Saugahatchee Watershed Management Plan
Annual Report
(January 17, 2007 - September 30, 2007)

prepared for the

Alabama Department of Environmental Management
(Cooperative Agreement C70591009)

and

U.S. Environmental Protection Agency, Region 4

by

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Eric Reutebuch
Wendy Seesock

Department of Fisheries and Allied Aquacultures
Auburn University
October 2007
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1. Executive Summary

1. Phase 1 Implementation of the Saugahatchee Watershed Management Plan (SWaMP; ADEM Cooperative Agreement C70591009 - FY04 CWA Section 319(h) Nonpoint Source Grant Workplan Project #20) involves the first three years of implementation of a nine-year, stakeholder-driven watershed management plan for the Saugahatchee Creek Watershed. It is funded, in part, by the U.S. Environmental Protection Agency (EPA), Region 4, and the Alabama Department of Environmental Management (ADEM), and is coordinated through the Department of Fisheries and Allied Aquacultures (FAA) of Auburn University (AU). Although the project was funded in January 2007, this report covers activities from August, 2006 through September 30, 2007.

2. SWaMP Coordinators conducted seven stakeholder meetings from September 2006 through September 2007 at the City of Auburn Bailey-Alexander Water and Sewer Complex. SWaMP stakeholders include representatives from ADEM, Alabama Cooperative Extension System (ACES), Alabama Forestry Commission, Alabama Soil and Water Conservation Committee, Alabama Water Watch (AWW), Auburn University Fisheries Department (AUFAA), Auburn University School of Forestry and Wildlife Sciences (AUSFWS), Auburn University Sustainability Initiative, City of Auburn, City of Opelika, Lee County Commission, Lower Tallapoosa River Basin Clean Water Partnership (LTRBCWP), MeadWestvaco, Inc., Natural Resources Conservation Service (NRCS), Save Our Saugahatchee, Inc. (SOS) and WestPoint Home, Inc.

3. SWaMP Director and Coordinators gave presentations at five Clean Water Partnership meetings, three community outreach meetings, a Lee County Commission meeting, an international training in Veracruz, Mexico, and at the 2007 AU Water Resources Conference, Bridging the Gap Between Science, People and Policies.

4. SWaMP outreach efforts have included hosting an education/outreach booth at two community events, the Loachapoka Syrup Soppin’ and the Auburn City Fest. Other efforts include presentations at various meetings (mentioned above), development of a fledgling SWaMP website (www.swamp.auburn.edu), environmental education programs at area schools, and participation in the Lee County Water Festival.

5. SWaMP publications include the production of a 20-page publication, Saugahatchee Creek Watershed – Past, Present & Future (available at www.swamp.auburn.edu) and a SWaMP tri-fold brochure (which have been distributed at stakeholder meetings and outreach events), a SWaMP poster, and abstracts for professional meetings. The SWaMP poster was presented at the 2007 AU Water Resources Conference in Auburn, AL in June 2007.

6. Partnering and leveraging activities have included collaboration with other 319(h) projects, and with other AU environmental initiatives; and seeking funding from other sources for expansion of SWaMP Project objectives through grant-writing and through collaborative efforts.

7. Evaluation of effects of urban/suburban development on water quality of Saugahatchee Creek has involved analysis of historic data, which indicated that nonpoint source phosphorus concentrations from urban subwatersheds were about three times higher than that of rural subwatersheds. AUSFWS initiated a water quality study of select catchments experiencing varying degrees of development to document effects of conversions of land use in the Auburn/Opelika area, and as a basis for an outreach program to education stakeholders regarding the benefits of the water quality services approach to maintaining clean water.

8. Strategic placement of on-the-ground best management practices (BMPs) has involved the development of a procedure by which stakeholders can apply for SWaMP funding, and a procedure by which SWaMP evaluates applicants for possible funding. A SWaMP Water Quality Improvement Project Application Guidance form has been drafted, and a 14-member SWaMP Steering Committee has been formed to evaluate
applications for SWaMP project funding. SWaMP coordinators have had meetings and communications regarding six BMP projects (four structural, two nonstructural), a silviculture BMP workshop, and an unpaved-roads BMP workshop. Tours were organized of potential nonpoint sources in the Saugahatchee Watershed and of a detention structure for possible retrofitting into a wetland.

### 2. Project Milestones

**Project Milestones from August, 2006 - September 30, 2007.**

<table>
<thead>
<tr>
<th>No.</th>
<th>Activities and Practices to Assure That Project Implementation is Timely and Reasonable</th>
<th>Responsible Entity*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Activity: Analyze existing data for Saugahatchee Creek (timeline: 12 mo). Data analyses were conducted, and it was determined that nonpoint source phosphorus concentrations from urban subwatersheds were about three times higher than that of rural subwatersheds.</td>
<td>AUFAA</td>
</tr>
<tr>
<td>2</td>
<td>Activity: Identify areas for BMP installation (timeline: 12 mo). Aerial photography and land cover maps are being collected and inventoried.</td>
<td>AUSFWS, NRCS</td>
</tr>
<tr>
<td>3</td>
<td>Activity: Conduct meetings with landowners to promote SWaMP (timeline: 12 mo). A landowner meeting is being organized for the lower Saugahatchee Watershed (Reeltown area) in collaboration with ACES, NRCS and the Forestry Planning Committee.</td>
<td>SWaMP, NRCS</td>
</tr>
<tr>
<td>4</td>
<td>Activity: Conduct meetings with city leaders, citizen groups etc. to promote SWaMP (timeline: 12 mo). SWaMP coordinators conducted seven stakeholder meetings from 9/2006 – 9/31/2007; and also had two meetings with collaborators of two other Section 319(h) projects.</td>
<td>SWaMP Coordinator, Cities of Auburn and Opelika, Counties</td>
</tr>
<tr>
<td>5</td>
<td>Activity: Installation of gages, data retrieval and determination of nutrient/ sediment loading of select catchments (timeline: 36 mo) AUFAA and AUSFWS made five reconnaissance trips to locate new catchment streams for inclusion in the catchment study; five planning/evaluation meetings were held to find and finalize catchments; gages were ordered for stream gaging.</td>
<td>AUFAA, AUSFWS</td>
</tr>
<tr>
<td>6</td>
<td>Activity: Analyze Current Watershed land use/land cover conditions using Landsat satellite imagery (timeline: 24 mo). A current land use/land cover map of the Saugahatchee Watershed will be generated in Year 2.</td>
<td>AUFAA</td>
</tr>
<tr>
<td>7</td>
<td>Activity: Conduct follow-up meetings with landowners to determine individual landowner BMP needs (timeline: 24 mo). Follow-up meetings will be scheduled in Year 2.</td>
<td>SWaMP Coordinator, NRCS</td>
</tr>
<tr>
<td>8</td>
<td>Activity: Conduct 2 workshops on the use of proper BMPs for construction and maintenance of unpaved roads (timeline: 24 mo). Planning on a workshop on proper maintenance of unpaved roads has been initiated.</td>
<td>SWaMP Coordinator, NRCS, Counties, ADEM</td>
</tr>
<tr>
<td>9</td>
<td>Activity: Evaluate how land use change from rural to urban affects nutrient and sediment loading (timeline: 36 mo). A USFWS conducted water quality analyses of streams draining select catchments with varying degrees of development on 18 dates from 1/14/07-9/25/07.</td>
<td>AUSFWS</td>
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<tr>
<td>Activity</td>
<td>Responsible entities</td>
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<td>--------------------------------------------------------------------------------------------</td>
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<tr>
<td><strong>10</strong> Activity: Develop land use change costs-and-benefits tool that can be used by planners and other decision-makers (timeline: 36 mo). Tool will be developed after completion of field data collection and analysis.</td>
<td>AUSFWS</td>
<td></td>
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<tr>
<td><strong>11</strong> Activity: Install 70 storm drain markers per year and 10 watershed signs (timeline: 36 mo). SWaMP assisted AU Sustainability Initiative and the City of Auburn in installing 250 storm drain markers in the Auburn area in May 2007.</td>
<td>SWaMP Coordinator, Cities of Auburn and Opelika, Counties</td>
<td></td>
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<tr>
<td><strong>12</strong> Activity: Conduct 3 tours for foresters to demonstrate proper use of silviculture BMPs (timeline: 36 mo). A tour of proper silviculture BMPs was conducted in May 2007.</td>
<td>SWaMP Coordinator, AL Forestry Commission, AL Forestry Association, MeadWestvaco Inc.</td>
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<tr>
<td><strong>13</strong> Activity: Begin installation of 6 specific BMPs in rural areas (timeline: 36 mo). A meeting with rural landowners is scheduled for January 2008, a SWaMP Steering Committee (for evaluation/approval of projects for SWaMP funding) and a Project Guidelines and Application form has been developed.</td>
<td>NRCS, ACES, Landowners</td>
<td></td>
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<tr>
<td><strong>14</strong> Activity: Begin installation of 6 specific BMPs in urban areas (timeline: 36 mo). SWaMP coordinators have had meetings/communications regarding six urban projects (four structural, two nonstructural).</td>
<td>Cities of Auburn and Opelika</td>
<td></td>
</tr>
<tr>
<td><strong>15</strong> Activity: Calculate Post-BMP load reductions by modeling (timeline: 36 mo). Post-BMP load reductions will be calculated after BMPs are installed.</td>
<td>AUFAA</td>
<td></td>
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</tbody>
</table>

*Responsible entities: AUFAA=AU Department of Fisheries and Allied Aquacultures; AUSFWS=AU School of Forestry and Wildlife Sciences; NRCS=Natural Resources Conservation Service; ACES=Alabama Cooperative Extension System.*
3. SWaMP Personnel at Auburn University

William (Bill) Deutsch, Ph.D.

Project Director - Bill has been a Research Fellow in AU Department of Fisheries and Allied Aquacultures since 1990. In addition to serving as Project Director of SWaMP, he is the Program Manager of the Alabama Water Watch Program, which currently has about 60 active citizen volunteer monitoring groups statewide. He has served as Director of the Tallapoosa Watershed Project, an integrated (research, education and outreach components) project funded by USDA-CSREES, for the past four years. He also works through the International Center for Aquaculture and Aquatic Environments to direct the Global Water Watch Program, which conducts environmental studies and trainings with international projects in the Philippines, Ecuador, Brazil, China, Thailand and Mexico.

Graeme Lockaby, Ph.D.

Director of Water Quality Services Investigations and Outreach - Graeme is serving multiple roles at AU as Professor of the AU School of Forestry and Wildlife Sciences, Associate Dean for Research, Director of the AU Water Resources Center, and Co-Director of the Center for Forest Sustainability. He is widely known and acclaimed for his academic contributions to the understanding of the ecology of floodplain forests. In addition to his teaching and research efforts and his work as an associate dean, he has also led interdisciplinary efforts that examine the interplay among ecological, sociological, and economic factors as they affect and are affected by landscape change.

Eric Reutebuch, M.S.

Project Co-coordinator - Eric has worked with the Rivers and Reservoirs Group and Alabama Water Watch Program at AU for the past 18 years. He has served as Project Coordinator for the USDA-CSREES Tallapoosa Watershed Project for the past four years. His work with AWW primarily involves writing publications that feature AWW groups, their local issues, their water monitoring data and how they are using the data to better manage their local watersheds. In addition to publishing responsibilities, he travels around the state to conduct data interpretation sessions with local citizen monitoring groups.

Wendy Seesock, M.S.

Project Co-coordinator - Wendy has served as Director of the Rivers and Reservoirs Group Laboratory at AU since 1980. She has also served as Assistant Curator of the AU Ichthyological Museum, member of the Board of Directors of the Midsouth Aquatic Plant Management Society, Inc., member of the Alabama Fisheries Association Eutrophication Committee and the Alabama Fisheries Association Steering Committee.

Christopher Anderson, Ph.D.

Coordinator of Water Quality Services Investigations and Outreach - Chris works as a Post Doctoral Fellow in the AU School of Forestry and Wildlife Sciences. His fellowship is funded by the AU Center for Forest Sustainability and he has worked on research and outreach related to land use and water quality, coastal wetland ecology, and restoration ecology.
4. SWaMP Progress Report

The Saugahatchee Creek Watershed (USGS hydrologic unit code 03150110030) encompasses a 220 square mile area located in the Lower Tallapoosa River Basin in east-central Alabama, primarily in Lee and Tallapoosa counties. Approximately 76% of the watershed is forested, while 12% is used for pastures and row crops, and 8% is in urban/developed areas according to a USGS 2001 land use analysis. The upper watershed is undergoing rapid transition from forest/agricultural land to urban/developed land. Saugahatchee Creek has two segments, the Pepperell Branch and the Saugahatchee Creek Embayment (where the creek enters Yates Lake) currently on the ADEM 303(d) list of impaired streams for receiving excess nutrients, primarily phosphorus. The embayment is also listed for receiving excessive organic matter and problems with low dissolved oxygen.

The Phase 1 Implementation of the Saugahatchee Watershed Management Plan (SWaMP) began in early 2007. SWaMP efforts began much earlier in 2004, when AWW received a small grant to develop a watershed management plan to clean up Saugahatchee Creek. A diverse SWaMP stakeholder group representing local governments, business/industry, academia and community groups was formed to assist and advise in drafting the watershed plan to reduce nonpoint source phosphorus loading into the creek. The stakeholder group completed the Saugahatchee Watershed Management Plan in 2005, following an 18-month process of more than 20 meetings, and submitted an application for funding Phase 1 Implementation of SWaMP, the first 3 years of the 9-year plan.

SWaMP outlines rural and urban, structural and non-structural strategies for reducing nonpoint source pollution in the Saugahatchee Watershed. The Plan complements work by the Tallapoosa Basin Clean Water Partnership, as well as efforts underway by the cities of Auburn and Opelika to address Phase II Storm Water Regulations and nutrient reductions outlined in the ADEM draft Total Maximum Daily Load (TMDL) for the creek.

The goal of Phase I Implementation of SWaMP is to achieve a 15% reduction in nutrients (primarily phosphorus) entering the Saugahatchee Embayment from nonpoint sources. The goal of implementation of the entire 9-year SWaMP plan is a 39% nutrient load reduction into the embayment and restoration of its waters to fully support its use classifications of Public Water Supply, Swimming, and Fish and Wildlife. The overall goal of the plan is much broader, to ultimately improve quality of life in the watershed in light of inevitable population growth and the economic development that goes with it.
Efforts thus far have focused on organizing and broadening the SWaMP stakeholder group, education/outreach activities, initiating a study of local watersheds to demonstrate and educate on the benefits of forest cover in maintaining a clean water supply, website development, prioritizing areas in the Saugahatchee Watershed for placement of best management practices (BMPs) to reduce nonpoint source pollution entering the creek, and developing a procedure for funding on-the-ground projects in the Saugahatchee Watershed.

Stakeholder meetings relative to the Implementation Phase of SWaMP were held in September and October of 2006, and in February, April, May, August and September of 2007 at the City of Auburn Bailey-Alexander Water and Sewer Complex. Stakeholders include municipal officials, representatives from business, industry, community groups, Auburn University, ADEM, USDA-NRCS, the Alabama Forestry Commission, and the Alabama Cooperative Extension System. Meeting agendas have included review of the SWaMP Plan, an update on Soil and Water Conservation Committee Statewide Watershed Assessment, an update on citizen volunteer bacteria monitoring in the Auburn/Opelika area, updates on SWaMP outreach efforts, an update on the AU Forestry study of local subwatersheds, the AU Sustainability Initiative's Alabama Clean Streams environmental education program, formation of a SWaMP Steering Committee, formation of a process for on-the-ground project funding, a 319-funded low impact development project that SWaMP plans to collaborate with, and several potential projects that SWaMP may fund (a riparian zone restoration project on Saugahatchee Creek, a retrofit of a subdivision detention basin into a wetland at Camden Ridge Subdivision, and a rain barrel project at an Opelika school; see Appendix A. Meeting Agendas).

SWaMP stakeholders meeting at the City of Auburn Bailey-Alexander Water Complex, September 2006.

SWaMP project updates were presented at five Tallapoosa River Basin Clean Water Partnership meetings, in August 2006 and in February, April, and May and July 2007. Presentations on the SWaMP project have also been given to governmental and citizen groups, including presentations to the Lee County Commission, Save Our Saugahatchee Inc., and Friends of Chewacla Creek and the Uphapee Watershed.

Abstracts of the SWaMP project were submitted and accepted at two professional conferences, the 2007 AU Water Resources Conference, Bridging the Gap Between Science, People and Policies, in Auburn, AL in June 2007 and the ADEM 19th Annual Nonpoint Source Conference to be held in Montgomery, AL in January 2008 (see Appendix B. SWaMP Abstracts).

SWaMP conducted a watershed tour of several sites in the Saugahatchee Watershed including a construction site of a residential subdivision, a forested site managed by MeadWestvaco that had recently been thinned, and a rural unpaved road site near Loachapoka. Several stakeholders went on the tour to learn about best management practices that minimize erosion/sedimentation and types of nonpoint source pollution that can run off of these different land uses (see Appendix C. Articles about SWaMP).
Education/outreach efforts have included the distribution of a publication, *Saugahatchee Creek Watershed – Past, Present & Future*, (produced under the initial planning grant) at stakeholder meetings and outreach events such as the Loachapoka Syrup Soppin’ and the Auburn City Fest (see Appendix D. SWaMP Publications). Other publication efforts include a SWaMP tri-fold brochure and a SWaMP poster. The SWaMP poster was presented at the 2007 AU Water Resources Conference, *Bridging the Gap Between Science, People, and Policies* in Auburn, AL in June.

Several meetings were held to design a SWaMP webpage, which is in its early stages of development (see Appendix E. SWaMP Webpage). This webpage will be used as a communication tool as well as a place to showcase and promote watershed management efforts to minimize nonpoint source pollution.

SWaMP has assisted in other education/outreach efforts including teaching school children in Auburn and Opelika about stream ecology, water chemistry testing and stream bioassessment; teaching children about water and water pollution at the Lee County Water Festival; assisting two local citizen volunteer monitoring groups, Save Our Saugahatchee and Friends of Chewacla Creek and Uphapee Watershed, in watershed-level bacteria assessments of streams in the Auburn/Opelika area; and educating children and their parents about nonpoint source pollution and its prevention and water chemistry testing at the AU Davis Arboretum’s Game Day outdoor education program.

Children and their parents learning about nonpoint source pollution with the Enviroscape and about testing water chemistry with the AWW test kit.
Other efforts include supporting and partnering with ongoing activities in environmental education, such as the AU Sustainability Initiative’s Clean Streams Program, which teaches fourth grade students about nonpoint sources of pollution in their local neighborhoods and what they can do to minimize them.

Analysis of historical data for the Saugahatchee Watershed indicated that urban nonpoint source pollution should be a priority, since runoff from urban subwatersheds was about three times higher (average=0.09 mg/ L) in phosphorus than rural (primarily forested) subwatersheds (average=0.03 mg/ L; Bayne et al. 2004).

Mean concentrations (mg/ L) of phosphorus measured in streams draining urban (yellow) and rural (green) subwatersheds in the Saugahatchee Watershed (Bayne et al. 2004).

Preliminary analysis of local watersheds that exhibit a range of urban development indicated that forest cover protects water quality, and that as the amount of land in a watershed covered by lawns and/ or impervious surfaces increases, stream water quality is impacted.

SWaMP will fund strategic installation of BMPs to intercept/ minimize pollution runoff into Saugahatchee Creek to reduce nonpoint source loading of phosphorus into Saugahatchee Embayment. Selection of BMP projects for SWaMP funding requires publicizing and educating Saugahatchee Watershed stakeholders about SWaMP. This is being achieved through several media: stakeholder meetings, the new SWaMP website, distribution of the SWaMP tri-fold brochure and 20-page publication, and a planned landowners meeting to discuss SWaMP efforts and opportunities. A SWaMP Steering Committee (below), composed of representatives from both urban and rural areas, and from government, business/industry, community, and university sectors, has been formed for the evaluation of potential BMP projects for SWaMP funding.

<table>
<thead>
<tr>
<th>Saugahatchee Watershed Management Plan Steering Committee</th>
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<tbody>
<tr>
<td><strong>Urban</strong></td>
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<tr>
<td>Government</td>
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<tr>
<td>City of Opelika –Mike Hilyer</td>
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<td>City of Auburn-Matt Dunn</td>
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<td>ADEM-Missy Middlebrooks</td>
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<tr>
<td>Business/Industry</td>
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<td>Hydro Engineering Solutions – John Curry</td>
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<td>Community</td>
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<td>S.O.S-Cliff Webber</td>
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<td>Auburn University</td>
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<td>AU Forestry-Chris Anderson</td>
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<td><strong>SWaMP Director/Coordinators:</strong> Deutsch, Seesock, Reutebuch</td>
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</tbody>
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A SWaMP Project Application form has been finalized to be distributed to stakeholders who wish to apply for SWaMP project funding (see Appendix F. SWaMP Application Form). SWaMP coordinators have had meetings and communications regarding six BMP projects (four structural, two nonstructural), a silviculture BMP workshop, and an unpaved-roads BMP workshop.

**Potential SWaMP Projects (as of September 2007):**
- Stream Bank Restoration Project – Saugahatchee Creek
- Detention Wetland Project – Camden Ridge Subdivision
- Clean Streams Program – Schools in the Saugahatchee Watershed
- Rain Barrel Project – Trinity School, Opelika
- Opelika Stream Riparian Restoration Project – Opelika City Park
- Waterbody Signage – Lee/ Tallapoosa Counties, Auburn/ Opelika

Tours were organized of potential nonpoint sources in the Saugahatchee Watershed and of a detention structure for possible retrofitting into a wetland.

**5. References**


**6. Appendices**

A. SWaMP Meeting Agendas  
B. SWaMP Abstracts  
C. Articles about SWaMP  
D. SWaMP Publications  
E. SWaMP Webpage  
F. SWaMP Project Application Form
APPENDIX A - SWaMP Meeting Agendas

1. **Saugahatchee Watershed Management Plan (SWaMP) Meeting**  
   September 18, 2006, 1:30 – 3:00 PM  
   City of Auburn Bailey-Alexander Water & Sewer Complex  
   1501 W. Samford Avenue

Purpose: To initiate the implementation of SWaMP

Items of business will include:

1. Welcome and Introduction
2. Review of the objectives of SWaMP
3. Initiation of formation of a governance body and management of SWaMP
4. Compilation of stakeholder comments to ADEM’s Draft TMDL for Saugahatchee Creek Embayment to formulate SWaMP comments to be sent to ADEM
5. What’s next?

2. **Saugahatchee Watershed Management Plan (SWaMP) Meeting**  
   October 18, 2006, 1:30 – 3:00 PM  
   City of Auburn Bailey-Alexander Water & Sewer Complex  
   1501 W. Samford Avenue

Purpose: To discuss SWaMP governance, on-the-ground project funding, SWaMP outreach (booth at Syrup Soppin’, website)

Items of business will include:

1. Review of the minutes of the September meeting
2. Formation of a governance body and management of SWaMP
3. Initiation of on-the-ground projects in the Saugahatchee Watershed
   a. Distribution of a list of possible projects
   b. Discussion of application process for SWaMP funds for project implementation
4. SWaMP outreach activities
   c. SWaMP booth at Loachapoka Syrup Soppin’
   d. Evaluate a mock-up of a SWaMP webpage and discuss its content
5. Next meeting date
3. **Saugahatchee Watershed Management Plan (SWaMP) Meeting**  
February 28, 2007, 2:00 ~ 4:00 PM  
City of Auburn Bailey-Alexander Water & Sewer Complex  
1501 W. Samford Avenue

Purpose: To discuss SWaMP progress

Items of business will include:

1. Christopher Plymale, EPA Region 4 – discussion of SWaMP/EPA interactions
2. Review the Plan and Phase 1 Implementation, September/October meetings
3. Update on Soil and Water Conservation Committee Statewide Watershed Assessment - Vic Payne and Jason Garner
4. Update on ADEM/SOS/CHEWUP bacteria monitoring in Auburn/Opelika
5. Miscellaneous Items:  
   - SWaMP outreach activities update (SWaMP booth at Syrup Soppin’, web page)  
   - Initial Data Analysis – toward prioritization of subwatersheds; Saugahatchee LU/LC  
   - Atlanta Conference: Emerging Issues Along Urban/Rural Interfaces, April 9-12 ([http://www.sfws.auburn.edu/urbanruralinterfaces/index.html](http://www.sfws.auburn.edu/urbanruralinterfaces/index.html))  
   - New USDA/CSREES proposal for the Tallapoosa and relationship to SWaMP
6. Next meeting:  
   - AU Fisheries and Forestry discuss their specific SWaMP activities  
   - Discuss SWaMP outreach  
   - Discuss SWaMP governance  
   - Stakeholders discuss potential SWaMP activities:

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<thead>
<tr>
<th></th>
<th>Structural</th>
<th>Non-structural/Outreach</th>
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<tbody>
<tr>
<td><strong>Urban</strong></td>
<td>Auburn</td>
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<td><strong>Rural</strong></td>
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<td>County</td>
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<td>SOS</td>
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<td>Other</td>
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4. Saugahatchee Watershed Management Plan (SWaMP) Meeting
5 April, 2007 2:00-4:00 PM
City of Auburn Bailey-Alexander Water & Sewer Complex
1501 W. Samford Avenue

Purpose: To learn about two projects in the urban/suburban parts of the watershed.
To discuss SWaMP governance and project funding.

1. Introductions:
2. Forestry activities
   Chris Anderson
   Q&A
3. Storm drain marking
   Matt Williams
   Q&A
4. SWaMP governance and project funding.
   a. Need for break-out groups/committees?

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<thead>
<tr>
<th></th>
<th>Urban</th>
<th>Rural</th>
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<tbody>
<tr>
<td><strong>Government</strong></td>
<td>1. City of Opelika</td>
<td>1. NRCS</td>
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<td>2. City of Auburn</td>
<td>2. County Commissions</td>
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<td>3. ADEM</td>
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<td><strong>Business/Industry</strong></td>
<td>WestPoint Home</td>
<td>MeadWestvaco</td>
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<td><strong>Community</strong></td>
<td>S.O.S</td>
<td>AL Forestry Commission</td>
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<tr>
<td><strong>Auburn University</strong></td>
<td>SWaMP Director/Coordinators</td>
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</tbody>
</table>

5. Moving toward priority areas for activities: What’s the message?
   a. *E. coli*
   b. Nutrients
   c. Forestry (Chris)
6. Announcements: **SOS/CHEWUP Creek Clean-Up (April 7)**
   TWP2 grant (April 4)
   Earth Day (April 19th)
   SOWC-TWP (April 20th)
   Auburn City Fest (April 28th)
   Water Festival (May 11th)
7. Next Meeting: Date?, Topics for discussion?
5. **Saugahatchee Watershed Management Plan (SWaMP) Meeting**

22 May 2007, 2:00 ~ 4:00 PM  
City of Auburn Bailey-Alexander Water & Sewer Complex  
1501 W. Samford Avenue

Purpose: To tour various sites in the Saugahatchee Watershed and discuss issues related to these sites.

Items of business will include:

1. Introductions
2. Review the tour and planned stops.
3. Ellington Place, Richland Road, Joel Seawell, Erosion Pros
4. The Preserve, Lee Road 72
5. MeadWestvaco site, forest thinning, Lee Road 81, Auburn.
6. Dirt road impacts, Lee Road 65, Loachapoka.
7. Discussion.
8. Future meeting date.
6. **Saugahatchee Watershed Management Plan (SWaMP) Meeting**

7 August, 2007 2:00-4:00 PM  
City of Auburn Bailey-Alexander Water & Sewer Complex  
1501 W. Samford Avenue

Purpose: To update stakeholders on SWaMP activities, learn about two projects in the watershed.

1. **Introductions:**

2. **Update of SWaMP activities – Eric Reutebuch**

3. **Low Impact Development – Eve Brantley**

4. **Saugahatchee Creek Riparian Zone Restoration – Matt Dunn and Dan Ballard**

5. **New Business:**
   - WWTP diversion
   - Statewide rain garden plan
   - SWCC watersheds assessment – Saugahatchee as a priority watershed
   - Recognition of Auburn-area watershed protection efforts

6. **Announcements:**

   - **Stream Restoration Workshop Series:**  
     Workshop and registration information available from the website  
     [http://www.aces.edu/waterquality/towncreek.htm](http://www.aces.edu/waterquality/towncreek.htm)  
     - Stream Morphology Assessment September 20-21, 2007  
     - Stream Restoration Design November 28-29, 2007  
     - Stream Restoration Construction January 9-10, 2008  
     - Vegetation for Stream Restoration February 27-28, 2008  
     Contact Eve Brantley [brantef@auburn.edu](mailto:brantef@auburn.edu) for information

   - **Red Water Blues:**  
     - Sept. 6 at Cullman  
     - Sept. 13 at Prattville  
     - Sept 27 at Spanish Fork  
     - Contact info:  
       - Cullman—Tim Scott, (256) 734-6471, ext. 3 or tim.scott@al.nacdnet.net  
       - Prattville—Paula Adams, (334) 365-5532, ext. 3 or paula.adams@al.nacdnet.net  
       - Spanish Fort—Rhonda Bryars, (251) 937-3297, ext. 3 or rhonda.bryars@al.nacdnet.net

   - **2007 Alabama Water Resources Conference,** Orange Beach Alabama.  
     Join us September 5-7, For details visit [www.auei.auburn.edu/conference](http://www.auei.auburn.edu/conference)

7. **Next Meeting – Date**
7. Saugahatchee Watershed Management Plan (SWaMP) Meeting
18 September, 2007 2:00-4:00 PM
City of Auburn Bailey-Alexander Water & Sewer Complex
1501 W. Samford Avenue

Purpose: To update stakeholders on SWaMP activities, and learn about two structural BMP candidate projects for possible SWaMP support.

1. Introductions:

2. Update of SWaMP activities
   - Camden Detention Pond tour
   - Clean Streams meeting
   - SWaMP website
   - AU Forestry Catchment Study sites

3. Retrofit Subdivision Detention Basin into a Wetland – John Curry

4. Discussion of a Rural Agricultural Stream for 319 Restoration Project – (Eve Brantley)

5. Opelika School Rain Barrel Project – Bryan Duncan

6. New Business:
   - Potential projects for SWaMP support and their evaluation – Eric Reutebuch
   - Sampling of Yates/Saugahatchee Embayment – Wendy Seesock
   - Lower Saugahatchee Landowners Meeting – Tommy Futral
   - CWP program – Business Partners for Clean Water – Bill Deutsch
   - AU Water Resources Center Grant Program Request for Proposals

7. Announcements:
   - **Stream Restoration Workshop Series:**
     Workshop and registration information available from the website: [http://www.aces.edu/waterquality/towncreek.htm](http://www.aces.edu/waterquality/towncreek.htm)
     - Stream Morphology Assessment September 20-21, 2007
     - Stream Restoration Design November 28-29, 2007
     - Stream Restoration Construction January 9-10, 2008
     - Vegetation for Stream Restoration February 27-28, 2008
   
   Contact Eve Brantley brantef@auburn.edu for more information

   - **Loachapoka Syrup Soppin** – October 20th – SWaMP booth
     - Sign-up sheet, outreach materials

8. Next Meeting: Date?
Implementing SWaMP – the Saugahatchee Watershed Management Plan

William Deutsch1, Graeme Lockaby2, Wendy Seesock1, Eric Reutebuch1
1Department of Fisheries and Allied Aquacultures, Auburn University, Auburn, AL 36849-5419
2Center for Forest Sustainability, Auburn University, Auburn, AL 36849-5419

The Saugahatchee Creek Watershed encompasses a 220 square mile area located in the Lower Tallapoosa River Basin in east-central Alabama primarily in Lee and Tallapoosa counties. Approximately 76% of the watershed is forested, while 12% is used for pastures and row crops, and 8% is in urban/developed areas (according to a USGS 2001 analysis). The upper watershed is undergoing rapid transition from forest/agricultural land to urban/developed land. Saugahatchee Creek has two segments, the Pepperell Branch and the Saugahatchee Creek Embayment (where the creek enters Yates Lake) currently on ADEM’s 303(d) list of impaired streams for receiving excess nutrients, primarily phosphorus. The embayment is also listed for receiving excessive organic matter and problems with low dissolved oxygen.

The Phase 1 Implementation of the Saugahatchee Watershed Management Plan (SWaMP) began in early 2007 under a 3-year grant awarded to Department of Fisheries and Allied Aquacultures at Auburn University. The project is directed by Alabama Water Watch (AWW) and partially funded by the Alabama Department of Environmental Management through a Clean Water Act Section 319(h) nonpoint source grant provided by the U.S. Environmental Protection Agency-Region 4. SWaMP efforts began much earlier in 2004, when AWW received a small grant to develop a watershed management plan to clean up Saugahatchee Creek. A diverse SWaMP stakeholder group representing local governments, business/industry, academia and community groups was formed to assist and advise in drafting the watershed plan to clean up the creek. The stakeholder group completed the Saugahatchee Watershed Management Plan in 2005, following an 18-month process of more than 20 meetings, and submitted an application for funding Phase 1 Implementation of SWaMP, the first 3 years of the 9-year plan.

SWaMP outlines rural and urban, structural and non-structural strategies for reducing nonpoint source pollution in the Saugahatchee Watershed. The Plan complements work by the Tallapoosa Basin Clean Water Partnership, as well as efforts underway by the cities of Auburn and Opelika to address Phase II Storm Water Regulations and nutrient reductions outlined in ADEM’s draft Total Maximum Daily Load (TMDL) for the creek.

The goal of Phase 1 Implementation of SWaMP is to achieve a 15% reduction in nutrients (primarily phosphorus) entering the Saugahatchee Embayment from nonpoint sources. The goal of implementation of the entire 9-year SWaMP plan is a 39% nutrient load reduction into the embayment and restoration of its waters to fully support its use classifications of Public Water Supply, Swimming, and Fish and Wildlife. The overall goal of the plan is much broader, to ultimately improve quality of life in the watershed in light of inevitable population growth and the economic development that goes with it.

Efforts thus far have focused on organizing and broadening the SWaMP stakeholder group, education/outreach activities, initiating a study of local watersheds to demonstrate and educate on the benefits of forest cover in maintaining a clean water supply, and prioritizing areas in the Saugahatchee watershed for placement of best management practices (BMPs) to reduce nonpoint source pollution entering the creek.
Education/outreach efforts have included the production of a publication, *Saugahatchee Creek Watershed – Past, Present & Future*, which has been distributed at several stakeholder meetings and outreach events. Other efforts include supporting and expanding ongoing partner activities in environmental education, such as the Auburn University Sustainability Initiative’s Clean Streams Program, which teaches fourth grade students about nonpoint sources of pollution in their local neighborhoods and how to minimize them. Workshops on management techniques of urban and rural lands that minimize nonpoint source pollution are being planned.

Analysis of historical data for the Saugahatchee Watershed indicated that urban nonpoint source pollution should be a priority, since runoff from urban watersheds was higher in phosphorus than rural (primarily forested) watersheds.

Preliminary analysis of five local watersheds that exhibit a range of urban development indicates that forest cover protects water quality, and that as the amount of land in a watershed covered by lawns and/or impervious surfaces increases, stream water quality is impacted.

Strategic installation of BMPs to intercept/minimize pollution runoff will involve outreach workshops, analysis of aerial imagery, watershed tours, and interactions with land managers and landowners. Based on strong collaboration of watershed partners and stakeholders thus far, we are confident in achieving reductions in the flow of nonpoint source pollutants into the creek.
Implementing SWaMP – the Saugahatchee Watershed Management Plan

William Deutsch¹, Eric Reutebuch¹, Graeme Lockaby², Wendy Seesock¹
¹Department of Fisheries and Allied Aquacultures, Auburn University, Auburn, AL 36849-5419
²Center for Forest Sustainability, Auburn University, Auburn, AL 36849-5419

The Saugahatchee Creek Watershed encompasses a 220 square mile area located in the Lower Tallapoosa River Basin primarily in Lee and Tallapoosa counties. Approximately 77% of the watershed is forested (USGS 2001). The upper watershed is undergoing rapid transition from forest/agricultural to urban/developed. Saugahatchee Creek has two segments, the Pepperell Branch and the Saugahatchee Creek Embayment on ADEM’s 303(d) list for excess nutrients.

The Phase 1 Implementation of the Saugahatchee Watershed Management Plan (SWaMP) began in 2007 under a 3-year grant awarded to the Department of Fisheries and Allied Aquacultures at Auburn University. The project is directed by Alabama Water Watch (AWW) and partially funded by the Alabama Department of Environmental Management (ADEM) through a Clean Water Act Section 319(h) nonpoint source grant provided by the U.S. Environmental Protection Agency-Region 4. SWaMP efforts began in 2004, when AWW received a grant to develop a watershed management plan for Saugahatchee Creek. A diverse SWaMP stakeholder group representing local government, business/industry, academia and community groups was formed to assist in drafting the plan. The stakeholder group completed the Saugahatchee Watershed Management Plan in 2005, and submitted an application to ADEM for funding Phase 1 Implementation of SWaMP.

SWaMP outlines rural and urban, structural and non-structural strategies for reducing nonpoint source pollution in the Saugahatchee Watershed. The Plan complements the work of the Tallapoosa Basin Clean Water Partnership, as well as efforts underway by the cities of Auburn and Opelika to address Phase II Storm Water Regulations and nutrient reductions outlined in ADEM’s draft TMDL for Saugahatchee Creek. The goal of Phase 1 Implementation of SWaMP is to achieve a 15% reduction in nutrients (primarily phosphorus) entering the Saugahatchee Embayment from nonpoint sources.

Efforts thus far have focused on organizing and broadening the SWaMP stakeholder group, establishing partnerships to leverage SWaMP efforts, education/outreach activities (publications, outreach booths at local civic events, a watershed tour, webpage construction), gathering and analyzing historical water quality data, initiating a study of local watersheds to demonstrate and educate on the benefits of forest cover in maintaining a clean water supply, and prioritizing areas in the Saugahatchee watershed for placement of best management practices (BMPs) to reduce nonpoint source pollution entering the creek. A project guidance/application document has been developed for BMP installation, and several projects have been identified for evaluation and possible funding by SWaMP.
APPENDIX C - Articles about SWaMP


A COMBINED EFFORT

John Tarbert, a soil specialist from MeadWestvaco, describes Tuesday in Auburn how clearcutting an area of forest can be done with soil conservation in mind, by keeping ground cover and setting up water-flow barriers, most erosion can be prevented. Alabama A&M Forestry and Wildlife's Chris Anderson and ADEM's Missy Middlebrooks look along the Saugahatchee river, as it twists and flows under the CR 65 bridge, near CR 66 in Loachapoka.

Stakeholders observe potential water pollutant sources

LINDSAY FIELD

Stakeholders of the Saugahatchee Watershed toured Lee County Tuesday observing potential sources or non-point nutrient pollution.

Saugahatchee Watershed Management Plan (SWaMP) stakeholders met at the Bailey-Alexander facility Tuesday afternoon before taking an educational tour of sites on the Saugahatchee Watershed.

They visited a residential development, Ellington Place off Richland Road; the MeadWestvaco forestry site off Lee Road 81; and the Saugahatchee Creek at the single lane bridge where it crosses Lee Road 65.

“We will use these areas to focus on where we will put grant money to help with reduction of these nutrient loads to the creek in the form of BMP's (Best Management Practices),” said Wendy Seesock, SWaMP member and Save Our Saugahatchee president.
Ag Illustrated. Volume 4, Number 1, Fall 2006.

Bill Deutsch was awarded a $304,900 grant from the Alabama Department of Environmental Management.

Could Alabama become the new ‘Food Bowl’? It was so proclaimed by Former Pensacola Mayor B. H. Sibley. As the nation’s hunger and housing woes grew, the need for fresh produce became a common topic. The key to success is not only growing the food, but also growing the market for it. The town has already gathered some 150 volunteers from across the state, which are now helping to grow food in the city.

The goal of the project is to establish Alabama’s Black Belt Region as the center for both production and delivery of fresh produce. The project will help to support the local economy and create new opportunities for local farmers.

Soren Bredborg, a student in the Alabama Agricultural Economics program, was instrumental in organizing and speaking at the recent Annual Conference on Ag and Food Policy. The event, which attracted more than 200 visitors, included presentations by Soren on GPS-based food tracking systems and by McDonald on alternative fuels.

Elois Church has been hired as an assistant professor of Ag and Food Policy, specializing in crop production.

Bill Deutsch, research associate in the Department of Plant Sciences and Agricultural Economics, recently presented at the Alabama Annual Conference on Ag and Food Policy.

The SWAMP stakeholders group that developed the plan includes representatives from the area’s leading universities, including Auburn University, Alabama A&M, and Alabama State University. The group includes Eric Ristau and Wendy Swineford, both of Auburn University, and will be focusing on developing a plan for reducing nutrient and sediment pollution in the creek, which flows through portions of Lox, Chambers, Oktibbeha, and Talladega counties.

To learn more about the project, visit www.swampalabama.org.

Elois Church has been hired as an assistant professor of Ag and Food Policy, specializing in crop production.

Annual Report, January – September 2007
Brochure describing SWaMP.
Saugahatchee Creek Watershed
Past, Present, & Future

October 2005

Publication produced by SWaMP describing the Saugahatchee Watershed.
The Saugahatchee Watershed Management Plan (SWaMP) 
William Deutsch1, Graeme Lockaby2, Wendy Sesecok1 and Eric Ruteckich1 
Department of Fisheries and Allied Aquacultures, Auburn University, Auburn, AL. 
Center for Forest Sustainability, Auburn University, Auburn, AL. 

Project Description 
Phase 1 Implementation of the Saugahatchee Watershed Management Plan (SWaMP) began in early 2007 under a $775,000 grant awarded to the Department of Fisheries and Allied Aquacultures at Auburn University. The project is directed by Alabama Water Watch (AWW). A diverse SWaMP stakeholder group representing local governments, businessindustry, academia and community groups was formed and directed a watershed management plan to reduce nonpoint source nutrient loading into the creek. SWaMP implementation involves education outreach efforts on proper land management of forests, fields and farms, and adaptive management of rural and urban land management practices to improve water quality of the creek.

A Watershed in Transition 
1993 
2001 

SWaMP NPS Pollution Reduction Strategies: 
- Workshops on proper forest management 
- Workshops on maintenance of unmaintained roads 
- Outreach on reduction of nonpoint source pollution 
- Installation of urban best management practices 
- Installation of rural best management practices 
- Watershed signage, storm drain marking

Phosphorus Concentrations (mg/L) of Select Sub-watersheds 
Elevation [TP] for transects in Saugahatchee Creek; Total P (TP) concentration in Saugahatchee Creek (green) = 0.050 mg/L, Median [TP] for transects in Creek (green) = 0.020 mg/L, Auburn University Forested study, 2001-2002

This project is partially funded by the Alabama Department of Environmental Management through a Clean Water Act Section 319 grant, which is provided by the U.S. Environmental Protection Agency-Region 4.
APPENDIX E - SWaMP Webpage

Fledgling SWaMP webpage.
Saugahatchee Watershed Management Plan (SWaMP)

Water Quality Improvement Project Application Guidance

SWaMP is a management plan drafted for the Saugahatchee Creek Watershed by the SWaMP stakeholder group, designed to improve water quality by reducing nutrient loading (especially phosphorus loading) into Saugahatchee Creek. This will be achieved through funding for strategic placement of urban and rural Best Management Practices (BMPs) that reduce the amount of nonpoint source pollution entering the creek, and through funding of educational/outreach activities that positively impact the behavior of watershed residents relative to nonpoint source pollution. The SWaMP Steering Committee is the decision-making body that allocates funding for BMP projects in the Saugahatchee Watershed. This group is composed of a wide array of stakeholders representing diverse interests in the watershed. Please visit the SWaMP web site for more information, www.swamp.auburn.edu.

To be considered, a project must 1) address environmental need, such as a positive, measurable impact on the water quality of Saugahatchee, and 2) contain an itemized budget (form) in adequate detail.

Other project selection criteria include:

- Project must be in the Saugahatchee Watershed.
- Project addresses objectives of SWaMP (see APPENDIX for objectives)
- Project can be used for future demonstration/education purposes by SWaMP (relates to structural BMP projects, not education/outreach projects)
- Project conveys that the applicant possesses a credible understanding of the nature and extent of the nonpoint source pollution problem and has the ability to successfully implement and direct the project to completion. Project expertise and resource availability must be adequate and assured.
- Project budget demonstrates good stewardship of grant funds for services to be provided (e.g. cost-effective; reasonable; justifiable; not “padded”).
- Project leverages funding (cash or in-kind services) from other partners. Funds will be used for BMP installation or for educational/outreach activities that are expected to result in water quality improvement. If matching is included in application form and project is approved, the fund recipient must provide SWaMP with documentation of matching or in-kind project support in the project report.
Guidelines for Application for Project Funding:

1. Type all information requested in the project application form. You may retype the form on your computer or download form from www.swamp.auburn.edu.
2. Complete all requested information. Proof read carefully to avoid omitting required information.
3. Mail the original to:

   Saugahatchee Watershed Management Plan Project  
c/ o Eric Reutebuch  
Department of Fisheries and Allied Aquacultures  
250 Upchurch Hall  
Auburn University, AL 36849-5419

4. Proposals will be reviewed and judged by the SWaMP Steering Committee based on criteria including: environmental need, water quality improvement, usefulness as a demonstration project to promote similar projects in the Saugahatchee Watershed, measures of success, appropriate budget.
5. If selected, you may be invited to present your project in greater detail to the SWaMP Steering Committee.
6. Grant recipients are responsible for compliance with all state and federal income tax laws.
7. A final written report must be forwarded to the SWaMP Steering Committee at the address listed above within thirty days after project completion.
8. Funds will be distributed based on funding source disbursement protocols.
9. The SWaMP Steering Committee reserves the right to approve or disapprove all or any part of a proposal.

Notification:
You will be notified of project evaluation and action to be taken by the SWaMP Steering Committee. Possible actions by SWaMP Steering Committee include recommendation for funding, and assistance in seeking partnerships to successfully attain necessary funding for project implementation.

To be considered for project funding, please complete application items listed below, including all requested information. Document should have one inch margins and type size no smaller than 11 point font.

1) Fill out all information requested on the Project Application Form and Project Budget Form

2) Add a one to two page Project Summary briefly describing:
   What: the project, specific objectives, environmental need, and evaluation of success
   Where: location of the project and area/stream(s) affected by it
   Who: list the partners, roles and responsibilities
   How: outline the procedures that will be used
   How Much: total amount of funds requested from SWaMP, and a budget narrative of details describing what the funds will be used for
   When: include schedules and estimated date of completion – this may be a separate spreadsheet or table attached to the summary

3) Reporting requirements – A final report must be submitted to the SWaMP Steering Committee within 30 days of project completion.
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**Saugahatchee Watershed Management Plan**

**Department of Fisheries and Allied Aquacultures**

**250 Upchurch Hall, Auburn University, AL 36849-5419**

**PHONE:** (334)-844-1163  **FAX:** (334)-844-3666
# Project Budget Form

**Project Title:** ________________________________________________

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**Totals:**
APPENDIX

PROJECT GOAL(s) - To implement Phase 1 of the Saugahatchee Watershed Management Plan that addresses current water quality problems identified in the Phase I TMDL and to reduce nutrient loading to the embayment by 15%.

PROJECT OBJECTIVE(s):

1. Analyze existing loading data for the Saugahatchee Creek on an annual and a seasonal basis to assess year-to-year variability and the relationship between nutrient load/biological response (chlorophyll a) in Saugahatchee Embayment

2. Gage flow and nutrient/sediment monitoring to determine loading in selected watershed Catchments

3. Analyze current Watershed land use/land cover (LU/LC) conditions to aid in identifying areas for BMP installation and for an education/outreach tool to illustrate LU/LC changes over time

4. Analyze environmental services and economic costs/benefits of current and projected land use

5. Implement a program of education/outreach/training for landowners, resource managers, decision makers, educators and the general public

6. Identify and install six BMPs in rural areas assisted by NRCS, Lee County SWCD, and Landowners

7. Identify and install six BMPs in urban areas assisted by officials from Auburn and Opelika

8. Model data using STEPL, Region 5, or other appropriate software to calculate post-BMP load reductions.