>
<table>
<thead>
<tr>
<th>Task 1: Identify agricultural producers in watershed</th>
<th>NRCS</th>
<th>In-kind</th>
<th>Percentage of producers</th>
<th>All</th>
<th>All new producers</th>
<th>All new producers</th>
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</thead>
<tbody>
<tr>
<td>Task 2: Identify agricultural producers with no current Nutrient Management Plan (NMP) or Conservation Plan and assist with development of Plan</td>
<td>NRCS</td>
<td>In-kind</td>
<td>Number of producers identified</td>
<td>All</td>
<td>All new producers</td>
<td>All new producers</td>
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<td>Number of Nutrient Management Plans or Conservation Plans developed</td>
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<td>All new producers</td>
<td>All new producers</td>
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<tr>
<td>Task 3: Identify agricultural producers with current NMP or Conservation Plan and review to insure proper implementation</td>
<td>NRCS</td>
<td>In-kind</td>
<td>Number of producers identified</td>
<td>All</td>
<td>All new producers</td>
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<td>Number of Nutrient Management Plans or Conservation Plans reviewed</td>
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<td>All new producers</td>
<td>All new producers</td>
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<td>Task 4: Contact producers for participation in cost-share programs – target producers in priority subwatersheds</td>
<td>NRCS</td>
<td>In-kind</td>
<td>Number of producers identified within priority subwatersheds</td>
<td>All</td>
<td>All new producers</td>
<td>All new producers</td>
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<tr>
<td></td>
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<td>Number of applications submitted for cost-share program in priority subwatersheds</td>
<td>10</td>
<td>5</td>
<td>5</td>
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<tr>
<td>Task 5: Install BMPs</td>
<td>NRCS, Producer</td>
<td>Producer, Section 319(h) grant, EQIP</td>
<td>Percentage of land area of priority subwatersheds affected by BMP program</td>
<td>50</td>
<td>25</td>
<td>25</td>
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<tr>
<td></td>
<td></td>
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<td>Number of participants</td>
<td>10</td>
<td>5</td>
<td>5</td>
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<td></td>
<td></td>
<td></td>
<td>Load reduction estimate</td>
<td>TBD</td>
<td>TBD</td>
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</table>

Objective 3: Reduce fecal coliform loads from agricultural lands within the watershed

<p>| Objective 4: Reduce Sediment loads from silvicultural lands within the watershed |
|---|---|---|---|---|
| Task 1: Identify forestry | GFC, NRCS | In-kind | Percentage of producers | All | All new | All new |</p>
<table>
<thead>
<tr>
<th>Task 2: Identify forestry producers with no current Forest Stewardship Plan and assist with development of Plan</th>
<th>GFC, NRCS</th>
<th>In-kind</th>
<th>Number of producers identified</th>
<th>All</th>
<th>All new producers</th>
<th>All new producers</th>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Number of Forest Stewardship Plans developed</td>
<td>All</td>
<td>All new producers</td>
<td>All new producers</td>
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<tr>
<td>Task 3: Contact producers for participation in cost-share programs – target producers in priority subwatersheds</td>
<td>GFC, NRCS</td>
<td>In-kind</td>
<td>Number of producers identified within priority subwatersheds</td>
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<td>All new producers</td>
<td>All new producers</td>
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<td></td>
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<td>Number of applications submitted for cost-share program in priority subwatersheds</td>
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<tr>
<td>Task 4: Install BMPs</td>
<td>GFC, NRCS, Producer</td>
<td>Producer, Section 319(h) grant, EQIP</td>
<td>Percentage of land area of priority subwatersheds affected by BMP program</td>
<td>50</td>
<td>25</td>
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<tr>
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<td>Number of participants</td>
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<td>Load reduction estimate</td>
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<tr>
<td>Objective 5: Monitor water quality of load reduction achievement</td>
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<td>Task 1: Update EPD – approved SQAP for post-BMP monitoring</td>
<td>RC&amp;D, Contractor</td>
<td>Section 319(h) grant, In-kind, cash match</td>
<td>EPD - approved-SQAP and updates as needed to reflect new pre- and post-BMP monitoring</td>
<td>100%</td>
<td>N/A</td>
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<tr>
<td>Task 2: Conduct post-BMP monitoring BY AAS-qualified personnel utilizing approved SQAP</td>
<td>RC&amp;D, Contractor</td>
<td>Section 319(h) grant, In-kind, cash match</td>
<td>Number of samples collected</td>
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<td>N/A</td>
<td>N/A</td>
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<tr>
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<td></td>
<td></td>
<td>Load reduction</td>
<td>Meet water quality standards for designated use</td>
<td>Meet water quality standards for designated use</td>
<td>Meet water quality standards for designated use</td>
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<tr>
<td>Task 3: Implement long-term water quality monitoring by AAS-qualified personnel under EPD – approved SQAP</td>
<td>RC&amp;D, Contractor</td>
<td>TBD</td>
<td>Number of samples collected</td>
<td>N/A</td>
<td>TBD</td>
<td>TBD</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Load reduction</td>
<td>N/A</td>
<td>Meet water quality standards</td>
<td>Meet water quality</td>
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<tr>
<td>Objective 6: Conduct Education Outreach</td>
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<td>for designated use</td>
<td>standards for designated use</td>
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<tr>
<td>Task 1: Develop, coordinate, and host Field Day</td>
<td>RC&amp;D, GSWCC, Local Soil &amp; Water Conservation District, UGA Cooperative Extension, NRCS</td>
<td>Section 319(h) grant, In-kind, cash match</td>
<td>Number of attendees</td>
<td>15</td>
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<tr>
<td>Task 2: Present sector specific information relating to pollution prevention, BMP utilization, water quality improvement, and/or available assistance programs at producer meetings in each of the counties in the watershed</td>
<td>RC&amp;D, GSWCC, Local Soil &amp; Water Conservation District, UGA Cooperative Extension, NRCS</td>
<td>Section 319(h) grant, In-kind, cash match</td>
<td>Number of Presentations</td>
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<td></td>
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<td>Number of attendees per presentation</td>
<td>10</td>
<td>N/A</td>
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<td>Task 3: Develop newspaper articles on Lower Oconee River water quality, pollution control efforts, and available assistance programs</td>
<td>RC&amp;D, GSWCC, Local Soil &amp; Water Conservation District, UGA Cooperative Extension, NRCS</td>
<td>Section 319(h) grant, In-kind, cash match</td>
<td>Number of articles published</td>
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<td></td>
<td></td>
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<td>Number of readers reached</td>
<td>2,000</td>
<td>2,000</td>
<td>N/A</td>
</tr>
</tbody>
</table>
X. Appendix
References


FEMA Floodplains Dataset, Federal Emergency Management Agency


Georgia Hydrologic Unit Boundaries, 10- and 12-digit, U.S. Geological Survey


“Gridded Soil Survey Geographic (qSSURGO)”, USDA, Natural Resources Conservation Service

“Ground-water Pollution Susceptibility map of Georgia, Hydrologic Atlas 20”, Victoria P. Trent, 1992


“National Elevation Dataset”, USDA, Natural Resources Conservation Service

“National Landcover Dataset”, USDA, Natural Resources Conservation Service

“National Wetlands Inventory”, USDA, Natural Resources Conservation Service

“Results of Georgia’s 2017 Silvicultural Best Management Practices Implementation and Compliance Survey”, Georgia Forestry Commission, December 2017


“Total Maximum Daily Load Evaluation for Thirty-Two Stream Segments in the Oconee River Basin”, Georgia Department of Natural Resources, January 2007


“1981-2010 Normals”, National Climate Data Center, 2018