Drag Nasty Creek
Watershed Management Plan

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ACRONYM GLOSSARY

319 (H) Clean Water Act (CWA) §319(h) Non-Point Source (NPS) Grant Program
AAS- Georgia Adopt-A-Stream
NCWP-Drag Nasty Creek Watershed Partnership
BMP – Best Management Practice
BOD – Biochemical Oxygen Demand
CBOD – Carbonaceous Biochemical Oxygen Demand
CWA – Clean Water Act
CWP – Clean Water Partnership
DO – Dissolved Oxygen
EPA- Environmental Protection Agency
FC- Fecal Coliform
FSA- Farm Services Agency
GAEPD- Georgia Environmental Protection Division
GFC-Georgia Forestry Commission
GWPPC-Georgia Water Planning and Policy Center at Albany State University
HUC – Hydrologic Unit Code
NBOD – Nitrogenous Biochemical Oxygen Demand
NLCD – National Land and Cover Database
NOAA – National Oceanic and Atmospheric Administration
NPDES – National Pollutant Discharge Elimination System
NPS – Nonpoint Source
NRCS – Natural Resource and Conservation Service
NTU – Nephelometric Turbidity Units
PS- Point Source
PS/NPS- Point and Nonpoint Source
RC&D -Resource Conservation and Development
Region 5 Model 5- Excel workbook that provides a gross estimate of sediment and nutrient load reductions
RUSLE- Revised Universal Soil Loss Equation
SOD – Sediment Oxygen Demand
STEPL- Spreadsheet Tool for Estimating Pollutant Load
TDS – Total Dissolved Solids
TMDL – Total Maximum Daily Load
TN – Total Nitrogen
TP – Total Phosphorous
TSS – Total Suspended Solids
USDA- United State of Department of Agriculture
USEPA – United States Environmental Protection Agency
USFWS- United States Fish and Wildlife Services
WMP- Watershed Management Plan

Drag Nasty Creek
Watershed Management Plan

EXECUTIVE SUMMARY

Drag Nasty Creek (HUC 0313000313) Watershed is located in Southwest Georgia, Clay and Quitman counties, within the Middle Chattahoochee River (HUC 0313003). The creek flows into Walter F. George Reservoir, a 45,181-acre lake that borders the states of Georgia and Alabama. The Lake is a popular recreation area, providing for boating, fishing and camping. George T. Bagby State Park and Lodge is located on the eastern side of the Lake in Georgia and the Eufaula National Wildlife Refuge is located on the western border in Alabama. The Lake also provides hydroelectric power for this region.

The Georgia Environmental Protection Division (GAEPD) 2010, 305(b)/303(d) List, shows seven (7) miles (tributary to Lake) of Drag Nasty Creek as not supporting its designated use (fishing), because of fecal coliform bacteria violations, potentially due to nonpoint source (NPS) pollutants. The creek continues to be listed on Georgia's 2012 list of non-supporting rivers and streams. Total Daily Maximum Loads (TMDLs) were established for Drag Nasty Creek in 1998 and a basic Total Maximum Daily Load (TMDL) Implementation Plan was developed in 2001.

As part of the Source Assessment, Golden Triangle RC&D conducted water quality monitoring, supplemented with historic land use data over a period of one year February to December of 2012. The water quality monitoring data was entered into Georgia Adopt-A-Stream website. Golden Triangle RC&D used the water quality monitoring and historic land use data to identify the stressors, which would lead to recommendations for land management measures BMPs (Best Management Practices).

In addition, recommendations for appropriate management measures were also gathered through partnerships and stakeholders participation in developing the Comprehensive Watershed Management Plan. Partners and stakeholders included collaboration with Clay County Managers, Clay County Health Department, Georgia Department of Natural Resources Non-Gaming Unit, and private landowners. Based on data, which Golden Triangle collected and presented to partners and stakeholders, concluded that identified management measures, if fully implemented would substantially reduce nonpoint source pollutants within the Drag Nasty Creek Watershed. The recommended management measures include:

- Stream Crossing
- Stream Bank Stabilization
- Repair/Installation for Failing or Non-Existent Septic Systems
- Wildlife Management for Feral Hog Removal

A 30% decrease of pollutants is projected through the use of adaptive Watershed management strategies, site specific location opportunities, and customized BMP installations. Key measures of success within Drag Nasty Creek will include:

- Number of BMPs Implemented
- Number of Landowners Participating
- Septic Tank Installations
- Removal of Feral Hog Population

This plan could be a continuing relevant document for watershed management planning if revised as land uses change within the Watershed.

1.0 INTRODUCTION

The purpose of developing this Watershed Management Plan (WMP) for Drag Nasty Creek is to provide a tool that demonstrates a holistic approach to water quality management by actively engaging stakeholders within the watershed and the selection of management strategies that will be implemented to solve the problems.
The components of this plan were prepared using USEPA Guidelines 9 Key Elements for Watershed Management Planning:

1. Identification of Pollutant Sources
2. Estimate of Pollutant reductions required
3. Identification of Management Measures to implement
4. Estimate funding needs and resources
5. Informational/Education outputs required
6. Schedule for implementation
7. Measureable milestones
8. Development of criteria to determine progress and success
9. Development of monitoring plan to evaluate success.

This document serves as an update to the 2001 TMDL Implementation Plan. The components of this plan were prepared using USEPA *Handbook for Developing Watershed Plans to Restore and Protect Our Waters*, which provide guidelines for a watershed approach to restore impaired waters.

WATERSHED MANAGEMENT PLAN ORGANIZATION

Section 2 Watershed Description Page 7 characterizes the watershed area of Drag Nasty and includes land cover data, climate data, threatened/endangered species, soil properties, population trends, water quality, and current stream conditions.

Section 3 Pollutant Load and Source Assessment Page 23 describes the State of Georgia Standards for pollutant levels, the current loading within the creeks, the probable sources of the pollutants and reductions needed to meet water quality.

Section 4 Management Strategies/Recommendations/Load Reductions Phase 1 Page 29 provides an overview of the types and required number of BMPs that will be recommended for implementation, and the projected load reductions that that should occur.

Section 6 Education and Outreach Page 42 provides the education and outreach components that will be used for this Watershed Management Plan.

Section 7 Funding Need and Sources Page 47 discuss funding needs and sources that will be considered for this project.

Section 8 Project Activities/ Milestone Timeline Phase 1 Page 49 provides proposed budget, project activities, and milestones for Phase 1

Section 9 Project Activities/ Milestone Timeline Phase 2 Page 54 provides proposed budget, project activities, and milestones for Phase 2

Section 10 Evaluation/Assessment/Measurement of Progress Page 59 provides a description of the measures that will be used to gauge the effectiveness of the Educational/Outreach, BMP installation, and condition of the creeks.

2.0 STREAM SELECTION

Drag Nasty Creek is listed on the 2010 Georgia Environmental Protection Divisions (GAEPD) 305 (b)/303(d) list as not supporting/partially supporting its designated use of fishing for a 7(seven) mile section on the Highway 39 Bridge to the tributary. (See Appendix C, Page 49 for impaired area) Total Daily Maximum Loads (TMDLs) were established for Drag Nasty Creek in 1998 and a TMDL Implementation Plan was developed in 2001 (See below for original TMDL recommendations).

2001 Original TMDL Recommendations-

Potential Fecal Coliform Loading Sources

If additional monitoring shows fecal coliform limits are being exceeded, the advisory committee has identified the following potential sources of fecal coliform pollution within the watershed:

- Wild hogs in the creek (hundreds of wild hogs exist in the two counties)
- Improperly functioning septic systems/residential units lacking a sanitary system (although a preliminary "quick check" by the Health Department did not uncover any obvious problems in the watershed)
- People dumping deer carcasses into creeks during hunting season

Potential Actions that could Reduce the Fecal Coliform Load

- The wild hog problem must be addressed, not only for water quality issues. Methods by which to legally to hunt wild hogs using bait from May through August must be investigated.
- If additional monitoring shows fecal coliform limits are being exceeded and agricultural uses are determined to be a contributor, implement appropriate Agricultural BMPs.
- Implement measures to ensure the buffer currently in place along the creek is not significantly disturbed. Agricultural/Forestry BMPs should be followed.
- Implement a program to identify improperly functioning septic systems and fix them.
- Implement a program to ensure all residential units have a sewage disposal system.
- Implement a public education program to educate people on the importance of disposing of waste in an acceptable manner. Emphasize the problems created when deer carcasses are dumped into water bodies.

3.0 FORMATION OF STAKEHOLDER COMMITTEE, PARTNERS AND ORGANIZATIONS

On December 1, 2011, Georgia Environmental Protection Division awarded Golden Triangle a Section 319(h) Grant to develop a comprehensive watershed management plan for Drag Nasty Creek Watershed. The Plan was to be developed using as a guide, USEPA's *Handbook for Developing Watershed Plans to Restore and Protect Our Waters.*

The first step in developing this plan was to establish a local stakeholder/partnership committee. This was done by recruiting representatives from government agencies, local landowners, and others.

Golden Triangle held two (2) public meetings May and December 2012 during the development of the WMP for the purpose of presenting information about the WMP planning process and to gain input from potential stakeholders and partners about their concerns and issues pertaining to water quality and other natural resources in the Drag Nasty Watershed.

The May 2012 listening session contributions were provided by the following people and organizations:

- Golden Triangle RCD Representative Clay County- Joyce Sanders
- Local Landowner Clay County- Lee Hubbard
- Local Landowner Clay County- David Shiver

Phone conversation where held with Frank Yancy from NRCS and Marty McKinney from Water Policy and Planning Center due to not being able to make the meeting.

From the comments and feedback provided in the meeting, the following issues were identified as areas of concern within the Watershed.

- Pollution from livestock, agriculture, and wildlife
- Failing Septic Systems
- Illegal Dumping

The Drag Nasty Creek Partnership was formed in June of 2012. Appendix L provides the Partnership listing.

Golden Triangle RC&D presented a draft of the WMP at the December 13th, 2012 public meeting, and provided an electronic draft to GAEPD. Comments on the draft were incorporated in February and June 2013. A third party reviewer was also requested by GAEPD. Lee Carmon with Resource Management Strategies in Athens was contracted to review the draft WMP in August 2013. Her feedback and comments are incorporated within the document.

4.0 SOURCE ASSESSMENT

Generally, the greatest source of Non-Point pollutants in a rural setting for Fecal Coliform, sedimentation, and Dissolved Oxygen are associated with diffuse runoff of animal waste, erosion sediments from row crop runoff, and failing septic tanks/lines, along with low flow and higher than normal temperatures.

Golden Triangle RC&D and the Watershed Partnership completed water sampling/ monitoring, and Stream Bank assessments conducted from February 2012 to November 2012 of Drag Nasty Creek Watershed. Table 4-0, Potential Causes, below reflects the impairments and potential causes of Non-Point Source Pollutants based on the 2001 TMDL Implementation Plan, water quality monitoring, visual surveys, and Stakeholder input. The total reduction required for the watershed to meet its designated use of fishing is 30%.

Table 4-0 Potential Causes

Identified Impairment	Potential Source/Causes
Fecal Coliform	Failing/Non-Existent Septic Systems Fecal Matter from Feral Hogs Fecal Matter from Wildlife
Nutrient Loading-Sediment	Degraded or limited buffers in Agricultural Fields
Low Dissolved Oxygen	Beaver Ponds Unknown Man-Made Dam Low Flow/High Temperatures
Habitat Alteration	Unstable Banks Trash and Debris resulting from Illegal Dumping Unknown Man-Made Dam

Summary of Source Assessment

From the surveys completed Golden Triangle RC&D agrees with the original 2001 TMDL findings, that there are excessive nutrients/algae blooms, choked overgrown channels, Stream Bank erosion, run-off from agriculture fields, illegal dumping, extreme low/no flow due to unknown man-made dam, large wild feral hog population, and failing/non-existent septic systems as the sources of the Non-Point Source pollutants within Drag Nasty Creek. Table 4.1 ranks the pollutants.

Table 4.1 Non-Point Source Pollutant Rank

Source	Percentage	Reduction Projected
Illegal Dumping	1%	100%
Stream Bank Erosion	10%	5%
Algae Blooms/Over Grown Channels	3%	1%
Man-made Dam	35%	Total Removal
Wild Feral Hogs	16%	10%
Failing/Non Existent Septic	35%	Total Replacement

5.0 ASSESSMENT AND CHARACTERISTICS OF CURRENT CONDITIONS

Drag Nasty Creek (HUC 0313000313) Watershed is located in Southwest Georgia within the Lower/Middle Chattahoochee-Walter F. George Reservoir Watershed (HUC 0313003) which lies within the Lower/Middle Chattahoochee River basin and ends its flow into Walter F. George Lake. The lake and surrounding area provide recreational activities including boating, fishing, and camping.

The Watershed is located within the Southern Hilly Gulf Plain/Coastal Plains ecoregion and covers Clay and Quitman Counties in southwest Georgia. (See Appendix B, Page 48 for county percentages of Watershed.) Drag Nasty Creek Watershed covers an area of 51,777 acres between the two counties. The Creek has been on the GAEPD (d)/305(b) list since 1998 as not supporting its primary designation of fishing. Table 5.0 provides the non-point source pollutant listed for each area.

5.0 Impaired Sections of Drag Nasty Creek

Water Body Segment Name	County Location(s)	Criterion Violated or Water Quality Concern	Listing Status Category 4a, 5 or 1
Drag Nasty Creek (7 miles tributary to bridge)	Clay	FC	4a

The Watershed comprises varying soil types that can lend to sediment loading and Stream Bank alteration due to the soil composition and topography of the landscape. Section 5.1 will discuss the soil types and topography within the area.

Rural farming, agricultural, small urban communities, Private hunting plantations, and managed Pine forests are also prevalent within the watershed. Section 5.2 will detail the Land Cover and Use.

5.1 PHYSICAL FEATURES

5.1.1 SOIL TYPES IN DRAG NASTY CREEK WATERSHED

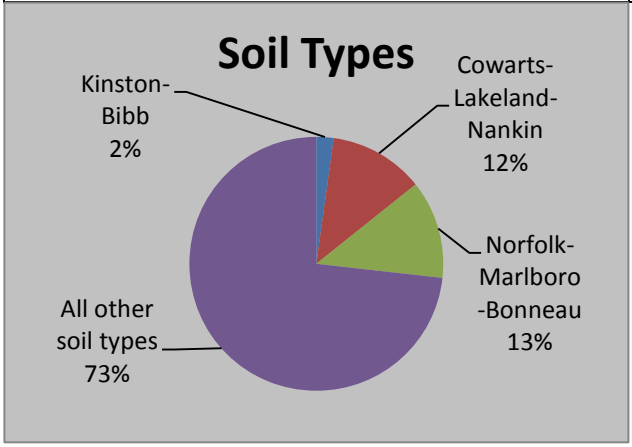
Soil and its inherent physical characteristics are an important component to consider when conducting natural resource management and land-disturbing activities. Permeability and erodability are two factors in particular, which can potentially influence water quality.

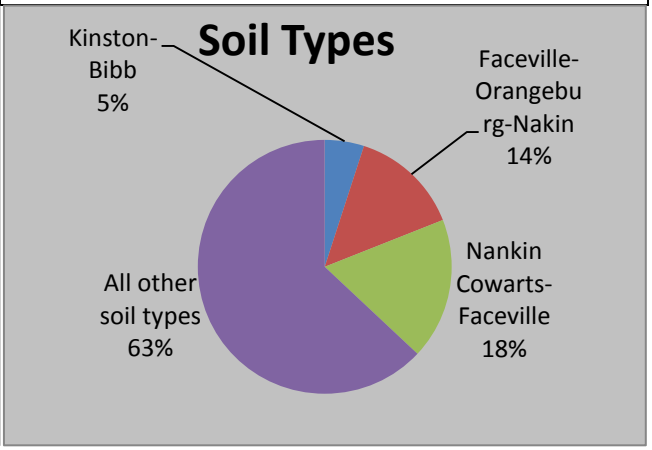
According to the USEPA, “Groundwater contamination by pollutants such as pesticides and nutrients found in the surface releases are affected by the properties of the overlying soil. Soil permeability is one of the controlling factors for the rate at which a contaminant travels through soils. Soils with higher permeability facilitate the transport of pollutants into ground water.” (1998).

The soil types associated within Drag Nasty are described as the Southern Hilly Gulf Coastal Plain formations. This formation is a combination of sandy/ loamy surface layers and clayey sub soils that tend to easily erode. The top three (3) soil associations for the geographical area around Drag Nasty are broken out below by county.

Table 5.1.2 Soil Types

Clay County Soil Associations	Quitman County Soil Associations
Kinston-Bibb: Poorly drained soils that are loamy throughout; on long narrow flood plains	**Kinston-Bibb:** Poorly drained soils that are loamy throughout; on long narrow flood plains
Cowarts-Lakeland-Nankin: Well drained, nearly level to gently sloping soils to strongly sloping soils ridges, with sandy or loamy surface layers and loamy or clayey subsoils.	**Faceville-Orangeburg-Nankin**: Well drained, nearly level to gently sloping soils on broad ridges, with sandy or loamy surface layers and loamy or clayey subsoils.
Norfolk-Marlboro-Bonneau: Well drained, nearly level to gently sloping soils on broad ridges, with sandy or loamy surface layers and loamy or clayey subsoils.	**Nankin-Cowarts Faceville-** Well drained, nearly level to gently sloping soils on broad ridges, with sandy or loamy surface layers and loamy or clayey subsoils.

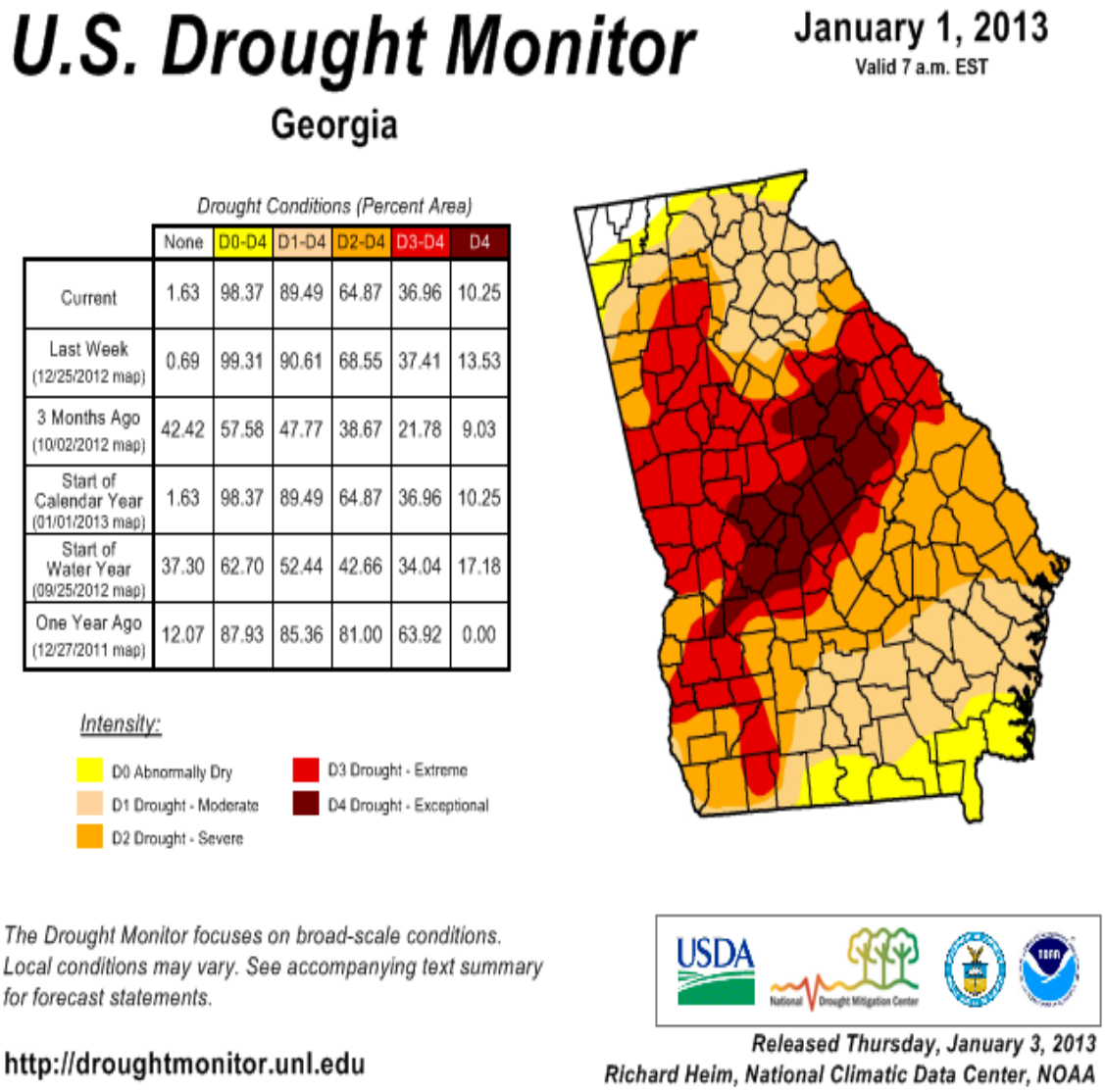




5.1.3 Climate

Data from the National Oceanic and Atmospheric Administration (NOAA) shows that rainfall in Southwest Georgia from January 2000 to January 2012 decreased from an average rainfall of 41.75 inches per year to 39.24 inches per year. The average overall temperature for the same time period January of 2000 to January of 2012 showed an overall increase from 63.2 degrees to 64.6 degrees. The highest temperature changes being reflected in July and August, beginning in 2010 through 2012. (See Figure 5.1.3 for Drought Monitor and Appendix E for NOAA temperature and rainfall data)

Figure 5.1.3



5.1.4 HABITAT

The Lower/Middle Chattahoochee River basin is characterized by numerous streams and tributaries, with dissected irregular plains and gently rolling low hills. These low hills consist of diverse bands of sand, clay, and loamy soil formations, large forest communities, natural vegetation with areas of pasture and cropland planting. Lake Walter F. George Reservoir and the surrounding forest provide the backdrop for a very productive and abundant wildlife habitat. The watershed contains diverse habitats including xeric upland longleaf pine forest, bottomland hardwood swamps, freshwater wetlands, and natural springs. (*2001 DNR Georgia Ecoregion Descriptions, W.F.George-Clean Lake Study, Ground-Water Resources of the Lower/Middle Chattahoochee Subarea 3 1997*)

5.1.5 RECHARGE AREAS

The Watershed lies within the Claiborne aquifer system. The aquifer is characterized as a sandy aquifer and contains more fine-grain sediment. Recharge for this aquifer will happen annually if sufficient rainfall is present. According to the Department of Natural Resources Groundwater Pollution Susceptibility Map (Hydrologic Atlas 20) this area lies within a combination of "Average" and "High" susceptibility zone for Pollutants to enter the re-charge areas through septic systems, agricultural wastes, and run-off of fertilizers. See attachment E for Groundwater Recharge Area Map of Georgia (Hydrologic Atlas 18) and attachment F for Groundwater Pollution Susceptibility Map of Georgia

5.1.6 FLOOD PLAINS

Flood plains do exist within the Watershed, notably along the entire 7(seven) mile length on the Clay County line. See Attachment G, for FEMA Flood Plain Map.

5.1.7 WETLANDS

Drag Nasty contain 379.84 acres of woody wetlands and 10.01 acres of herbaceous wetlands. See attachment H for USFWS Wetland Map.

5.1.8 TOPOGRAPHY

The dissected irregular plains and gently rolling low hills of the Southern Hilly Gulf Coastal Plain ecoregion developed over diverse bands of sand, clay, and marl formations. The heterogeneous region that stretches west across Alabama and into Mississippi, has a mix of clayey, loamy, and sandy soils. It has more rolling topography, higher elevations, and streams have increased gradient. The natural vegetation is mostly oak-hickory-pine forest, and to the south begins a transition into southern mixed forest.

5.2 LAND USE/COVER AND POPULATIONS CHARACTERISTICS

5.2.1 LAND COVER

The health and stability of aquatic ecosystems is directly linked to the health and condition of the terrestrial ecosystems. Many factors can affect this balance:

- Land Use
- Deforestation
- Population Size

All land use has an effect on water quality, whether positive or negative. In forests and other areas with good vegetation cover and little disturbance, most rainfall soaks into the soil, collecting in recharge areas underground rather than runoff. In highly populated areas with pavement and buildings, little rainfall can soak into the soil, which can cause high runoffs events. The USGS Land Cover Database indicates the Watershed is comprised of the following uses:

Table 5.2.1 Land Cover

Land Cover Classification	Drag Nasty Creek Acres
Open Water	26.24
Low Intensity Residential	0
High Intensity Residential	0
Commercial/Ind/Trans	2.67
Barren Rock/Sand/Clay	0
Quarries/Mines and Transitional	812.38
Forest	4,523,35
Row Crops	1,563.83
Pasture/Hay	850.19
Urban/Recreational Grass	0
Woody Wetlands	379.84
Emergent Herbaceous Wetlands	10.01

USGS Land Cover Database 2006

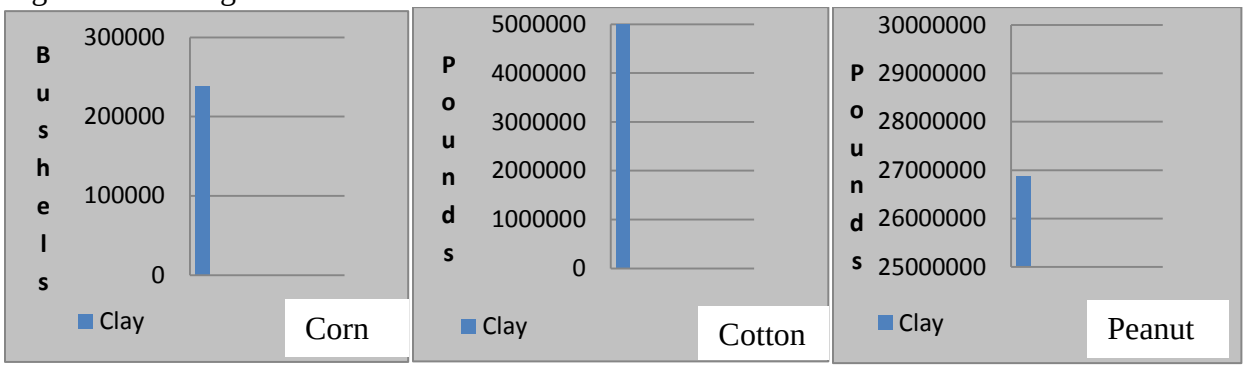
5.2.2 LAND USE

The Watershed is mainly forest and agriculture fields, with very small separated urban communities. Land use within the project area is predominantly agricultural, with row crop production being the main agricultural practice. The major agricultural row crop production is peanuts, cotton and corn. Managed Pine Forest and hunting plantations are also prevalent within the area.

5.2.3 AGRICULTURAL USE

Approximately 1,563.83 acres within Clay County are used as agriculture row crop production. There are approximately 3 (three) fields that have drainage area's leading into the creek. Within these fields degraded buffers were observed. See attachment I for map.

Figure 5.2.3.1 Agriculture Production



5.2.5 WILDLIFE

Drag Nasty Creek Watershed contains mixed forest, woodlands, and pine plantations. These area's provide for a unique population of wildlife and plant species including many threatened and endangered species such as the Alligator Snapping Turtle (Macrochelys temminikii) and the Oval Pigtoe Mussel (Pleurobema pyriforme). White tail deer, raccoons, squirrels, feral hogs, migratory birds and water fowl have been observed within the creek. According to GAWRD the abundance of wildlife within the watershed can directly contribute to the Fecal Coliform levels. (See Appendices D Page 64 for full listing of Species)

5.2.6 URBAN RUN-OFF

Failing and non-existent septic system where discussed by the Partnership as an issue of concern within the Watershed. There is a small RV mobile home community upstream on Highway 39. The Clay County Administrator and County Health Department found that the individual septic systems were installed in the 1950's and had not been replaced since the original installation. The failure rate of the septic systems is therefore gauged at a 100% failure rate. Golden Triangle RC&D and Clay County are working to better define sources from the septic system and determine the best course of action to repair or install new systems. Rubes Creek WMP that focused on Septic System Repair and Replacement will be utilized as a guide for this issue. (See attachmentO)

Supplemental- Golden Triangle RC&D is partnering with Rolling Hills RC&D to work with Clay County to pay for the installation of BMPs for new septic systems.

5.2.7 DEMOGRAPHICS

The 2012 US Census Bureau indicates a 2.1 % decline in over-all population for the Clay County area. This decrease in population is in stark contrast to the number of farm and acreage increases from 2002 to 2007 according to the USDA 2007 Census Report. See attachment J.

5.3 WATERBODY AND WATERSHED CONDITIONS

5.3.1 SUMMARY OF VISUAL SURVEY

A Watershed visual stream assessment survey was conducted from February 2012 to August of 2012, supplemented with historical land use analyses. The purpose of survey was to collect data on the stream conditions, and find potential sources of the pollutants. The data collected will be used to document and shape this Watershed Management Plan implementation by providing:

- Baseline for Stream Conditions
- Status of Existing Channels
- Susceptibility and Signs of Erosion and Bank Degradation
- Restoration Actions

Stream Assessment Parameter	Stream Condition
Channel/Bank Erosion	Severe bank erosion, degradation, overgrowth, and choked channels was observed
Excessive Nutrients	Overgrowth and algae blooms were observed
Blockages including no/low flow	Illegal dumping was observed which blocked or diverted stream flow
Water Appearance	Algae blooms, very brackish, and foul smelling
Wildlife signs	Abundant wildlife signs were observed on the banks with clear watering pathways, visible footprints, and dead carcasses.
Agricultural Runoff	Observed some failing or destroyed buffers that will require repair.
Urban Runoff	Septic tank failure within mobile home community upstream of creek.
Other	Man-made dam

OTHER- UNKNOWN MAN MADE DAM

An unknown and believed to be unpermitted dam with pumping equipment was found on the Clay County side of Drag Nasty near the Highway 39 Bridge. This was observed and photographed while completing Stream Assessments on the Creek. The US Army Corps of Engineers was notified about the dam and pumping equipment for further investigation due to having property that runs alongside of Drag Nasty Creek. The dam is blocking almost all stream flow of the Creek at this location. (See Attachment P for Pictures of Dam)

5.3.2 WATER QUALITY STANDARDS

The Clean Water Act and EPA's Water Quality Planning and Management Regulations (40 **CFR** Part 130) require states to develop total maximum daily loads (TMDLs) for their water bodies that are not meeting their designated uses due to pollutants. The TMDL process establishes the allowable loadings of pollutants or other quantifiable parameters for a water body based on the relationship between pollution sources and in- stream water quality conditions, so that states can establish water quality based controls to reduce pollution from both Point and Nonpoint Sources and restore and maintain the quality of their water resources *(USEPA, 1991).*

These Standards are established to provide and enhance the following:

- Water quality and prevention of pollution
- Protect the public health and welfare of drinking water supplies
- Conservation of fish, wildlife and other beneficial aquatic life
- Agricultural, industrial, recreational, and other reasonable and necessary uses to maintain and improve the biological integrity of the waters of the State

Table 5.3.2 below shows the recommended ranges approved by Georgia Environmental Protection Division (*391-3-6-.03 Water Use Classifications and Water Quality Standards)*

Table 5.3.2 Water Quality Standards

Water Quality Characteristic of Concern	Ecological or Health Effect	Standard	Notes
Dissolved Oxygen	High levels of Dissolved Oxygen are necessary for fish respiration	5.0 mg/l average 4.0 mg/l minimum	GA water quality standards
Temperature	Fish suffer metabolic stress at high temperatures.	90 c maximum	GA water quality standards
Fecal Coliform	Fecal Coliforms do not pose a health threat but serve as an indicator for bacteria that can cause illness in humans and aquatic life.	200 col/100ml(May-Oct) 1000 col/100 ml(Nov - April) 4000 col/100 ml(anytime)	GA water quality standards
Phosphorus	Macronutrient affects aquatic productivity and trophic state.	No effective standard in GA	Water body specific
Total Nitrogen	Macronutrient affects aquatic productivity and trophic state.	4.0 mg/l	GA water quality standards

5.3 WATER QUALITY DATA

Fecal Coliform

The primary pollutant for Drag Nasty Creek is Fecal Coliform bacteria. A total of 33 samples were collected for Fecal Coliform bacteria from each monitoring site within Drag Nasty Creek conducted from February 2012 to November 2012. Based on the data collected the overall readings fell within or below the standard of 150 cfu/100ml with the exception of March (367), May (167), and August (167) being above normal. The average Fecal Coliform reading during the monitoring period was 172 cfu/100 ml.

Dissolved Oxygen

A total of 33 samples were collected for dissolved oxygen from each monitoring site within Drag Nasty Creek conducted from February 2012 to November 2012.

The Dissolved Oxygen levels within the creek varied from the low range end to above the optimal levels of between 5 and 6 ppm. February (8.5), April (7.9), June (7.3), and November (7.6) of 2012 exceeded the optimum level, with November dropping to 3.9. The average reading for dissolved oxygen during the monitoring period was 6.7 ppm.

Nitrates/Phosphates

A total of 33 samples were collected for Nitrates and Phosphates from each monitoring site within Drag Nasty Creek conducted from February 2012 to November 2012.

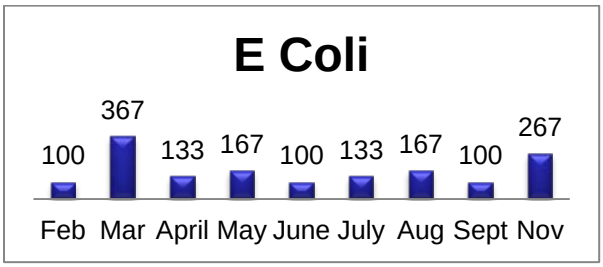
The Nitrates and Phosphate level within the creek varied from below or at normal range to above optimal levels. Nitrate levels are typically below 1 ppm and Phosphates below 0.1 ppm. Nitrate levels exceeded the optimum level for the entire monitoring period with the exception of November. The average reading during the monitoring period was 4.71. The Phosphate levels were within normal range or below with the exception of March 2012 with a reading of 1 ppm.

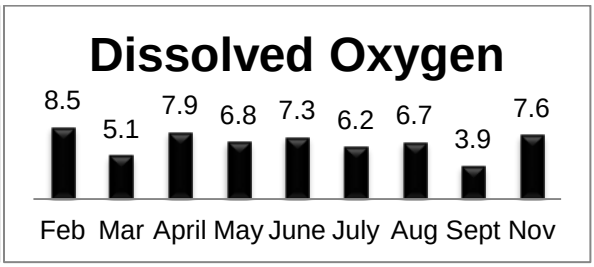
Sediment -Stream Bank Erosion

A total of 4 (four) sites within the creek show signs of erosion sediment issues and Stream Bank degradation, and overgrowth.

Table 5.3.4 Summary of Drag Nasty Monitoring Results

Date and Time	02/21/2012	03/21/2012	04/24/2012	05/24/2012	06/26/2012	07/23/2012	08/21/2012	09/28/2012	11/07/2012
Air Temp °C	14	22	17	22	25	29	25	25	14
Water Temp °C	21	28	20	26	29	31	28	28	16.5
pH	6	6	6	6	6.8	6.8	6.25	6.75	6
Dissolved Oxygen mg/L	8.5	5.1	7.9	6.8	7.3	6.2	6.7	3.9	7.6
DO % Saturation	82.27	58.45	81.69	77.93	88.69	81.25	81.4	47.38	73.56
Conductivity µs/cm	30	40	40	40	40	50	40	70	50
Nitrate-Nitrogen mg/L	4.4	2.2	6.6	4.4	6.6	4.4	4.4	-	0
Ortho-Phosphate mg/L	0	1	0.1	0.1	0.1	0	0	0	-
E Coli cfu/100mL	100	367	133	167	100	133	167	100	267





5.3.5 LAND MANAGEMENT ORDINANCES

Clay County adopted in 2005 Land Management Ordinances to help protect the natural resource of the Watershed. This included Wetland Protection, Ground Water Recharge, and River Corridor Plans. (See Attachment Q for ordinances)

6.0 Recommended Best Management Practices/Strategies

The Drag Nasty Creek Watershed Partnership (DNWP) will guide the implementation of the Drag Nasty Creek WMP. The management strategies will focus on environmental, programmatic, and social indicators in developing BMPs (Best Management Practices) for the critical areas that have been outlined, specifically seven (7) miles of tributary to Lake W. F. George.

Non-Point Source BMPs approved by NCRS specifications will include both structural and non-structural approaches for agriculture and urban pollutant load reductions. Through these approaches, we purpose to reduce the availability of pollutants and reduce the amount of pollutants generated. Educational outreach and workshops will also be utilized with the BMP practices. See Section 7.0 for Education outreach outline.

Structural and Nonstructural Agriculture and Urban BMPs will include but not be limited erosion control stabilization and stream bank protection, riparian buffers, Septic system replacement, wildlife management of feral hogs by removal, and removal of man- made dam.

6.1 Implementation of Best Management Practices (BMPs)

6.1.2 Structural BMPs

- **Stream bank stability and stream bank protection – Address Sedimentation/Dissolved Oxygen**

  Stream bank stabilization provides multiple benefits including erosion and land loss reduction, water flow, nutrient reductions, and habitat enhancements.

- **Failing Septic Systems**

  Repair and Replacement of failing septic systems would decrease the pathogen load to the surface waters, especially where the failing systems are in immediate vicinity or drainage areas.

6.1.3 Non-Structural BMPs

- **Riparian Buffers- Address Sedimentation/Dissolved Oxygen**

  Protect water quality by slowing nutrient, pollutants, and sediment runoff. Buffers can either be herbaceous or forested. They can provide vegetation types, water quality protection, groundwater recharge, and wildlife habitat.

- **Watershed debris and trash clean-up-Address habitat alteration**

  While conducting visual surveys of the Watershed, it was noted that Drag Nasty Creek within the Clay County side near the Highway 76 Bridge was being used for illegal dumping of old furniture, tires, and appliances. Not only is litter in streams unsightly, but trash and other debris in streams negatively impacts aquatic organisms. Larger solid wastes can alter habitats while smaller items can be ingested or cause entanglement resulting in detrimental health effects or death to aquatic life.

- **Wildlife Management**

  Removal of the large wild feral hog population will help with the Fecal Coliform reductions, sediment buildup, and bank degradation within the creek.

- **Removal of Unknown Man-Made Dam**

  An unknown and believed to be unpermitted dam with pumping equipment was found on the Clay County side of Drag Nasty near the Highway 39 Bridge. This was observed and photographed while completing stream assessments on the creek. The US Army Corps of Engineers was notified about the dam and pumping equipment for further investigation due to having property that runs alongside of Drag Nasty Creek. The dam is blocking almost all stream flow of the creek at this location. It is also unknown at this point if the man-made damn is being used to irrigate an adjacent agricultural field.

6.2 Load Reduction Methodology Region 5 Model 5

The Region 5 Model 5 Load Reduction model will be used to estimate the load reducing effects created by the installation of planned BMPs. The model uses the pollutants controlled calculation and documentation for Section 319 Watershed training manual. The program is segmented into five different BMP categories for estimation of load reductions. These categories are gully stabilization, bank stabilization, agricultural fields, feedlots and urban runoff. Many different subcategories are listed under each category. The program only gives an estimation of load reduction and makes many assumptions in doing so. Load reduction calculations are given for sedimentation, phosphorus, and nitrogen. Monitoring is the only true way to determine actual load reductions achieved by BMP installations.

Load Reduction Methodology

- The load reduction model requires the input of a soil rainfall/runoff erosive number of "R" value, for load reduction estimations. Clay County has a "R" value of 357 that will be used for the calculation.

- The load reduction model requires that a soil erodibility factor, or "K" factor, is used to estimate load reductions. Soils within Georgia have "K" values that range from 0.05 to 0.43. The majorities of the soils within the Watershed is medium textured soils, such as silt loam and have "K" values from 0.25 to 0.40. An average "K" value of 0.18 will be used to calculate load reduction values.

- A length of slope and steepness factor, or "LS" factor, is required to calculate load reduction values. The "LS" value is a site specific value that must be calculated from each BMP site. Most crop lands in Georgia have slope lengths that range from 60 to 250 feet. For load reduction calculations an average of 150 feet for slope length and an average of 5% slope will be used. This will be a "LS" factor value of 0.44.

- The Region 5 Model requires a cover management factor, or "C" factor in order to calculate load reductions. The program automatically inserts a "C" value into the calculation based on the county in which the BMP is installed. "C" factor values range from 0.20 to 0.31 within the five counties Watershed. An average value of 0.25 will be used in the load reduction calculations.

- The Region 5 Model requires a support practice factor, or "P" factor, to calculate load reductions. The model automatically inserts a "P" factor based on the county/counties selected. The five counties with the Watershed have "P" factors that range from 0.95 to 1.00. A "P" value of 1.00 will be used to calculate load reductions.

- The Region 5 Model gives an estimated soil lost per year in ton/acre/yr. Each of the two counties within the Watershed has different soil loss estimations according to the model. The two counties range from 7.46 to 7.22 tons/acre/yr for soil loss. An average number of 7.34 will be used to calculate load reductions.

- Wild hog territory runs an average of 4 square miles to 50 square miles depending on availability of food, water, shade and escape cover. The removal area will be scoped for the Bridge section on Highway 39 in Clay County. *(Jack Mayer Savannah National Laboratory Akien South Carolina, History and Ecology Wild Hogs in the Southeast Appendices N)*

- The BMPs to be completed are an estimate based on applications that have been filled out by Landowners and Shareholders. The BMPs installation sites are subject to Landowner participation.

6.3 Recommended Best Management Strategies and Load Reductions

The following table is an estimation of the BMPs that will be completed within Phase 1. The table contains an estimated number of acres that will be affected or a number of livestock to be excluded. Completion of the BMPs will depend heavily on Landowner participation and desires. Table 6-4 provides the type of BMP recommended and projected number for installation.

Pollutant	BMP Type	Number of BMPs Installed	Sediment Reduction (lbs/year)	Phosphorous Reduction (lbs/year)	Nitrogen Reduction (lbs/year)
Sediment	Riparian Buffers	3 (.25 miles per	168	159	300
Sediment	Stream Crossing Stability	3 (.25 miles per	27	23	45.9
Fecal Coliform	Septic Installations	7			
Fecal Coliform	Feral Hog Remvoal				
Habitat Alteration	Man Made Dam				

Estimated Cost

BMP Type	Critical Number	Estimated Costs
Riparian Buffers	2	$3,000.00 per site = $6,000.00
Stream Bank Stability	2	$3,000.00 per site = $6,000.00
Septic Installations	7	$5,833 = $40,831.00
Dredging of Big Slough	2 miles	At $3,000.00 per mile = $6,000.00

6.3.3 Septic Installations 1*

Due to the specific Failing and non-existent septic systems within the small RV mobile home community in Clay County, new installations of Septic Systems are recommended. Once installation is complete monitoring for Fecal Coliform pollutants will take place within Drag Nasty Creek.

6.3.4 Wildlife Management Feral Hog Removal 2*

Fencing- Fencing can be a way to prevent hogs from entering crop fields; however, this method can be very expensive and time consuming. It is generally not practical except in small areas such as around gardens. An effective fence needs to be at least six feet tall and have one foot buried underground. Another form of fence that may prove effective is electric fencing.

Hunting- Hunting hogs with firearms and dogs are another way of control. In Georgia, hogs can be hunted at night using a six volt or smaller spotlight. Because the Georgia Department of Natural Resources considers hogs a non-native species, there is no season or limit on them and they can be hunted any time of the year with a Georgia hunting license on private lands. Dog hunting can greatly increase the chances of locating groups of hogs. This method of hunting is done by releasing dogs to search an area while the hunter is on horseback or on foot. Once the dogs have located the hog, the hunter can go to the dogs and dispatch the hog. *(Wildlife Damage Warnell School of Forestry and Natural Resources 2007 Managing Wildlife Damage Feral Swine)* See Attachment N

1, 2*Within the Region 5 Model there is not a specific calculation for load reduction for entire Septic Replacement and Hog Removal. Using our best professional judgment the reductions will be monitored through Water Quality testing for Fecal Coliform loads. Hog Removal information also provided by Lance Renfrew with River Valley Regional Commission.

6.3.5 Man-Made Dam

Golden Triangle RC&D recommends that the man-made dam be completely removed to restore stream flow within the Creek.

6.3.6 Total BMP Load Reductions

The estimated load reductions for the BMPs to be targeted throughout the Drag Nasty Creek Watershed Management Plan will make a positive impact on the water quality within the Watershed. While immediate results may not be seen, the positive impact should be seen within a few years. The estimated load reductions for all the BMPs combined are as follows:

Table 6.3.6 Total Load Reductions from BMP Installation

Pollutant	BMP Load Reduction	Unit
Sediment	113,457	tons/year
Phosphorus	22,510	pounds/year
Nitrogen	232,127.90	pounds/year

7.0 Public Education and Outreach

Education and Outreach components are essential for this plan to reach wide and varied audiences on topics regarding Non-Point Source pollution, aquatic habitats, and the importance of protecting and improving water quality within the Watershed. This will include Landowner, Homeowners, Stakeholders, County Administration and workers, along with teacher and student education.

Educating students on the value of Georgia's water resources and how they can help is essential in creating a sense of environmental stewardship. Environmental awareness is not meant to be short-lived, but rather when instilled at a young age, can persist throughout a lifetime. Children are the future and their knowledge of environmental impacts is key to the preservation of our valuable natural resources.

Education and Outreach will be completed by utilizing the following:

Education Component	Target Audience
Adopt –A- Stream Monitoring	All
Rivers-A-Live Clean-up	All
Erosion and Sediment Control	Landowners, Homeowners, County Administration and workers
BMP demonstrations/Field days/Workshops	Landowners, Homeowners, County Administration and workers
Septic Tank Awareness	Landowners, Homeowners
Volunteering	All

1) Strategy:

The main strategy of the Drag Nasty Creek Management Plan is to improve the water quality in the impaired sections of the Watershed and protect the water quality in the remaining part of the Watershed in order for the entire Watershed to be fully supporting. This would allow the Watershed to be removed from the EPA's 305/ (b) 303 (d) lists. The education and outreach will be designed to:

a) Increase Public awareness of BMPs and how they are used to protect and improve water quality within the Drag Nasty Creek Watershed

b) Increase public awareness of the Ecological significance of Drag Nasty Creek Watershed

c) Increase public awareness of how farming/land use practices effect the Watershed.

d) Increase Public awareness of the Endangered and Protected Species located with the Drag Nasty Creek Watershed.

2) Implementation:

The following plan outlines what actions will be taken in order to implement the education and outreach strategies. Many of the programs within the NRCS such as EQIP and WHIP (Wildlife Habitat Incentive Program) use the same or similar BMP strategies that the Drag Nasty Creek Watershed Program will use. Therefore, the Drag Nasty Creek Watershed Program Manager will work closely with NRCS, and the Department of Natural Resources personnel to implement the education plan. The following strategies will be implemented:

a) Increase public awareness of the value and long-term environmental advantages of protecting and improving the Watershed.

b) Conduct BMP demonstration, erosion and sediment control workshops

c) Promote and Educate Public/Landowners on different types of BMPs available, their effectiveness on improving water quality and cost-sharing under the 319 grant and other programs that could be available to them

d) Erect Educational signs within the Watershed boundaries

e) Educate the public on how and why septic tank repair/upkeep and if needed new installation is important for the Drag Nasty Creek Watershed.

The Drag Nasty Creek Watershed Program will implement these strategies by using the following plan for educational and outreach activities in the Watershed community.

a) Hold quarterly Drag Nasty Creek Partnership meetings. Minutes from the meeting will be updated on the Golden Triangle RC&D website under the Drag Nasty Creek Partnership page.

b) Conduct 2 (two) BMPs Field day demonstration projects

c) Conduct 2 (two) Adopt-A-Stream (1) and Rivers Alive training days (1), and clean-up events.

d) Create Educational brochures for why Watersheds are important, how pollutants cause problems, lawn/garden and septic tank awareness

e) Produce Public Service Announcements through local newspapers to promote activities and events related to the Watershed.

f) Erect two (2) Watershed education signs on the major highways and roads entering the Watershed area. See Figure 6-1, Page 35, for a picture of the Watershed sign and see Figure 7-1, Page 25, and Table 7-2, Page 36, for a map and location of Watershed sign.

Figure 7-1 Watershed Boundary Sign

YOU ARE ENTERING THE DRAG NASTY CREEK WATERSHED
Please Protect Our Waters

Paid for in part through a grant from the USEPA in partnership with Georgia Environmental Protection Division under the Provision of Section 319(h) of the Clean Water Act.

Figure 7-2 Watershed Boundary Sign Location Map

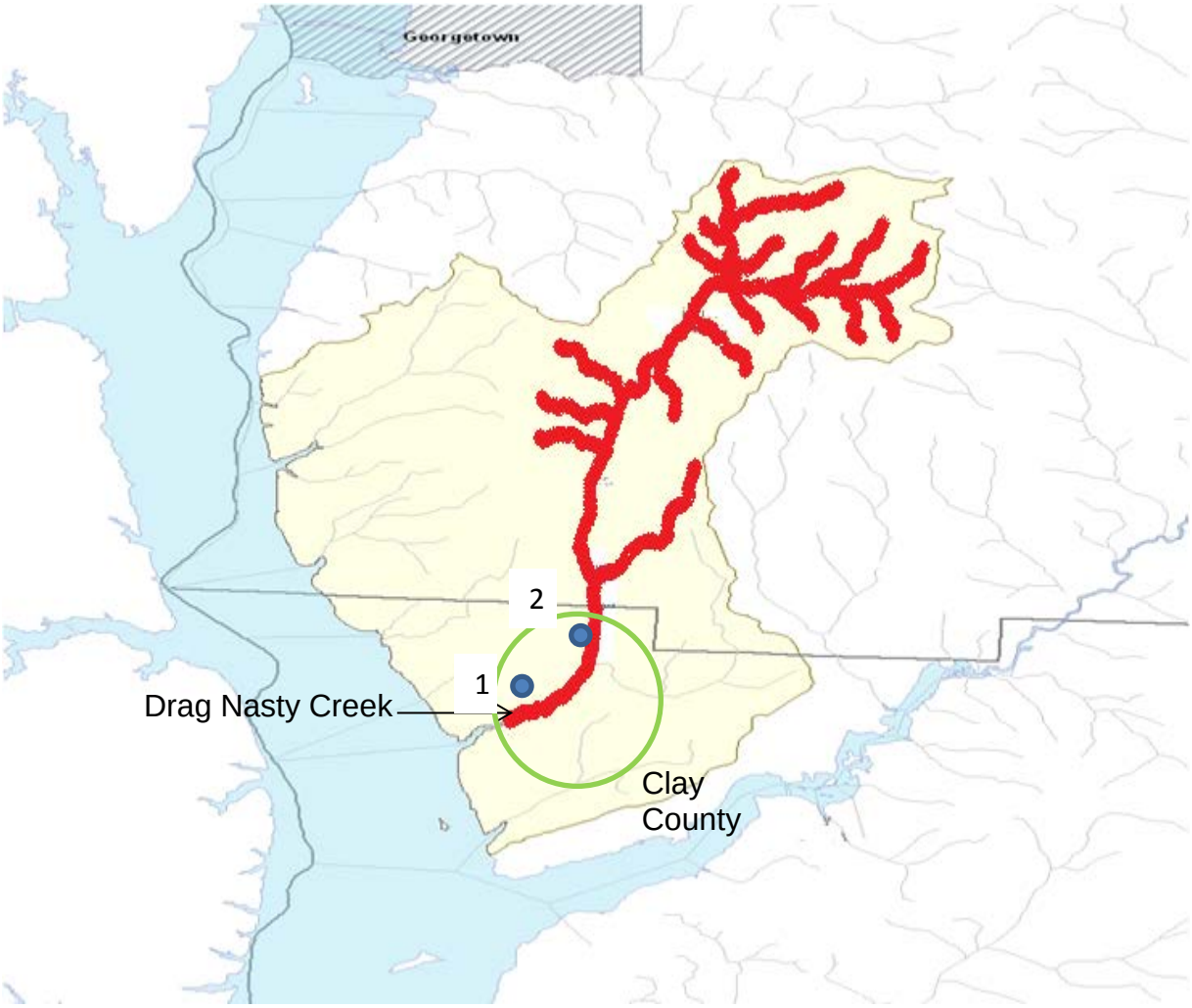


Table 7-2 Watershed Boundary Sign Locations Description

Map Number from Figure 6-2	Description of Location
#1	CR-76 at bridge north towards U.S. Highway 39
#2	CR-76

8.0 Non-Point Source Long Term Monitoring

Golden Triangle RC&D, along with the Partnership, and Stakeholders recommend a long term monitoring assessment through biological, chemical and bacteriological data collection. This long term approach will ensure measureable data on the effectiveness of the BMP installations, and expected load reductions of Fecal Coliform within the Watershed.

Table 8-2

Water Quality Monitoring Type	Parameter Assessed
Biological	Aquatic invertebrates Habitat
Chemical	Temperature Ph Turbidity Conductivity
Bacteriological	Fecal Coliform

Biological Sampling

Sampling aquatic invertebrates can be helpful in analyzing water quality. Presence of certain organisms living in the stream can reflect health conditions of the stream. A healthy stream is inhabited by a diverse array of organisms. Habitat assessments are completed based on In-stream conditions, channel morphology, Stream Bank structure, and riparian vegetation.

Chemical Sampling

Chemical sampling of our water resources measures a wide variety of parameters to assess water quality. Chemical makeup of water can affect the way water looks, smells, or tastes. Parameters include: temperature, pH, turbidity, Dissolved Oxygen and nutrients. Nutrients monitored include total phosphorous (TP) and total nitrogen (TN).

Bacterial Sampling

Bacterial Sampling measures and assesses any health risk due to contamination of surface waters.

9.0 Implementation Milestones, Evaluation and Revision

The goal of this WMP is to utilize and implement the best practices that will restore the condition of the Creek to its designated use, educate the community about water quality and how to protect it, and be cost effective for the land owner.

With the approval of the Watershed Management Plan by GAEPD, it may provide Golden Triangle RC&D with opportunities to obtain 319 (h) grant money covering 60% of the implementation costs. Additional funding sources will need to be acquired; this will be done through the varying cost sharing programs provided by NRC and individual Landowner cost share participation. Evaluation of each land owners request is recommended to find the most beneficial program to improve the water quality and reduce pollutants within the creeks. Listed below are descriptions of some of the programs available through NRCS that would fit the needs of the project.

9.1 Other Funding Needs and Sources

Conservation Reserve Program (CRP) This program was established as a conservation provision of the Farm Bill to encourage and assist producers who are willing to set aside environmentally sensitive land (highly erodible, riparian) for conservation benefits. Producers enrolled in CRP plant long-term, resource-conserving covers to improve the quality of water, control soil erosion, and develop wildlife habitat. In return, FSA provides participants with rental payments and cost-share assistance. Contract duration is between 10 and 15 years, and Landowner may receive a maximum of $50,000 annually in payments.

Environmental Quality Incentives Program (EQIP): The Environmental Quality Incentives Program (EQIP) is a voluntary program that provides financial and technical assistance to agricultural producers through contracts up to a maximum term of ten years in length. These contracts provide financial assistance to help plan and implement conservation practices that address natural resource concerns and for opportunities to improve soil, water, plant, animal, air and related resources on agricultural land and non-industrial private forestland. In addition, a purpose of EQIP is to help producers meet Federal, State, Tribal and local environmental regulations. Landowner may receive a maximum of $50,000 annually in payments.

Wildlife Habitat Incentive Program (WHIP) The Wildlife Habitat Incentive Program (WHIP) is a voluntary program for conservation-minded Landowner who wants to develop and improve wildlife habitat on agricultural land, nonindustrial private forest land, and Indian land. The Food, Conservation, and Energy Act of 2008 reauthorized WHIP as a voluntary approach to improving wildlife habitat in our Nation. The Natural Resources Conservation Service administers WHIP to provide both technical assistance and up to 75 percent cost-share assistance to establish and improve fish and wildlife habitat.

WHIP cost-share agreements between NRCS and the participant generally last from one year after the last conservation practice is implemented but not more than 10 years from the date the agreement is signed.

The NRCS will oversee the BMP projects to be certain that they are completed using the NRCS certified guidelines. A NRCS representative will provide a final approval form after projects are completed.

9.2 Implementation Milestones, Evaluation and Revision

Table 9.2 Project Activities 2013-2016

Activity	Responsible Entity	Schedule			
Planned Year		**2013**	**2014**	**2015**	**2016**
Identify high risk priority areas for BMPS	Watershed Stakeholder Partnership/GTRCD/ NRCS/USFWS/Local Cities/Counties	10/13	10/14	10/15	10/16
Contract with Landowner for installation of BMPs	Watershed Stakeholder Partnership/GTRCD	10/13	10/14	10/15	10/16
Install BMPs	Watershed Stakeholder Partnership/GTRCD	11/13	11/14	11/15	11/16
Hold quarterly Drag Nasty Watershed Partnership/Stakeholder meetings	GTRCD	11/13	2/14,5/14, 8/14,10/14	11/15	2/16,5/16 8/16,10/16
Update on an on-going basis activities within the watershed on the Golden Triangle DNWP website	GTRCD	11/13	9/14	11/15	9/16
Conduct two BMP field days	Watershed Stakeholder Partnership/GTRCD/ NRCS/USFWS/Local City/Counties	11/13	11/14	11/15	11/16
Partner with school groups/organizations	Watershed Stakeholder Partnership/GTRCD/ NRCS/USFWS/Local City/Counties	11/13	3/14	11/15	3/16
Conduct water sampling	GTRCD	10/13 11/13 12/13	2/14, 5/14,8/14 10/14	10/15 11/15 12/15	2/16, 5/16,8/16 10/16
Calculate load reductions BMP	GTRCD	10/13	9/14	10/15	9/16
Hold Adopt-A-Stream trainings courses	GTRCD/Georgia Adopt-A-Stream	10/13	2/14	10/15	2/16

Table 9.2.1 Milestones

MILESTONE	RESPONSBILE ENTITY	STARTING DATES	COMPLETION DATES
Negotiate with Landowner to implement BMPs	Watershed Stakeholder Partnership/GTRCD	10/13	9/16
Conduct Public Education and Outreach	Watershed Stakeholder Partnership/GTRCD/ NRCS/USFWS/ Local City and Counties	10/13	9/16
Develop BMP conservation plans	Watershed Stakeholder Partnership/GTRCD/ NRCS/USFWS	10/13	9/16
Install BMPs	Watershed Stakeholder Partnership/GTRCD	10/13	11/15
Update WMP after installing BMPs	GTRCD	11/13	11/15
Conduct Water Quality and Other Monitoring	GTRCD	10/13	9/16
Analyze Water Quality Data to Track Effectiveness	GTRCD	12/14	9/16
Obtain GAEPD's and Other Water Quality Data	GTRCD	12/14	9/16
Report Load Reductions	GTRCD	12/14	9/16
Evaluate Progress of Management Measures	Watershed Stakeholder Partnership/GTRCD	9/14	9/16

9.3 Evaluation and Assessment of Progress

The effectiveness of the recommended BMPs for the Drag Nasty Creek Watershed Management Plan will be tracked for the 3 (three) year period both by qualitative and quantitative measures.

Type of Indicator	Qualitative Measures	Type of Indicator	Quantitative Measures
Social Social Social Social Social Social Programmatic	• Individual/Group Participation • Partnership Meeting • Workshops • BMP Field Days • Adopt-A-Stream Training • Clean-up Events • Education and Outreach Effectiveness • Pre-Post Surveys	Environmental Environmental Environmental Programmatic Programmatic	• Watershed Monitoring Results • Adopt-A-Stream testing (including US Fish and Wildlife biological monitoring/chemical testing) • Load Reduction Reporting(monitoring for BMP effectiveness • Installation of new Septic systems • Removal of wild hog population

The Drag Nasty Creek Program Manager will administer and track the progress of the recommended management measures, monitor the effectiveness of BMPs and associated load reductions, and completion of the tasks and milestones.

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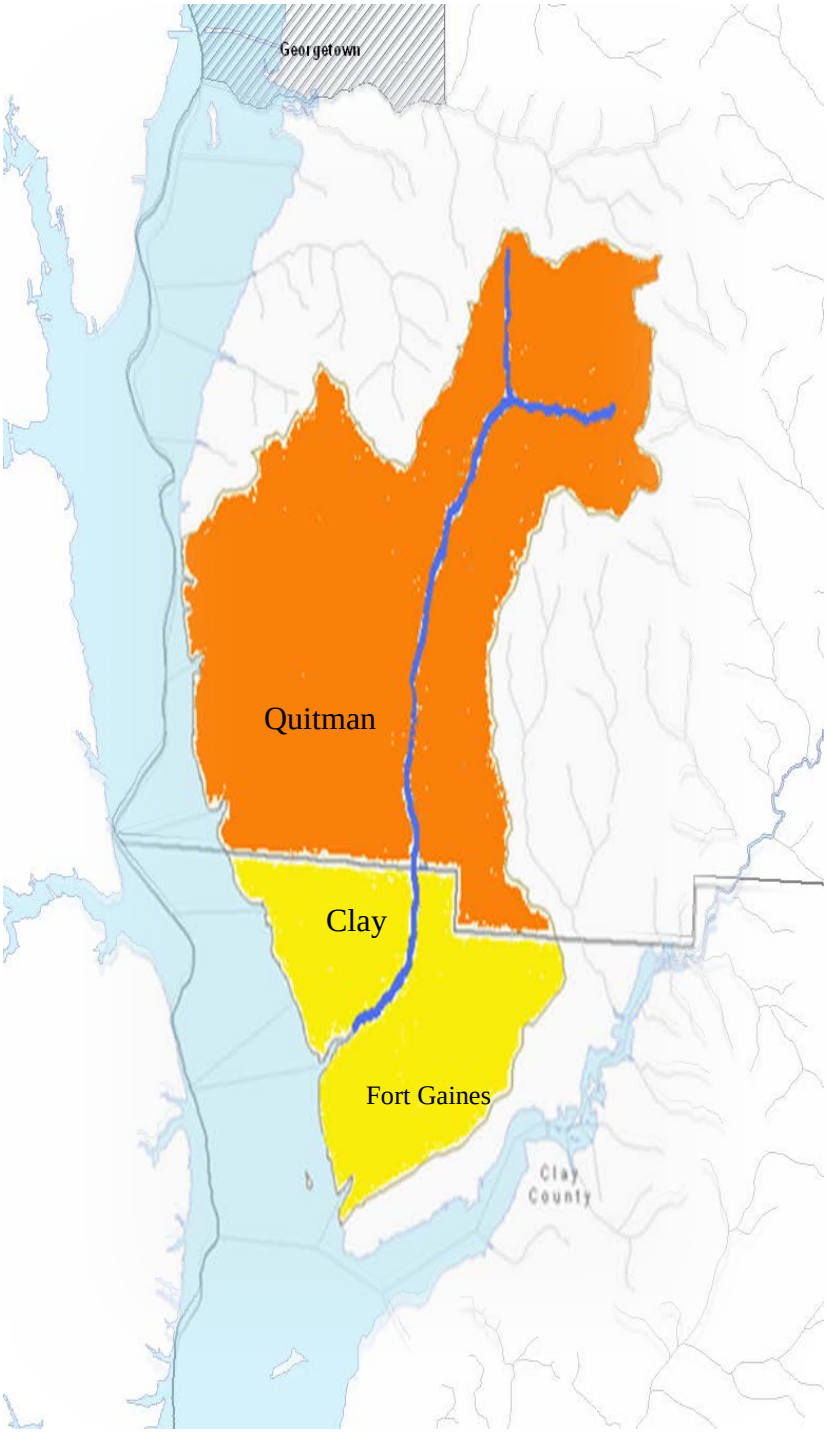
Appendix A Drag Nasty Creek Watershed Boundaries



Legend

Drag Nasty Creek

Drag Nasty Towns

Georgetown

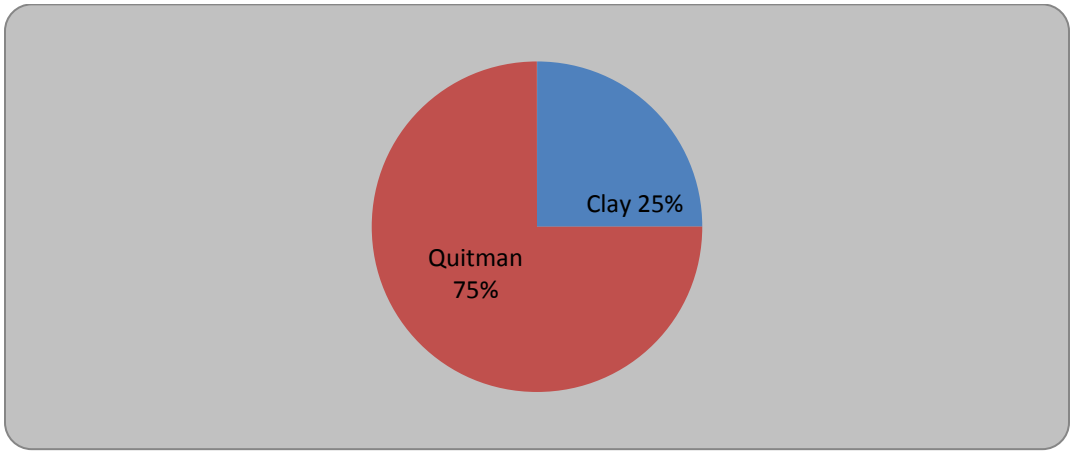
Fort Gaines

Drag Nasty Counties

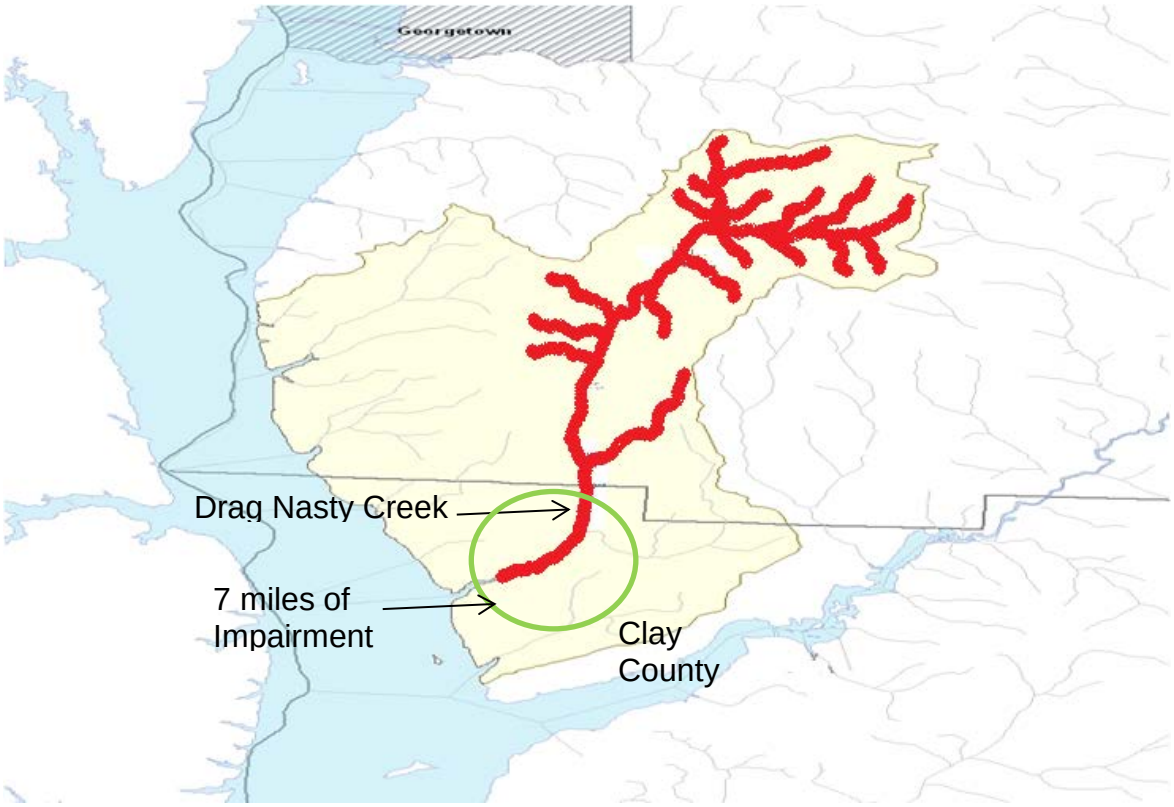
Quitman

Clay

Attachment B Land Area Percentages by County



Appendix C Drag Nasty Creek Impairment

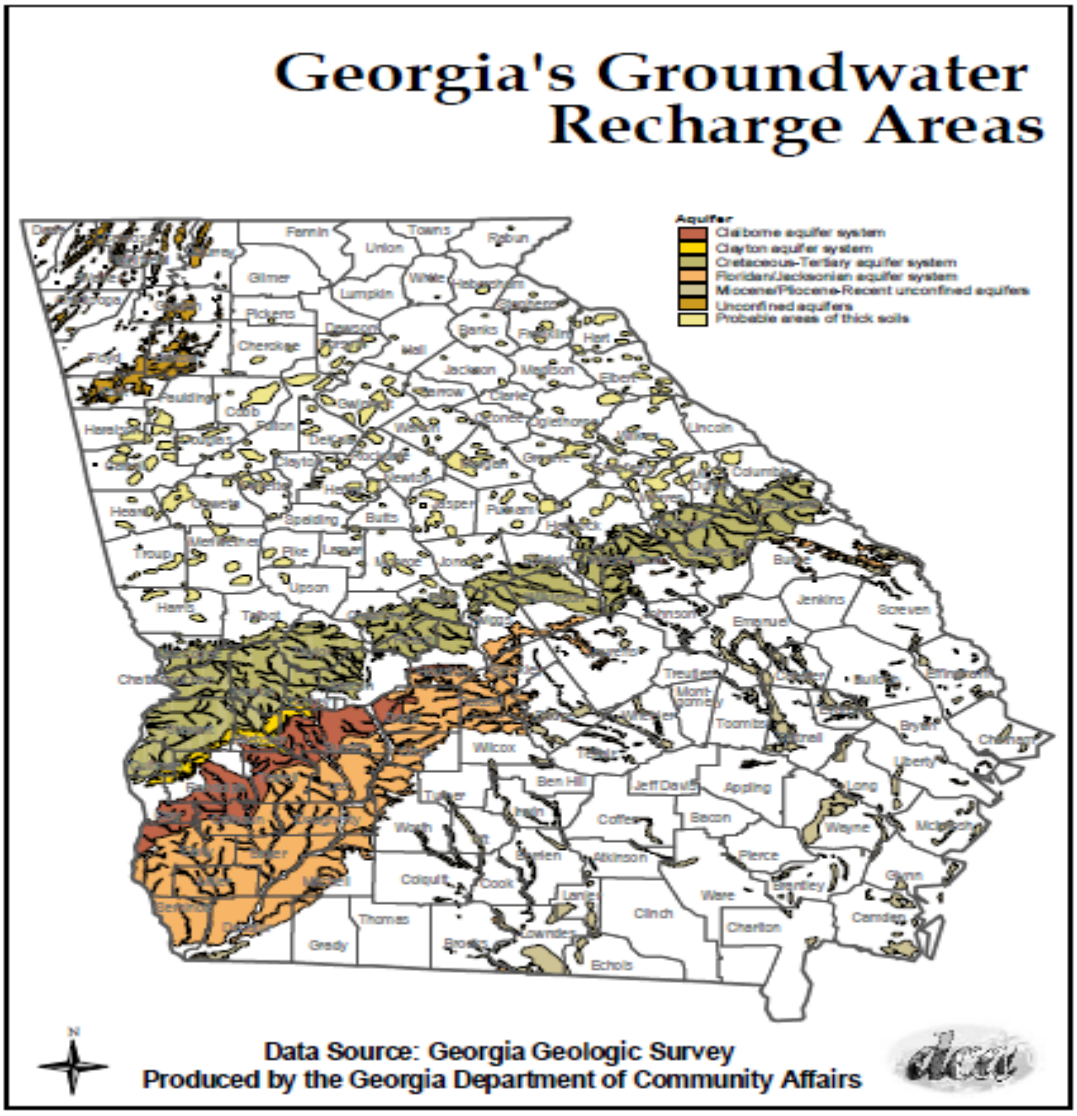


Appendix D Protected Plant and Animal Species in Drag Nasty Creek Watershed

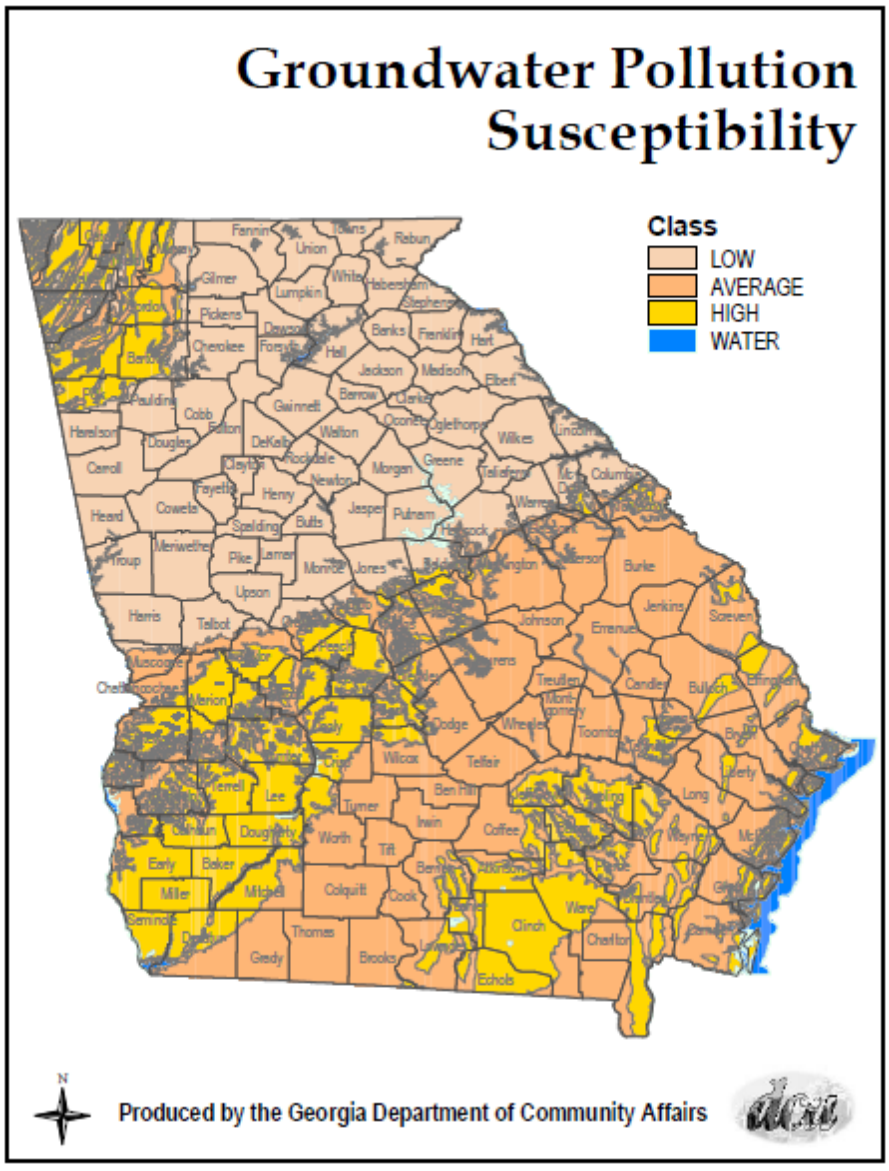
Threatened and Endangered Plants and Animals in the Drag Nasty Creek Watershed (Clay and Quitman Counties, including Chattahoochee River)				
Species	**Federal Status**	**State Status**	**Habitat**	**Threats**
Bird				
Wood Stork *Mycteria americana*	E	E	Primarily feed in fresh and brackish wetlands and nest in cypress or other wooded swamps	Decline due primarily to loss of suitable feeding in south Florida. Other factors include loss of nesting habitat, prolonged drought/flooding, raccoon predation on nest, and human disturbance of rookeries.
Red-cockaded woodpecker *Picoides borealis*	E	E	Nest in mature pine with low understory vegetation (<1.5m); forage in pine and pine hardwood stands > 30 years of age, preferably > 10" dbh	Reduction of older age pine stands and to encroachment of hardwood midstory in older age pine stands due to fire suppression
Reptile				
Gopher Tortoise *Gopherus polyphemus*	No Federal Status	T	Well-drained, sandy soils in forest and grassy areas, associated with pine over story, open understory with grass and sunny areas for nesting.	Habitat loss and conversion to closed canopy forest. Other threats include mortality on highways, and pet trade.
Southern Hognose Snake *Heterodon simus*	No Federal Status	T	Well drained, xeric, sandy soils longleaf pine and/or scrub oaks (especially turkey oak)	Destruction and alteration of longleaf pine-wiregrass
Alligator Snapping Turtle *Macrochelys temminckii*	No Federal Status	T	Rivers, lakes, large ponds near stream swamps	Destruction and modification of habitat
Fish				
Bluestripe Shiner *Cyprinella callitaena*	No Federal Status	Rare	Brown water streams	
Broad strip Shiner *Pteronotropis euryzonus (Suttkus)*	No Federal Status	Rare	Pools in moderate current over sand, silt, and bedrock, near logs, snags and aquatic vegetation.	

Invertebrate				
Oval Pigtoe *Pleurobema pyriforme*	E	E	River tributaries and channels to slow to moderate currents over silty sand, muddy sand, and gravel substrates	Habitat modification, sedimentation, and water quality degradation.
Plant				
Relict Trillium *Trillium reliquum*	E	E	Hardwood forests, found rich ravines or adjacent terraces with other springs flowering herbs	Logging, road construction, agricultural, mining, residential/industrial development, and encroachment by Japanese Honeysuckle and Kudzu.
Plumleaf Azalea *Rhododendron prunifolium*	No Federal Status	Rare	Stream banks	Logging, road construction

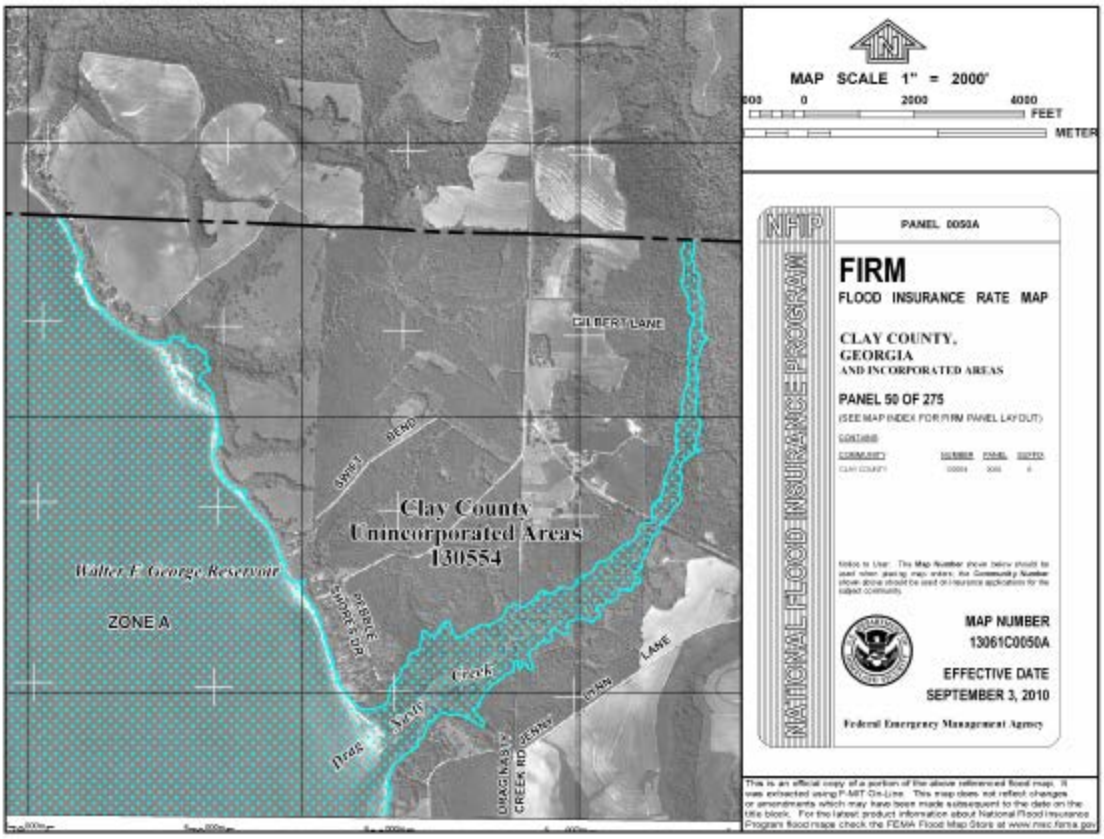
Attachment E Recharge Area



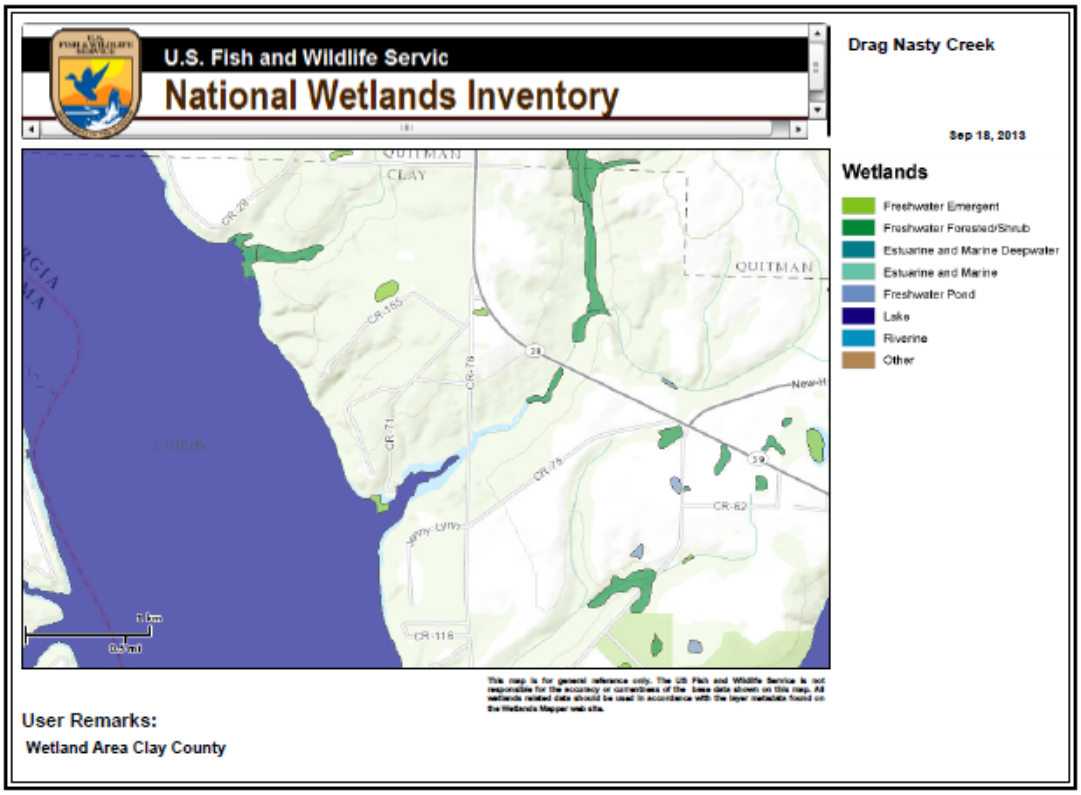
Attachment F Groundwater Pollution



Attachment G FEMA Floodplains



Attachment H Wetlands



Appendix J Population of Counties within Drag Nasty Creek Watershed

Drag Nasty Creek Watershed Demographics			
County	**2012Population**	**2010 Population**	**Percent Change**
Clay	3,116	3,183	-2.1%

US Census Bureau 2012

Drag Nasty Creek Watershed Demographics				
County	**2002 Number of Farms**	**2002 Acreage**	**2007 Number of Farms**	**2007 Acreage**
Clay	3,116	42,443	3,183	44,566

USDA 2007 Census of Agriculture by County

Appendix K Temperature and Precipitation Data

09/19/2013

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Annual Climatological Summary (2012)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: **FORT GAINES 2, GA US**

COOP:093578
Elev: 210 ft. Lat: 31.615° N Lon: 85.049° W

Date	Temperature (°F)														Precipitation (inches)									
Elem->	MMXT	MMNT	MNTM	DPNT	HTDD	CLDD	EMXT		EMNT		DT90	DX32	DT32	DT00	TPCP	DPNP	EMXP		TSNW	MXSD		DP01	DP05	DP10
Month	Mean Max.	Mean Min.	Mean	Depart. from Normal	Heating Degree Days	Cooling Degree Days	Highest	High Date	Lowest	Low Date	Number Of Days				Total	Depart. from Normal	Greatest Observed		Snow, Sleet			Number Of Days		
											Max >=90°	Max <=32°	Min <=32°	Min <=0°			Day	Date	Total Fall	Max Depth	Max Date	>=.10	>=.50	>=1.0
1	64.6	39.9	52.3		389	1	75	22	23	05	0	0	8	0	2.18		0.88	18	0.0			5	2	0
2	64.2	44.5	54.4		306	3	79	26	20	13	0	0	3	0	3.02		1.98	19	0.0			3	2	1
3	76.6	54.0	65.3		64	80	86	19	40	05	0	0	0	0	3.40		1.71	31	0.0			4	2	2
4	78.0	54.4	66.2		56	99	89	30	41	13	0	0	0	0	1.43		0.50	19	0.0			5	1	0
5	85.4	62.9	74.2		0	294	92	28	51	11	5	0	0	0	1.01		0.28	13	0.0			5	0	0
6	86.9X	67.4X	77.2X		0		98	30	61	04	9	0	0	0	2.91X		1.11	11	0.0			5	3	1
7	92.4	72.5	82.5		0	550	99	02	67	18	26	0	0	0	3.61		1.14	12	0.0			8	2	1
8	87.5	70.8X	79.2X		0		94	03	64	26	11	0	0	0	6.63		1.61	03	0.0			12	4	2
9	86.1	65.8	76.0		1	335	92	02	48	26	3	0	0	0	2.40		1.23	18	0.0			3	2	1
10	76.6	55.1	65.9		59	95	84	13	43	31	0	0	0	0	2.45		1.55	02	0.0			3	2	1
11	66.1	41.9	54.0		325	2	82	04	28	25	0	0	4	0	0.31		0.12	06	0.0			2	0	0
12																								
Annual	78.6*	57.2*	67.9*		1200*	1459*	99*	Jul	20*	Feb	54*	0*	15*	0*	29.35*		1.98*	Feb	0.0*			55*	20*	9*

Notes

(blank) Data element not reported or missing.

+ Occurred on one or more previous dates during the month. The date in the Date field is the last day of occurrence. Used through December 1983 only.

A Accumulated amount. This value is a total that may include data from a previous month or months or year (for annual value).

B Adjusted total. Monthly value totals based on proportional available data across the entire month.

E An estimated monthly or annual total.

X Monthly means or totals based on incomplete time series. 1 to 9 days are missing. Annual means or totals include one or more months which had 1 to 9 days that were missing.

T Trace of precipitation, snowfall, or snowdepth. The precipitation data value will equal zero.

Elem Element types are included to provide cross-reference for users of the NCDC CDO system.

Station Station is identified by: COOP ID, Station Name, State

S Precipitation amount is continuing to be accumulated. Total will be included in a subsequent monthly or yearly value. Example: Days 1-20 had 1.35 inches of precipitation, then a period of accumulation began. The element TPCP would then be 00135S and the total accumulated amount value appears in a subsequent monthly value.

* Annual value missing; summary value computed from available month values.

Appendix L Stakeholder and Partnership Listing

Organization	Responsibilities
Golden Triangle RC&D Council Inc. (Lead Organization)	o Execute grant contract with GAEPD. o Provide 40% of project costs in matching funds or in-kind services o Forms project advisory committee. o Hire a full-time project manager. o Serve as the lead Organization/grant administrator for the project. o Track all grant funds expended and all match values o provided in accordance with the implementation schedule o Track all project activities on the implementation schedule o Oversee the development of WMP that meet EPA's Nine Key Elements for Watershed Planning. o Update maps and other documentation as required o Conduct 2 Adopt-A-Stream training. o Conduct 2 Rivers-Alive Clean-up event o Conduct outreach project materials including, PSA announcements, meetings and website page. o Forms Watershed Stakeholder Partnership/alliance. o Submit requests for payment to GAEPD. o Completes quarterly progress reports. o Submit final project close-out report to GAEPD/USEPA.
GA Environmental Protection Division	o Provide 60% of Federal funds for project o Provides technical assistance through project review. o Approves project deliverables. o Provide guidance on Watershed planning. o Track implementation of the approved project work plan.
Spring Creek Watershed Partnership	o Provides guidance/direction through Steering Committee members o Assist with outreach activities. o Assist with field days, workshops and other activities.
USDA Natural Resources Conservation Service (NRCS)	o Provide technical assistance recommendation for BMPs identified in the TMDL plan to meet water quality standards for the WMP. o Serve on project advisory committee. o Assists with project outreach and identification of possible Partners. o Assist with field days, workshops, and other activities.
U.S. Fish and Wildlife Service	o Provide technical assistance including maps and endangered species surveys in the Watershed. o Provides technical assistance for identification of threat areas o Serves on project advisory committee. o Assist with field days, workshops and other activities.
Lower Flint/Ochlockonee Water Council	o Provides opportunities for leveraging efforts from other funding sources o Provide technical support for BMPs o Serve on project advisory committee
Georgia Water Planning and Policy Center at Albany State University(GWPPC)	o Provide technical assistance with WMP(irrigated acres, land use) o Serve on project advisory committee. o Participate in project activities.
Clay County including Health Department	o Provide technical assistance with the project (water testing, etc.). o Assist with promotion of the WMP project. o Provide support to project manager. o Render in-kind service matches as possible

Attachment H Clay County Ordinances

110-12-1-.07 Data and Mapping Specifications Adopted in 2005- Ongoing

- Natural and Cultural Resources. Map locations of the following resources. Evaluate how new development is likely to impact these resources and identify needed regulations or policies for their protection or management.
- Environmental Planning Criteria (required). Identify local resources defined in the Rules for Environmental Planning Criteria (water supply watersheds, wetlands, groundwater recharge areas, protected rivers and protected mountains). Indicate the status of the community's compliance with the requirements of the Rules for Environmental Planning Criteria through adoption of locally enforceable ordinances.
- Other Environmentally Sensitive Areas. Identify any public water supply sources, steep slopes, coastal resources, flood plains, soils, plant and animal habitats, or any other sensitive areas that are of significance to the community.
- Significant Natural Resources. Identify any scenic areas, prime agricultural or forest land, major parks, recreation and conservation areas or any other resources that are of significance to the community.
- Significant Cultural Resources. Identify any rural, residential, commercial, industrial, institutional or transportation resources, and community landmarks of historic, cultural or archeological significance. Also identify generalized locations of any archaeological sites identified as significant by the Georgia Department of Natural Resources.

Appendix M Sampling Walter F George Clean Lake Study

TABLE 6.1

WALTER F. GEORGE SAMPLING STATIONS

STA NAME	COE RIVER MILE[1]	STATION LOCATION	STORET STA NO.	SAMPLE TYPES[2]
CR1	120.3	Chattahoochee River at Bluff Creek Park, Upstream of Lake	12218701	BWQ, AGP, PHT
LG1	117.3	Lake WF George d/s side of CSX Railway Bridge, Near Omaha, GA	12219001	BWQ, CHL, FSH, SED, OMW
LG2	112.7	Lake WF George off Florence Marina State Park, GA	12219021	BWQ, CHL, SOD, PHT, AGP, DDO
LG3	101.7	Lake WF George at Confluence with Cowikee Creek	12219051	BWQ, CHL, SED, OMW
LG4	94.9	Lake WF George at US Highway 82, Eufaula, AL	12219101	BWQ, CHL, FSH, SED, OMW, PHT, AGP, DDO
LG5	89.5	Lake WF George off Cheneyhatchee Creek Embayment	12219201	BWQ, CHL, SED, OMW, SOD, PHT, AGP, DDO
LG6	82.3	Lake WF George off Pataula Creek Embayment	12219401	BWQ, CHL
LG7	75.4	Lake WF George in Dam Forebay	12219501	BWQ, CHL, FSH, SOD, PHT
CR2	75.0	Chattahoochee River Downstream of WF George Lock and Dam	12219601	BWQ
HC1	Trib Sta	Hannahatchee Creek at Bridge 6 Miles East of Omaha, GA	12218901	BWQ, FLO
DN1	Trib Sta	Drag Nasty Creek at GA Highway 39 Bridge, Upstream Side	12219301	BWQ, FLO
PC1	Trib Sta	Pataula Creek at US Highway 82 Bridge, Upstream Side	12219351	BWQ, FLO

[1]Army Corps of Engineers navigational river miles; All lake stations centered over Chattahoochee River channel

[2]BWQ - baseline water quality, CHL - chlorophyll, SED - organics and metals in sediment, OMW - organics and metals in water, FLO - stream flow, FSH - contaminates in fish, SOD - sediment oxygen demand, PHT - phytoplankton, AGP - algal growth potential, DDO - diel dissolved oxygen

8.1 NUTRIENT DATA

Table 8.1 contains total phosphorus data for tributary stations. Table 8.2 contains total nitrogen data. These data were used in nutrient budget calculations in chapter 4. Hannahatchee Creek had the highest average total phosphorus concentration. The Chattahoochee River upstream and Drag Nasty Creek had higher average total nitrogen concentrations.

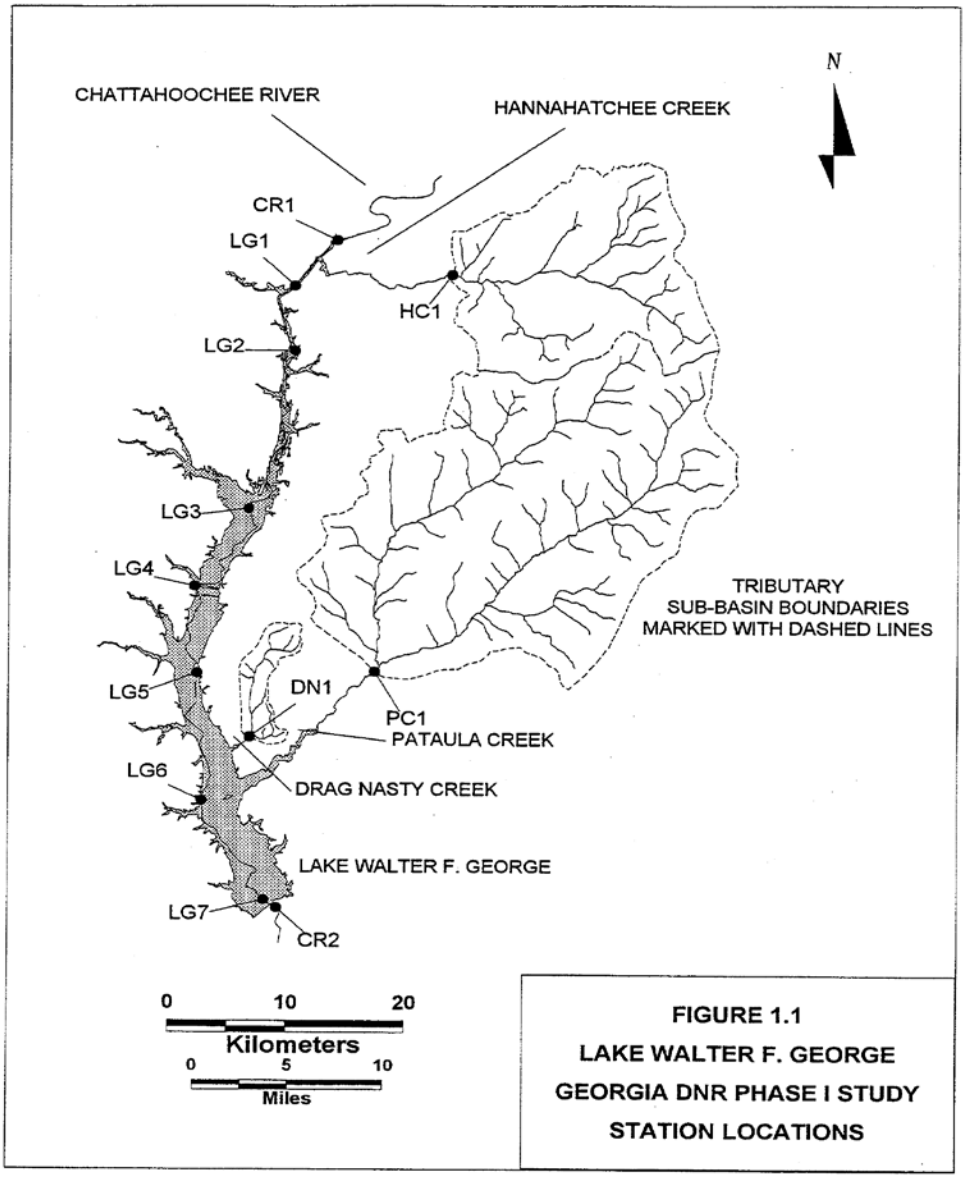
TABLE 8.1
TOTAL PHOSPHOROUS (mg/l) - TRIBUTARY STATIONS

DATE	CR1	HC1	PC1	DN1	CR2
11/14/1990	0.09	0.03	0.02	0.03	0.03
12/05/1990	0.1	0.07	0.05	0.02	0.05
01/16/1991	0.04	0.1	0.02	0.03	0.02
02/13/1991	0.06	0.11	0.04	0.02	ND
03/20/1991	0.06	0.04	0.03	0.02	0.02
04/10/1991	0.07	0.15	0.04	0.11	0.04
05/08/1991	0.07	0.09	0.05	0.05	0.04
05/22/1991	0.12	0.17	0.14	0.06	0.07
06/05/1991	0.03	0.11	0.05	0.04	0.03
06/19/1991	0.15	0.22	0.14	0.15	0.05
07/10/1991	0.07	0.09	0.06	0.05	0.05
07/24/1991	0.03	0.07	0.03	0.03	0.03
08/07/1991	0.02	0.05	0.13	0.02	0.02
08/21/1991	0.08	0.09	0.04	0.04	0.02
09/11/1991	0.04	0.1	0.04	0.04	0.03
09/25/1991	0.07	0.1	0.04	0.03	0.02
10/23/1991	0.07	0.07	0.08	0.05	0.08
Avg	0.07	0.10	0.06	0.05	0.04
SD	0.03	0.05	0.04	0.03	0.02

TABLE 8.2

TOTAL NITROGEN (mg/l) - TRIBUTARY STATIONS

DATE	CR1	HC1	PC1	DN1	CR2
11/14/1990	0.97	0.44	0.25	0.76	0.44
12/05/1990	0.94	0.53	0.03	0.42	1
01/16/1991	1.27	0.31	0.29	0.49	0.6
02/13/1991	1.04	0.19	0.61	0.78	ND
03/20/1991	0.75	0.63	0.19	0.38	0.59
04/10/1991	0.72	0.36	0.3	0.38	0.47
05/08/1991	0.72	0.21	0.32	0.56	0.46
05/22/1991	0.68	0.21	0.25	0.72	0.63
06/05/1991	0.63	0.32	1.05	ND	0.81
06/19/1991	0.66	0.22	0.37	0.76	0.94
07/10/1991	0.6	0.31	0.32	ND	0.26
07/24/1991	0.49	0.25	0.34	0.7	0.79
08/07/1991	0.8	0.42	0.56	0.64	0.28
08/21/1991	0.68	0.23	0.23	0.49	0.25
09/11/1991	0.86	0.21	0.44	0.72	0.44
09/25/1991	0.65	0.14	0.2	0.73	0.33
10/23/1991	0.66	0.72	0.12	0.69	0.37
Avg	0.77	0.34	0.35	0.61	0.54
SD	0.19	0.16	0.23	0.15	0.24


N
CHATTAHOOCHEE RIVER
HANNAHATCHEE CREEK
CR1
LG1
HC1
LG2
LG3
LG4
LG5
DN1
PC1
PATAULA CREEK
LG6
DRAG NASTY CREEK
LAKE WALTER F. GEORGE
LG7
CR2
TRIBUTARY
SUB-BASIN BOUNDARIES
MARKED WITH DASHED LINES
0 10 20
Kilometers
0 5 10
Miles
FIGURE 1.1
LAKE WALTER F. GEORGE
GEORGIA DNR PHASE I STUDY
STATION LOCATIONS

3

Appendix N Feral Hog

Outdoors: Pig problem

Hunting alone can't solve problems associated with number of wild pigs
Posted: Wednesday, February 17, 2010

The entire South has a pig problem - and Georgia is one of the leading victims in a boom that has occurred within the nation's wild pig population in the last 20 years

Special

As their numbers have grown, the amount of damage feral pigs create has skyrocketed. A recent Scripps Howard News Service story reported that wild pigs account for approximately $800 million in property and crop damage each year, as well as 27,000 auto collisions.

"They eat our crops. They root up our wetlands. They compete with our native species. They damage property. They run into our cars," Jack Mayer, a wild pig expert with the U.S. Department of Energy's Savannah River National Laboratory in Aiken, S.C., said in the Scripps Howard story.

While attacks on humans aren't particularly common, feral pigs are known to ravage gardens and will attack sheep, cattle, chickens and goats. They are also known to transmit nearly three dozen diseases that can be transmitted to domestic swine and livestock, creating potentially devastating damage to the American pork industry.

Within the region surrounding Athens, wild pigs - who can grow as large as 500 to 750 pounds and are known for their voracious appetites - are all over the mountains, rooting out vegetation, including rare wildflowers, and doing vast amounts of damage to vegetation and other wildlife populations.

"Wild swine are one of the worst invasive species you can get," Maryland Department of Natural Resources biologist Jonathan McKnight told the Cumberland (Md.) Times-News. "Wild swine will clear a woodland area out. They will eat the herbacious area. You get this mashed up distributed forest floor and what comes back after they eat everything is the really hearty, non-native invasive species - the few things they won't eat."

Mayer's study of the spreading pig population reveals that between 500,000 and 2 million wild pigs lived in the United States 20 years ago, with wild pigs residing in only 17 states. Today he says they number between 2 million and 6 million and live in 44 states.

He reports that wild pigs live in 137 of Georgia's 159 counties and number between 200,000 and 600,000 - which could trail only the massive pig populations in Texas and Florida for the most in any state.

Exact numbers for states' pig populations are difficult to pin down because they typically live in dense forest environments and are difficult to track.

But researchers know the pigs have spread in massive numbers and are now trying to formulate a plan for controlling the population and decreasing the damage they can cause.

The Scripps Howard story surmised that one reason for the population spread is that hunters ignore federal rules against transporting feral hogs and truck them from Texas and Florida - states with the densest wild hog population - into other states and release them into the wild or on private game reserves for hunting purposes.

And once they're allowed to begin breeding in a new area, it often doesn't take long for the population to explode. Feral pigs have an extremely high reproductive rate and are highly difficult to control with hunting measures alone.

There is no national policy on hunting pigs, instead leaving it up to individual states to set the guidelines for killing the oversized predators. Hunting feral hogs is permissible in Georgia during big-game, small-game and even turkey seasons as long as hunters follow the rules established for those particular hunts.

But hunting is not a particularly effective means of population control.

"Lethal removal would help keep the numbers down, but it won't control the population," Mayer told the Beaufort (S.C.) Gazette. "You'd have to kill 70 percent every year for nine years to keep the population under control. That's a tough order. Game hunting now only accounts for 20 to 50 percent of the population."

That leaves wildlife resources officials searching for other answers - and numerous possibilities exist - including male birth control that would be spread in bait, coordinated statewide eradication campaigns, looser state regulations on hunting wild pigs and tougher penalties for releasing them into the wild.

While states work to settle on a solution, the pig population continues to boom and the damage the wild hogs create continues to mount, leaving those in the most affect states to deal with the considerable nuisance.

"Drive carefully," U.S. Rep. Mike Conaway, R-Texas, said in the Scripps Howard story, "because if you run over one of them, you know, you won't enjoy it."

BIGGEST WILD PIG POPULATIONS

U.S. Department of Energy wild hog expert Jack Mayer of the Savannah River National Laboratory in Aiken, S.C., has tracked the spread of wild pigs to 44 states. Georgia ranks in the nation’s top five with an pigs residing in 137 of the state’s 159 counties and an estimated population between 200,000 and 600,000 pigs. Here is a list of the states where the most pigs reside:

State	Spread	Approximate Population
Texas	233 of 254 counties	1,000,000-3,000,000
Florida	All 67 counties	300,000-1,000,000
Georgia	137 of 159 counties	200,000-600,000
California	56 of 58 counties	200,000-400,000
Alabama	All 67 counties	90,000-300,000

Attachment O Septic Tank Success

Georgia: Rubes Creek

Repairing Failing Septic Systems and Installing Best Management Practices Restore Creek

Waterbody Improved

Leaking septic tanks in residential areas and polluted runoff from impervious surfaces caused abnormally high fecal coliform (FC) bacteria levels in Georgia's Rubes Creek. As a result, the Georgia Environmental Protection Division (GEPD) placed a 7-mile segment of the creek on its Clean Water Act (CWA) section 305(b)/303(d) list of impaired waters in 2003. Using CWA section 319 and third-party grant funding, stakeholders installed a number of best management practices (BMPs), including septic system repairs, on properties adjoining the creek's impaired segment. Water quality improved, prompting GEPD to remove the 7-mile segment from the state's 2010 CWA section 305(b)/303(d) list of impaired waters for FC bacteria.

Figure 1. Watershed partners worked with a residential landowner to repair a failing septic system (top: before, bottom: after).

Problem

Rubes Creek flows through Cherokee and Cobb counties in northwest Georgia's Coosa River watershed (Figure 1). Rubes Creek is in the Blue Ridge ecoregion. One of the most floristically diverse areas in the eastern United States, the southern Blue Ridge is home to Appalachian oak forests; shrub, grass and heath balds; and hemlocks, cove hardwoods and oak-pine communities.

Rubes Creek is designated for fishing use (i.e., secondary contact recreational use). To support that designated use, the FC geometric means in Rubes Creek must remain below 200 colony-forming units (cfu) per 100 milliliters (mL) of water in the summer (May to October) and below 1,000 cfu/100 mL in the winter (November to April). A single-sample maximum criterion of 4,000 cfu/100 mL for the winter months also applies. Water quality data collected in Rubes Creek from 1993 to 2003 showed that four of five FC summertime geometric means exceeded the state's bacteria water quality criteria for fishing use (Table 1).

As a result, GEPD added a 7-mile segment to the 2003 CWA section 305(b)/303(d) list of impaired water for high FC bacteria levels. GEPD identified urban runoff, animal waste, sanitary sewer leaks, and failing septic systems as likely bacteria sources.

A total maximum daily load (TMDL) study for pathogens in 58 stream segments in the Coosa River watershed, which includes Rubes Creek, was established by the GEPD and approved by EPA in 2004. GEPD cited runoff from failing septic systems as the primary source of FC bacteria and urban runoff as a secondary source. The TMDL noted that bacteria levels would need to be reduced by 50 percent to allow Rubes Creek to meet the water quality criterion necessary to support the fishing designated use.

Project Highlights

Using a combination of CWA section 319 funding and additional funds obtained through Cherokee County, The Nature Conservancy, the Wildlife Fund, and the City of Canton, the Limestone Valley Resource Conservation & Development Council (RC&D) worked with local stakeholders to promote and install BMPs that would reduce pathogen runoff into Rubes Creek. Partners used 2006 CWA section 319 funds to repair a failing septic system that was contributing high levels of bacteria to the stream (Figure 2). CWA section 319 funds also supported the installation of approximately 250 feet of grassed swales (vegetated channels designed to treat and attenuate stormwater runoff), which helped reduce bacteria loading into the creek from agricultural lands. Stakeholders participated voluntarily, providing partial labor and funds for the BMPs. The agricultural BMPs were installed in 2009, and they continue to help meet the load reduction allocations established by the TMDL.

Results

In the most recent (2008–2009) FC bacteria sampling of the 7-mile segment of Rubes Creek, state scientists found that all four FC bacteria geometric means complied with the state-established water quality criteria for both summer and winter (see Table 1). The FC data indicate that the stream now supports its fishing designated use, prompting the GEPD to remove the segment from the state's 2010 CWA section 305(b)/303(d) list of impaired water for FC bacteria.

Table 1. Rubes Creek seasonal monitoring data[a] (1995-2009)

Date	FC Bacteria Geometric Mean (cfu/100 mL)
Sept 1995	**482 (S)**
Nov 1995	111 (W)
Oct 1999	108 (S)
April 2001	101 (W)
June 2001	**281 (S)**
Feb 2003	138 (W)
May 2003	**245 (S)**
Aug 2003	**342 (S)**
Winter 2008	103(W)
Summer 2008	149 (S)
Winter 2009	92 (W)
Summer 2009	153 (S)

Partners and Funding

Rubes Creek has benefitted from $2,760 of CWA section 319 funding. Homeowners provided the remaining 40 percent of BMP costs for a total of $4,600 directed toward BMP construction. An additional $6,000 in federal CWA section 319 funds was provided for additional BMPs, implemented after monitoring

was completed, to ensure continued protection of the creek. Between 2004 and 2008, the U.S. Department of Agriculture provided more than $124,900 in Natural Resources Conservation Service Environmental Quality Incentive Program funds and $30,000 in Farm Service Agency funds to farmers in Cherokee County. Key partners in this effort include the Upper Etowah River Alliance, the Limestone Valley RC&D, and the Cherokee County Environmental Health Department. Agents of these generous partners provided technical expertise and labor. Landowners in the Coosa River watershed contributed in-kind labor hours and some matching funds.

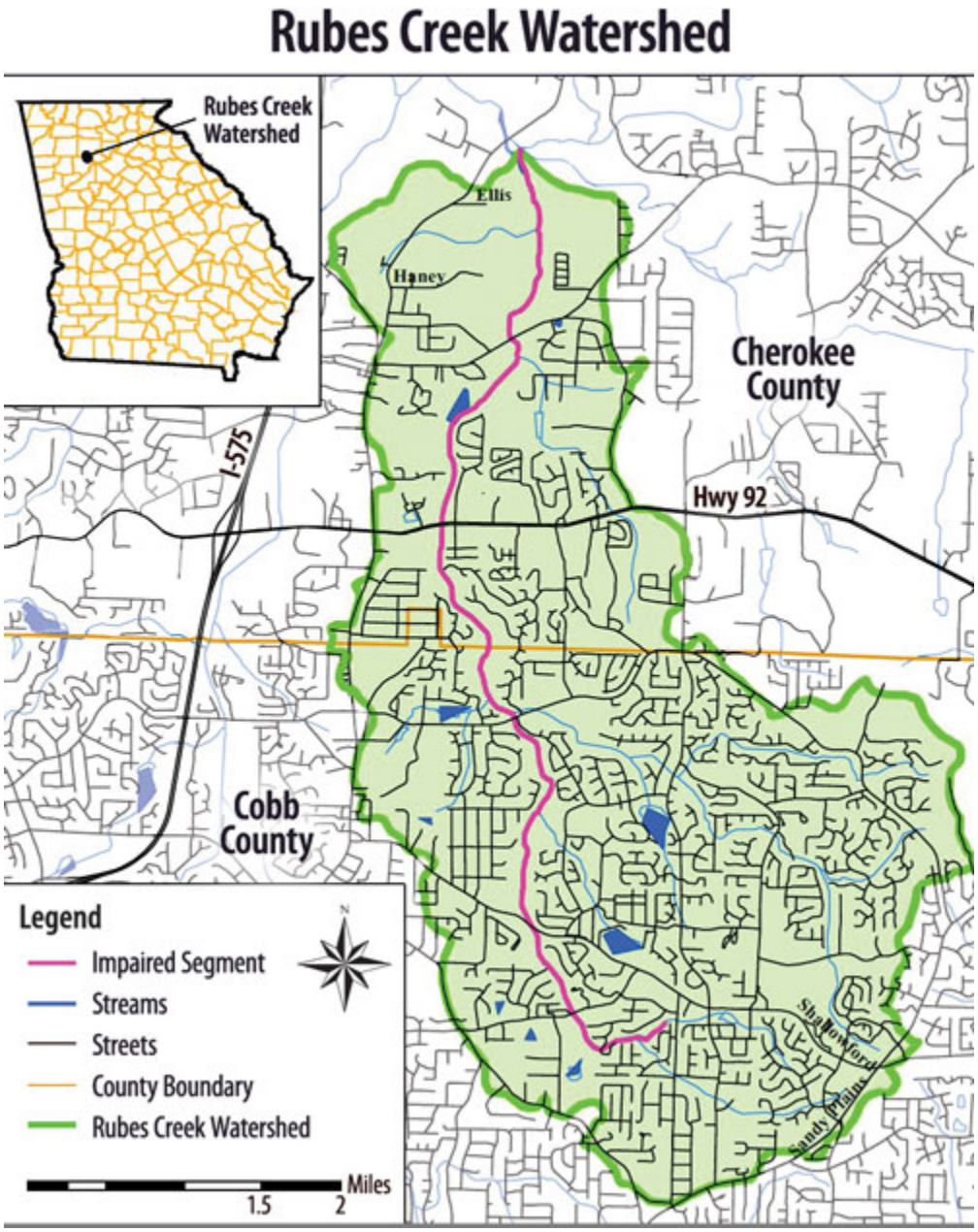


Figure 1. Rubes Creek is in northwest Georgia.

Attachment P Dam

Edge of pond looking like a natural beaver dam

Pond and pumping equipment down from Bridge on Hwy 39

Attachment P Dam

Close up of pumping equipment down from Bridge on Hwy 39

Back side of pond down from Bridge on Hwy 39

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Repairing Failing Septic Systems and Installing Best Management Practices Restore Creek