

**Chestatee River – Yahoola Creek Watershed
Sediment and Fecal Coliform Abatement Implementation
using Upland Landscape Restoration**

FY2016 319(h)

Background

The Upper Chestatee River in Lumpkin County (HUC 10 – 0313000106) currently has four stream segments listed as impaired on the 2014 303(d) list of waters not attaining state water quality standards for fishing and swimming. These impairments are attributed to the effects of excessive sedimentation impacting fish biota for two stream segments (Cane Creek and Cavenders Creek), and fecal coliform bacteria for two additional stream segments (Lower Yahoola Creek and Chestatee River from Tesnatee to Yahoola) attributed to non-point sources of pollution. While watershed-planning efforts have gathered momentum in recent years (with a Yahoola draft TMDL implementation plan in 2009, and a Watershed Improvement Plan for Chestatee River from Tate Creek to Tesnatee in 2015) this watershed still lacks a long-term strategic partnership to begin implementation efforts to reduce non-point sources of pollutants. This project presents an opportunity to unify watershed partners in achieving watershed restoration goals, tangibly reduce non-point pollutant loads and establish a model for upland restoration assessment, prioritization and stabilization that has statewide implications due to its cost effectiveness and ease in replicability.

Sediment is one of the most diffuse sources of non-point pollutants, and its presence is strongly correlated with changes in upland hydrology. Human influenced landscapes often degrade topsoils and increase soil compaction thus reducing rainfall infiltration, soil fertility, vegetative establishment and other ecosystem services provided by healthy landscapes. These landscape changes increase runoff and upland erosion potential as well as increase streambank and channel erosion due to increased volumes of stormwater.

The application of surface applied organic amendments to disturbed or degraded upland soils has been shown to reduce runoff to a fraction of that from bare soils, nearly eliminating surface erosion and setting the stage for permanent soil and vegetative restoration. The “cover management” or C factor is the most effective tool used to determine the soil loss ratio of an erosion control practice relative to bare soil (the lower the C factor the lower the soil loss). Organic amendments in the form of wood chips are amongst the most superior of all erosion practices studied with .08, .05 and .02 ratings at 7, 12 and 25 tons to the acre application rates (GA SWCC 2000). The only erosion control practice with higher effectiveness at reducing erosion is the use of compost blankets, which can be cost prohibitive for some sites.ⁱ An additional benefit of applied organic amendments is their ready availability through community partnerships with local utilities and municipalities that generate 1,000’s of tons annually.

Project Description

This project will form a new partnership to implement water quality improvement projects to address sediment loadings and fecal coliform bacteria in the Chestatee River Watershed in Lumpkin County. The target goal of this project is to restore degraded upland landscapes (those that do not support permanent stands of vegetation) and contribute excessive erosion, sediment and stormwater to receiving streams, thereby reducing pollutant loadings of sediment and stormwater (as well as fecal coliform and nutrients for some sites). The secondary goal of

this project is to demonstrate and promote the effectiveness of landscape restoration via application of organic materials in order to meet a range of water quality, water supply and associated community goals. The practice of organic materials application has broad implications towards informing better land development practices and policies, stormwater management, agricultural practices, right of way management, and residential property management, all of which culminate in the total non-point source contributions to the Chestatee River Watershed.

Before implementation begins a prioritization process using GIS based RUSLE and SWAT models will be used to accurately predict upland erosion potentials at strategic hotspot locations across the watershed. Site selection will be based on erosion reduction potential, partner collaboration, project match, visibility and outreach potential, and potential for future clean water partnerships. Upland landscape restoration of 4-5 sites (approximately 18-32 acres) will be completed through the strategic application of community “organic matter” resources.

Project Details and Partners

The maintenance of utility easement right of ways and curbside leaf and limb pickups generate 1,000s of tons of organic matter annually, much of which goes to inert landfills or is contracted for removal. Through collaborations with local utilities and municipalities these material resources can be mobilized towards “prioritized” upland landscape restoration sites and used to halt upland erosion, slow runoff, increase rainfall infiltration, re-establishing soil ecology, topsoil formation and nutrient recycling which leads to better vegetative establishment, ultimately reducing sedimentation, stormwater runoff and stream scouring.

The opportunities presented by this implementation plan include:

- The ability to engage a broad partnership in restoration of landscapes commonly known throughout the county watershed, increasing the impact and potential adoption of these and related model practices by other stakeholders.
- Engagement of diverse partners including utilities and municipalities responsible for the collection and removal of organic matter resources, agricultural partners and agencies engaged in recommending conservation practices, and educational institutions that maintain landscapes that may be assessed for improvement potentials.
- Demonstration of a highly cost effective erosion control practice (anticipated costs are less than \$1,000 per acre restored) with significant additional benefits to stormwater reduction, soil restoration, vegetative establishment, and aesthetic improvements.
- This practice has significant replication potential due to the high number of degraded landscapes across the state and the high volume of organic matter materials collected by local partners. Demonstrating quantifiable water quality improvements (as well as other secondary benefits) on a cost per acre basis could justify similar efforts in other sediment impaired watershed basins.

This project will focus initial upland restoration efforts towards urban influenced landscapes (degraded, compacted soils), road and utility right of ways (steep slopes) and opportunities for pasture improvement (gullied slopes and contour berms) in order to demonstrate the range of potentials for application of organic materials in landscape restoration and the enhancement of ecosystem services. Pre and post project stormwater outfall measurements for sediment will be measured to demonstrate loading reductions (as well as e. coli bacteria from agricultural sites using the IDEXX quanti-tray method). GIS modeling techniques will be used to assess pollutant

load reduction for project sites, sub-watershed basins as well as all individual parcels identified for priority restoration in the watershed (using RUSLE and SWAT models).

In addition to landscape restoration outlined above, this project will also include an upland pasture restoration (an isolation and mulching of a degraded pasture with leaf mulch) and one dirt road improvement project (a demonstration of an outward sloped road with water bars for reduced erosion) in order to diversify model “best management practices” in the watershed, expand the partnership and further reduce sediment and fecal coliform impairment. The pasture restoration will include liming and subsoiling (where required), reseeding in year two, and permanent fencing along stream borders, effectively reducing stormwater runoff and direct conveyance of sediments and fecal coliform bacteria into adjacent surface waters.

Project Outcomes

Outreach and education documents for all practices are intended to encourage the local adoption of practices at multiple scales and targeting multiple stakeholders throughout the watershed to include farmers, developers, municipal planners, residential homeowners, the Lumpkin County school system, and the University of North Georgia. Two “Watershed Sustainability” bulletins will be developed for dissemination outside of the watershed basin in an effort to spur statewide dialogue on opportunities to replicate the dispersal of community organic matter resources towards environmental restoration project sites using GIS hotspot prioritizations. This campaign to spread the adoption of this practice will reach out to neighboring counties (Dawson, Hall) to encourage the replication of project benefits.

List of Partners and Responsibilities

Organization Name	Specific Responsibilities
Georgia Mountains Regional Commission	<ul style="list-style-type: none"> • Execute grant contract with GAEPD • Provide 40% of total project costs in matching funds or in-kind services • Request payments from GAEPD each quarter • Pay funds to appropriate contractor(s) and vendor(s) and request reimbursements from GAEPD • Track all grant funds expended and all match values provided in accordance with the implementation schedule • Track all project activities in accordance with the implementation schedule • Complete and submit quarterly reports and invoices to GAEPD by January 15th, April 15th, July 15th, and October 15th of each project year • Complete and submit close-out report at conclusion of project • Individuals involved – Adam Hazel, Executive Director
GAEPD	<ul style="list-style-type: none"> • Provide 60% of total project costs • Review and approve project deliverables • Participate in meetings, as appropriate • Review and assist as needed with 319(h) Grant protocols • Provide project oversight and contract management • Provide monitoring guidance and training • Barbara Stitt-Allen,
University of North Georgia	<ul style="list-style-type: none"> • Serve as Project Manager • Provide in-kind services via office space, telephone, internet, and laptop computer for all project coordination personnel (to count towards 40% match requirement), laboratory facilities, GIS services, and administration • Serve as a location for Partnership meetings • Development of outreach and educational materials and workshops • Justin Ellis, Project Coordinator; Dr. Sudhanshu Panda, GIS modeling; student researchers
Chestatee-Chattahoochee RC&D Council	<ul style="list-style-type: none"> • Provide technical assistance and facilitate interaction with agricultural property owners • Implementation of farm projects to oversee development of farm plans and installation of exclusion fencing • Frank Riley, Executive Director
UGA Cooperative Extension	<ul style="list-style-type: none"> • Provide technical assistance and facilitate interaction with agricultural property owners • Conduct and assist with workshops and educational programs • Provide in-kind matching time towards 40% match requirement
	<ul style="list-style-type: none"> • Assist in identification of priority sites and in developing relationships with landowners. • Provide source of organic materials and delivery to priority upland restoration project sites.

City of Dahlonega	<ul style="list-style-type: none"> • Assist with workshops and educational programs • Review practices and ordinances for opportunities to improve management of upland landscapes to enhance ecosystem services • Provide in-kind matching time towards 40% match requirement
Lumpkin County	<ul style="list-style-type: none"> • Assist in identification of priority sites and in developing relationships with landowners. • Provide source of organic materials and delivery to priority upland restoration project sites. • Provide match time and resources towards a dirt road improvement project • Review practices and ordinances for opportunities to improve management of upland landscapes to enhance ecosystem services • Provide in-kind match time 40% match requirement
Natural Resources Conservation Service	<ul style="list-style-type: none"> • Provide technical assistance and consultation for implementation of agricultural best management practices • Develop conservation plans for farm partners • Assist with development of educational materials and workshops
Chattahoochee Riverkeeper	<ul style="list-style-type: none"> • Assist with publicizing volunteer planting days • Assist in outreach and education development and distribution
Amicaloa Electric Membership Cooperative	<ul style="list-style-type: none"> • Provide source of organic materials and delivery to priority upland restoration project sites.
Jackson Electric Membership Cooperative	<ul style="list-style-type: none"> • Provide source of organic materials and delivery to priority upland restoration project sites.
Georgia Forestry Commission	<ul style="list-style-type: none"> • Assist with re-vegetation of upland landscapes through providing bare root trees, and dibble bars for plantings (match where feasible)

319 Chestatee Draft Budget

Item Description	Per Year	Total 2 years
Project Coordinator (UNG)		
4 semesters (reduced load - \$3,700 per semester)	\$7,400	\$14,800
Summer semester (2 summers)	\$3,500	\$7,000
Farm Project Implementation (\$26/hrx100hrs per year) (RC&D)	\$2,600	\$5,200
Administration (GMRDC)	\$1,500	\$3,000
Upland Restoration Projects		
Tractor and haul time (\$40/hr x 100) - subsoil / lime / spread	\$4,000	\$8,000
Supplies		\$2,000
Trees, Lime		\$3,000
Farm Projects \$5,000 per at 1 per year (including fencing)	\$5,000	\$10,000
Dirt Road Project \$6,000		\$6,000
GIS assessment (student research time)	\$1,500	\$3,000
Pre and Post project monitoring	\$1,600	\$3,200
Travel (.575 *2000 annually)	\$1,150	\$2,300
Federal budget allocation estimate		\$67,500

Non-supporting Streams in the CHESTATEE WATERSHED (HUC 313000106)					
Waterbody	Reach Location	Criterion Violated	Potential Cause	Designated Use	Extent
Cavenders Creek Chestatee River	Headwaters to Chestatee River	Biota Impacted Fish Community from Sediment	Non-point Source Pollution	Fishing	2 miles
Yahoola Creek	U.S. Hwy 19 / SR60 Business to Chestatee River	Fecal Coliform	Non-point Source Pollution	Fishing	9 miles
Cane Creek	Headwaters to Chestatee River	Biota Impacted Fish Community from Sediment	Non-point Source Pollution	Fishing	8 miles
Chestatee River	Tesnatee Creek to Yahoola Creek	Fecal Coliform	Non-point Source Pollution	Fishing	10 miles

Source: State of Georgia 2014 Draft 305(b) / 303(d) list

ⁱ Faucette, LB et. al (2007) Erosion Control and stormwater quality from straw with PAM, mulch, and compost blankets of varying particle sizes. Journal of Soil and Water Conservation.

October 29, 2015

To: Mr. Jeff Linzer
Grants Unit Manager
NonPoint Source Program
Watershed Protection Branch
Georgia Environmental Protection Division
2 Martin Luther King Jr. Drive
Atlanta, GA 30334

Re: **Federal 319(h) Project FY16 letter of support**
Organic Amendment Restoration of Degraded Upland Landscapes in the
Chestatee-Yahoola Watershed

Mr. Linzer,

On behalf of the Lumpkin County Government and in partnership with the University of North Georgia please accept this letter of support and commitment as a participating partner in the goals of this 319(h) grant proposal. The Lumpkin County Government shares the goals to improve water quality in the Chestatee River through projects that will restore degraded uplands, improve dirt roads and road right of ways and improve upland pastures. We anticipate these efforts will reduce sediment and fecal coliform bacteria in our area waterways, and identify new practices that reduce future pollutants.

The Lumpkin County Government supports this project and is able to contribute the following:

- Assist in identification of priority sites and in developing relationships with landowners.
- Working with the Director of Planning and Public Works help to identify dirt roads or road right of ways where a dirt road improvement project (paid for with grant funds) could improve stormwater management and reduce erosion. Road right of ways will also be assessed for opportunities for stabilization with organic amendments.
- The County Consider providing organic amendments to selected upland sites identified for restoration.
- The Board of Commissioners will review and determine any formal commitments in terms services that would count as match at a future Commissioners meeting (tentatively slated for November)

We are fortunate to have a very strong team of collaborators and we greatly look forward to achieving tangible water quality improvements in the Soque Basin. Thank you for considerations.

Sincerely,

Larry Reiter
Director of Planning and Public Works
or
Stan Kelley
County Manager