

Parkerson Mill Creek Watershed Implementation Project Final Report September 30, 2014



Parkerson Mill Creek enhancement project at City of Auburn Softball Complex



Soil Resources and Conservation students at the Auburn University Turf Unit rain garden



Educational signage tells the story of stream restoration along Parkerson Mill Creek



Pet waste stations promote stewardship at high traffic areas in the watershed

Goals

1. Reduce pathogen pollutant loadings to help remove Parkerson Mill Creek (PMC) from the CWA S. 303(d) List of Impaired Waters (Integrated Listing Methodology Category 5).
2. Initiate implementation of nonpoint source (NPS) pollution best management practices to help Parkerson Mill Creek meet its state water quality standards and designated use classification (Fish and Wildlife).

Objectives

1. Implement environmentally protective NPS best management practices (BMPs) to enhance watershed health, protect water quality, and mitigate NPS pollution.
2. Initiate implementation of nonpoint source BMPs to target NPS nitrogen, phosphorus, and sediment load pollutant reductions throughout the watershed
3. Facilitate delivery of NPS education and outreach to many and varied audiences
4. Initiate designs or BMP implementation measures to enhance or protect riparian areas or floodplains
5. Initiate designs or BMP implementation measures to enhance water quality in order to protect aquatic habitat and species community survival and diversity
6. Initiate designs or BMP implementation measures needed to mitigate current and future streambank erosion and degradation and prevent creek sedimentation
7. Coordinate planning and implementation of watershed management activities with urban and rural landowners/users, the City of Auburn, and Auburn University
8. Promote “local watershed ownership” by facilitating opportunities for local stakeholders to provide local NPS watershed health, water quality protection, and communal quality-of-life perspectives and participation
9. Promote cooperative public/private sector watershed management planning and implementation partnerships
10. Promote citizen-volunteer water quality monitoring activities as an education and outreach mechanism to and sustain long-term interest in this project

Deliverables/Outputs

1. At least 5 environmentally protective, on-the-ground, NPS best management practices properly installed. A request for proposals was sent to stakeholders and posted on the Parkerson Mill Creek website (www.aces.edu/pmc) to make it accessible to any interested person or group to submit BMPs for possible selection. The screening process reviewed and prioritized submitted projects for installation. The selection committee included representatives from Auburn University Crop, Soil and Environmental Sciences, Alabama Cooperative Extension System (ACES), Auburn University Risk Management and Safety, Alabama Department of Environmental Management (ADEM) and City of Auburn (COA).

Table 1 provides an overview of the 15 best management practices that were implemented during the grant duration. Twelve of these projects were funded in part by Section 319 funds. Three of the projects (Wellness Kitchen stream project, City of Auburn parking lot bioretention cell, and AU Campus Landscape Renovations) were funded by grant partners and have been used extensively to promote nonpoint source education.

Table 1. Step-L estimates of best management practices implemented during the Parkerson Mill Creek Watershed implementation project.

BMP	Lat/Long	N lb/yr	P lb/yr	BOD lb/yr	SED t/yr
PSRC rain gardens	32°35'19.17"N, 85°29'20.15"W	4.2	0.7	0	0.2
Raptor Center cistern	32°35'53.47"N, 85°30'43.76"W	4.2	0.7	0	0.2
Raptor Center rain garden	32°35'53.47"N, 85°30'43.76"W	8.6	0.9	0	0.2
Raptor Center vegetated swale	32°35'53.47"N, 85°30'43.76"W	9.1	1	0	0.4
Dudley Hall rain garden	32°35'56.74"N, 85°29'8.35"W	27.5	3.4	0	0.9
Dudley Hall cistern	32°35'56.74"N, 85°29'8.35"W	4.3	0.7	0.4	0.2
AU Turf rain garden	32°34'42.13"N, 85°30'0.55"W	12.7	1.5	0	0.5
AU IM stream enhancement	32°35'48.45"N, 85°29'45.44"W	13.6	5.2	27.2	10
City softball stream project	32°33'21.38"N, 85°30'43.48"W	18.9	7.3	37.8	13.9
AU Wellness Kitchen stream	32°35'56.92"N, 85°29'28.01"W	52.9	20.4	105.8	38.9
AU Corley bioretention	32°35'59.03"N, 85°29'4.08"W	18.9	2.5	0	0.6
City parking lot bioretention	32°36'25.70"N, 85°28'48.70"W	27.5	3.4	0	0.9
Pet Waste Stations (19)	various locations	0	0	0	0
Storm drain markers (350)	various locations	0	0	0	0
Campus Landscaping Renovation	various locations	20.6	3.4	118.9	1532.8
Total Reductions		223	51.1	290.1	1599.7

Project Descriptions are provided below.

- a. Two- 100 ft² rain gardens were installed at the Plant Science Research Center on the Auburn University campus in October 2012. (32°35'19.17"N, 85°29'20.15"W)
- b. The Southeastern Raptor Center installed a 2,000-gallon cistern, two vegetated swales, and a 250-ft² rain garden in November 2012. (32°35'53.47"N, 85°30'43.76"W)
- c. The Auburn University College of Architecture, Design, and Construction, Auburn University Office of Sustainability, and PMC project installed a 400 ft² rain garden and 1,000 gallon cistern at Dudley Hall December 2012. (32°35'56.74"N, 85°29'8.35"W)
- d. The Auburn University Turf Research Unit installed a 200 ft² rain garden to catch 2,000 square feet of roof top runoff in March 2013. (32°34'42.13"N, 85°30'0.55"W)

- e. Nineteen pet waste stations have been installed at 4 residential apartment complexes in the watershed with a large population of university students and dogs. Educational materials were provided to residents, with fines being assessed for not picking up waste from pets.
- f. Approximately 350 storm drains on campus have been recognized and labeled with the AU PMC storm drain markers. All 350 were marked by students through various classes and departments on campus. (32°36'11.93"N, 85°29'16.41"W)
- g. Three in-stream rock vane structures were installed at the intramural field pedestrian bridge in December 2013. Approximately 150 linear feet of streambank was enhanced and habitat improved. The area was seeded, live stakes were installed, and native vegetation is awaiting installation along the banks in winter 2015. Students in the liberal arts department installed live stakes as part of their learning and outreach. (32°35'48.45"N, 85°29'45.44"W)
- h. Construction was completed in April 2014 for the City of Auburn Softball Complex stream project (150 lf). Project components included 75 linear feet of toe-wood, boulder vanes, stormwater outfall protection, and native vegetation. (32°33'21.38"N, 85°30'43.48"W)
- i. The Corley Courtyard Stormwater Education Plaza was completed in August 2014. Two- 6 foot deep, 1,500 ft² bioretention cells were constructed and educational signs will be installed in Fall 2014. It will serve as an outdoor teaching classroom for Biosystems Engineering faculty, students, campus visitors, Extension workshops, and campus Sustainability Academic Program tours. An Honors College Biosystems Engineering student was responsible for the original design and concept as part of the honors college requirements and curriculum. Post-storm event sampling will be analyzed and described by Biosystems faculty and students to evaluate pollutant removal. The first storm event sample was very low turbidity. Nutrient analysis has not yet been performed. (32°35'59.03"N, 85°29'4.08"W)
- j. The PMC project assisted with a 350 linear foot stream restoration project in the stream headwaters as part of the newly completed Auburn University Wellness Kitchen. PMC grant dollars were used to purchase educational signage. Auburn University Facilities and Athletics funded the actual restoration design, construction, and vegetation. Future improvement of the stream is included in the Auburn University Campus Master Plan and the Landscape Master Plan. (32°35'56.92"N, 85°29'28.01"W)
- k. The City of Auburn supports stormwater management and development practices that minimize environmental impact to local waterways. Examples of their commitment include the installation of a bioretention cell in the newly completed downtown parking lot. This was fully funded by the City of Auburn and used as

an educational demonstration project by the Alabama Cooperative Extension System. (32°36'25.70"N, 85°28'48.70"W).

1. The Auburn University Facilities Management Division renovated several areas on campus to increase greenspace and incorporate fertilizer application plans that target need based on soil testing. Campus locations that added greenspace include: Center for Advanced Science, Innovation, and Commerce (26,400 sq.ft.), Kinesiology (17,850 sq. ft.), Wellness Center (23,400 sq. ft on the ground and 27,540 roof), Residence Hall (135,200 sq. ft this includes new sod in area), Tiger Concourse (12,000 sq. ft), War Eagle Way (6,000 sq ft.) Vet School (8,000 sq. ft.), Memory Garden (5,000 sq. ft.), Ramsay Hall (3,000 sq. ft.), Magnolia Islands (1,000 sq. ft), and various small additions of landscape that equal approximately (5,000 sq. ft).
2. At least 5 field or classroom NPS water quality protection workshops or hands-on type training provided to local audiences.
 - a. Parkerson Mill Creek partnered with the Alabama Cooperative Extension System (ACES), City of Auburn (COA), and Saugahatchee Watershed Management Plan (SWaMP) to conduct five workshops.
 - i. Stephen Enloe Streamside Repair Workshop Feb 25, 2012, 36 participants - Participants learned about streamside erosion, as well as proper removal of non-native invasive vegetation and live staking using native vegetation.
 - ii. Smart Yards Lawn Care and Landscape Management Workshop March 17, 2012, 75 participants - Participants were introduced to watershed stewardship, the relationship between land use and water quality, economics of over application of fertilizers and herbicides, and the importance of soil testing.
 - iii. Rain garden installation at the home of Chris and Kathy Hughes – July 11, 2012, 15 participants - Participants discussed watershed stewardship, benefits of rain gardens, native plants, and gained hands-on experience planting a rain garden.
 - iv. Rainwater harvesting workshop April 4, 2013, 25 participants -Partnership with SWaMP and the AU Davis Arboretum to provide a field tour of rainwater harvesting options and overview of water resources, stormwater management.
 - v. Parkerson Mill Creek Project was presented at the Water Education Summit in Chattanooga, TN September 2013 to an audience of 160 attendees.

- vi. Parkerson Mill Creek partnered with the Office of Risk Management for a creek clean up February 19, 2014. Approximately 4,750 linear feet of stream was clean up.
 - vii. Parkerson Mill Creek partnered with the Davis Arboretum and others around campus for the Alien Invasion Plant Removal Clean up and Workshop on February 22, 2014 at the Davis Arboretum. Fifty volunteers were present; attendance was made up of professors, faculty, staff, students, and community volunteers.
- b. Workshops with Parkerson Mill Creek as the lead coordinator.
- i. Residential Rain Garden Certification workshop – 55 landscape and natural resource professionals participated in the first Residential Rain Garden Certification workshop that was held December 2012 in partnership with the Saugahatchee Watershed Management Plan. Participants learned basics of nonpoint source pollution, siting, design, and construction of rain gardens, and appropriate vegetation and maintenance of these practices.
 - ii. Low Impact Design Guidelines for Engineers and Designers and Contractors – May 1-2, 2012. 30 design professionals took part in this introduction to Low Impact Development design and lessons learned workshop that was a partnership with the Saugahatchee Watershed Management Plan.
 - iii. Plant Science Research Center Open House and Rain Garden Workshop – October 30, 2012. Auburn University faculty, staff, students, and watershed stakeholders learned basics of nonpoint source pollution, overview of rain gardens, and assisted in the planting of two parking lot rain gardens at the Auburn University Plant Science Research Center.
 - iv. The Parkerson Mill Creek Showdown - February 23, 2013 – Forty fellow nature lovers and environmental stewards on came out to show support for the “Parkerson Mill Creek Showdown,” an invasive-plant cleanup event taking place on campus along Parkerson Mill Creek behind the McWhorter Center. The event was designed for those who were concerned about the impact of invasive plants on local habitats or wanted learn more about how to manage invasive plants along a creek bank. Participants learned correct herbicide techniques, identification of several invasive species, and were treated to a chili lunch following the workshop.
 - v. Parkerson Mill Creek partnered with AU Division of Facilities Management for understory land clearing of invasive plant species and

- field tour with facilities personnel. AU Facilities will follow-up with routine herbicide treatments and replanting of the streambanks with native vegetation for streamside protection and creating aesthetically pleasing greenspaces for university and public use, while raising awareness of the streamside habitat. Educational signage is planned.
- vi. A professional development workshop was conducted accompanying the City of Auburn Softball stream project April 15, 2014. 15 professionals from across Alabama and Georgia attended this field training to learn more about stream restoration design and construction techniques.
- c. University classroom participation has played a critical role in this project. Students from across colleges and departments have toured Parkerson Mill Creek and experienced firsthand the creek, problems, and solutions. They learned about severe bank erosion, discussed the elevated pathogen levels, collected litter, removed invasive vegetation, and recommended solutions. The results of their participation were presented to other classmates.
 - i. EarthSmart – Univ1000 Fall 2011, Spring 2012, Fall 2012, Fall 2013, Spring 2014 (35 total students)
 - ii. Sustainability and Community - HONR1087 – Spring 2012, Fall 2013, Spring 2014 (20 total students)
 - iii. Practicum in Liberal Arts - LBAR 3910 – Spring 2014 (20 students)
 - iv. English Department Class Project –ENGL 5000 – Fall 2013 (5 students)
 - v. Soil Resources and Conservation – AGRN 5080/6080 – Summer 2011, 2013, 2014 (45 students total)
 - d. Parkerson Mill Creek partnered with the Center for Forest Sustainability (CFS) to host a CFS Water Fun Day, June 26, 2012. Fifty elementary school students and adult chaperones visited the Parkerson Mill Creek watershed. They were introduced to watersheds and stream health by hands-on participation in the Enviroscope.
 - e. Parkerson Mill Creek partnered with the Office of Sustainability to present a “Campus Conversation”. The conversation involved a short 10 minute presentation to the audience and a brainstorming session to allow stakeholder input and opinions about the current state of the creek and its future. The attending students and faculty voiced concerns and ideas as for how they would like to be able to use the creek in the future. They brought up ideas to keep it both aesthetically pleasing to the public and allowing for natural ecosystems to be brought back into place. (30 participants)

- f. Parkerson Mill Creek partnered with the Center for Forest Sustainability (CFS) to host the second CFS Water Fun Day in June 2013. Seventy-five elementary school aged kids and chaperones visited the Parkerson Mill Creek watershed and attended a day filled with indoor and outdoor activities. They learned about stream insects and ecology, healthy and unhealthy streams, and the importance of watershed protection.
 - g. Parkerson Mill Creek partnered with the Office of Sustainability and Honors College for two events for storm drain marking. Approximately 50 students participated in marking over 350 storm drains.
 - h. Auburn University Stream Team, July 2014. 25 high school students from around the state attended a 3-day intensive study on water and the environment. They toured Parkerson Mill Creek to see a degraded stream and discussed history, problems associated with the creek, and solutions to the problem with PMC and other urban streams suffering from the same issues. Students were trained in Alabama Water Watch and will return to Auburn University in summer 2015 to present data and watershed observations of their adopted streams.
3. Improved water quality through reductions in NPS pollutant loadings as determined by STEPL modeling (e.g. pathogens, nitrogen, phosphorus, and sediment). The STEPL model was used to assess pollutant load reduction quantities after BMPs were implemented.
 - a. Total pollutant load reduction from newly installed landscaping on campus – N - 20.6 lb/yr; P – 3.4 lb/yr; BOD – 118.9 lb/yr; TSS - 1532.8 lb/yr
 - b. Pollutant load reduction from installed practices - N – 202.4 lb/yr; P – 47.7 lb/yr; BOD – 171.2 lb/yr; TSS – 66.9 lb/yr
 - c. Total pollutant load reductions - N – 223 lb/yr; P – 51.1 lb/yr; BOD – 290.1 lb/yr; TSS – 1599.7 lb/yr
4. Enhancement of stakeholder watershed, water quality and NPS pollution management knowledge and awareness.
 - a. Stakeholders were notified via email of any and all upcoming activities and workshops that are in relation to PMC and were encouraged to attend. Emails included upcoming workshops, clean-ups, activities within the watershed and PMC partner activities.
 - b. Students with the Auburn Sustainability Awareness Program (ASAP) held a two-day river runway on the Haley Center concourse to educate Auburn University students, faculty, and staff, and visitors about PMC, water usage, and the effects of their actions on nearby waterbodies.

- c. An award ceremony was held in the Davis Arboretum in January to present a check to Parkerson Mill Creek stakeholders. All stakeholders were invited to attend. The ceremony was a good opportunity to kick off the grant opening and raise awareness and deliver information to a broader audience about Parkerson Mill Creek.
 - d. A stakeholders meeting was held in October 2012 and August 2013 for stakeholders to see progress and provide input.
5. Semi-annual, annual, and final S.319 grant project report submitted to ADEM to help assess goals, objectives, and milestone implementation status; NPS pollutant load reductions, and water quality improvements
- a. The first semi-annual report was submitted in March 2012.
 - b. The first annual report is submitted, with plans to include status updates and improvements in future reports.
 - c. March 2013 a semi-annual report was submitted and included the latest updates.
 - d. September 2013 an annual report was submitted and included the latest updates.
 - e. March 2014 semi-annual report was submitted and included the latest updates.
 - f. October 2014 final report submitted.

Other Ongoing Work

1. Auburn University has included Parkerson Mill Creek in their annual consideration of deferred maintenance funding for projects that will improve water quality, stream stability, stormwater runoff, and aesthetics. Examples of projects that complement the PMC project include mechanical clearing of invasive plants in the riparian corridor. This action made it easier to remove litter, dissuade illegal dumping, chemically manage invasive species, and was a highly visible introduction to students, faculty, staff, and visitors to the stream. Currently, plans are being developed to stabilize and enhance a high erosion tributary that flows through the Paterson Greenhouse Complex.
2. Engineers Without Borders performs monthly sampling for water chemistry and bacteria counts at six sites on PMC. This data is recorded and made public by Alabama Water Watch (AWW) on its website (www.alabamawaterwatch.org or <https://fp.auburn.edu/icaae/wbsites.aspx> - Parkerson Mill Creek). Quarterly sampling of PMC is conducted and recorded by Save Our Saugahatchee (SOS) and the data is also posted on the website.
3. IMPACT and the Big Event, student volunteer organizations, performed weekly creek clean-ups for trash, debris, and removal of invasive species during spring semesters.
4. A trash pick-up was hosted in March by Tom McCauley and the Office of Risk Management and Safety to clean up portions of the creek on the Auburn University campus.

5. An IMPACT volunteer day was held August 15, 2012 with nearly 40 students participating to remove trash, invasive species, and debris along the creek.
6. A pet waste campaign was completed in Fall 2012 at Auburn University to raise awareness about the Parkerson Mill Creek and pet waste on campus. Interested students passed out flyers noting the effects of pet waste on the environment along with pet waste bags and doggie bones. The university took note of the campaign and has included pet waste issues in the Campus Master Plan for the proper disposal of pet waste on gameday weekends in Auburn.
7. A RV Pump-Out Campaign was conducted for Fall 2012 to offer RV owners discounted disposal of their holding tanks. Vouchers were provided to each owner and passed out by students and staff of Ag Heritage Park. The university has since included RV waste disposal issues in the Campus Master Plan in order to plan for the proper disposal of RV holding tanks on gameday weekends in Auburn.
8. Facilities Management and Landscape Services made Parkerson Mill Creek a priority and have included the upkeep and management of the streamside forest in their rotation schedule for herbicide, invasive plant removal, and replanting of the streamside buffers.
9. Facilities Management is in the process installing instream structures to protect the pedestrian bridges and reduce erosion. Construction is expected to begin in Dec 2013.

Appendix

PMC Awards Ceremony – 1.31.2012



Auburn watershed project receives nearly \$200,000

By: [DONATHAN PRATER](mailto:dprater@oanow.com) | dprater@oanow.com

The Alabama Department of Environmental Management (ADEM) presented Auburn University with a check for \$179,810 toward its Parkerson Mill Creek Watershed Project at AU's Davis Arboretum on Monday.

"We have received the grant money from the Department of Environmental Management and will be holding a call for projects," Eve Brantley, Water Resource Specialist for ACES said.

The \$179,810 in federal funds will be matched by non-federal funds, Brantley said.

The project is designed to improve the water quality of Parkerson Mill Creek and is a cooperative effort between ADEM, AU, the City of Auburn, Alabama Cooperative Extension System (ACES) at AU, the AU Water Resources Center and other local stakeholders. The project will also provide education/outreach opportunities for local citizens to learn about protecting water quality.

"Controlling stormwater runoff is an important piece of what we try to do to improve water quality," ADEM Director Lance LeFleur said.

Parkerson Mill Creek was named for the Parkerson family grist mill, which was in operation until the late 1800s, said William Batchelor, dean of the AU College of Agriculture.

Parkerson Mill Creek is approximately 10 miles long, Brantley said.

"As the city of Auburn grew up around the creek, it started to become impaired as no one was watching after its needs," Batchelor said. "The creek has been since listed as an impaired water body by the state of Alabama."

Parkerson Mill Creek flows through the AU campus underneath the interstate before emptying into Chewacla Creek, which ends up in the Tallapoosa River, Brantley, said.

The Business Journals Digital Network: The Business Journals Local Business Directory Book of Lists Portfolio.com



BIRMINGHAM BUSINESS JOURNAL

Choose a city: Home News People Events Exclusives How-To Buy Find

On The Move Executive Profiles Names In The News Beginners To Big Shots

Call 866-732-3154 for a free consult

Sponsored by:

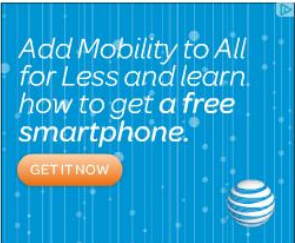
Share Tweet Like Email Print Reprints Comments

★ ADEM awards Auburn \$179K for watershed project

Birmingham Business Journal
 Date: Tuesday, January 31, 2012, 12:02am CST

The Alabama Department of Environmental Management presented Auburn University with a check Monday for \$179,810 for a project designed to improve the water quality of Parkerson Mill Creek.

According to the Opelika-Auburn News, Eve Brantley, Water Resource Specialist for the Alabama Cooperative Extension System, said the \$179,810 in federal funds will be matched by non-federal funds.



The project is a cooperative effort between ADEM, Auburn University, the City of Auburn, the Alabama Cooperative Extension System at Auburn, the Auburn Water Resources Center and other local stakeholders.

THIS WEEK @

January 30, 2012

Auburn enrolled second most National Merit Scholars

Auburn University is ranked second nationally out of 145 public institutions with the enrollment of 181 National Merit Scholars, the university's Office of Enrollment Services announced last week. The rankings are included in the recently released 2010-2011 National Merit Scholarship Corporation Annual Report. Auburn is first in the Southeastern Conference among public institutions and second, behind Vanderbilt, among all Southeastern Conference institutions. Auburn ranked ninth overall out of the 359 institutions where these scholars are enrolled, with Chicago, USC, Harvard, Northwestern, Vanderbilt, Washington-St. Louis, Oklahoma and Yale ranked higher. Only Oklahoma was ranked above Auburn among all public institutions. More information about Auburn's program for National Merit Scholars is available on [the website](#). General information about Auburn University scholarships is available [here](#).



Parkerson Mill Creek Watershed to receive \$200,000

The Alabama Department of Environmental Management will announce the beginning of an effort to improve water quality in the Parkerson Mill Creek Watershed, which flows through a large portion of the Auburn campus, on Monday, Jan. 30. The project, which is designed to improve water quality and enhance local stakeholder capacity, is a cooperative effort between the Alabama Department of Environmental Management, Auburn University, the City of Auburn, the Alabama Cooperative Extension System at Auburn University, the Auburn University Water Resources Center, and other local stakeholders. The project will provide almost \$200,000 in funding to support the implementation of best management practices to improve water quality and improve habitat for aquatic organisms in the Parkerson Mill Creek Watershed. The project will also support education and outreach opportunities to provide local citizens with opportunities to learn about the importance of protecting water quality. For more information, visit [the website](#).



American Whistleblower Tour coming to Auburn Monday

The Government Accountability Project is bringing the American Whistleblower Tour: Essential Voices for Accountability to Auburn on Monday, Jan. 30. The stop will feature prominent whistleblowers Sherron Watkins, Enron scandal, and Kenneth Kendrick, peanut butter and salmonella outbreak. The tour is a campaign aimed at educating the public, particularly America's students, about the phenomenon and practice of whistleblowing. Stops feature a panel presentation of high profile whistleblowers discussing their experiences. This stop is being sponsored by the School of Accountancy and will also feature whistleblower classroom visits throughout the College of Business and roundtable discussions with faculty members. A full description of the tour can be found [here](#).

Auburn Democrats screening 'Hot Coffee'



OA News article – William White 3.25.2012

Workshop focuses on improving stream stability



Streamside repair workshop participants learned that just because it's green doesn't mean it's good.

“Invasive plants, which are more detrimental than beneficial, are perfect examples of that,” said Stephen Enloe, an Auburn University invasive plant specialist.

Enloe said Saturday's workshop was planned to educate folks on what they can do about a troublesome invasive plant such as Chinese Privet, especially when they are working at stream bank stabilization and

protecting a soil resource.

About 50 people participated in Saturday's Streamside Repair Workshop behind Enloe's home in Auburn next to the stream, an unnamed north Auburn tributary, whose banks are covered with invasive plants such as privet, kudzu, silver-thorn olive and nandina.

As urban areas add rooftops, parking lots and roadways, a lot of water runoff is produced, which results in some stream erosion in what was originally a natural, easy flowing stream.

“We wanted to demonstrate some ways we can improve stream stability using native plants,” said Eve Brantley, a water resources specialist with the Alabama Cooperative Extension System.

Brantley said streamside repair using native plants has the ripple effect of improving local water quality, improving habitat and getting people connected with their streams.

In talking about the native plants to use, Katie Dylewski, an AU water program specialist, suggested the following ones to use along streams:

- » Button bush, silky willow and silky dogwood can be used as live stakes at the water's edge; and
- » American Beautyberry, Inkberry and Virginia Sweet spire can be used up on sides of the stream bank.

The next workshop related to water quality is the “Smart Yards” Lawn Care and Landscape Management Workshop planned for 9 to 11:30 a.m. March 17 at Town Creek Park in Auburn. For more information, visit www.swamp.auburn.edu.

OA News Article -

Smart Yards Lawn Care and Landscape Management Workshop – Chuck Browne – 3.13.2012

The Saugahatchee Watershed Management Plan, in partnership with the city of Auburn, the Lee County Extension System, the Parkerson Mill Watershed Management Plan and the Alabama Department of Environmental Management, will offer a Smart Yards Lawn Care and Landscape Management Workshop. The free workshop is from 9 to 11:30 a.m. Saturday at Town Creek Park in Auburn.

The workshop will cover practical tips and management methods to maintain a healthy and environmentally conscious lawn and landscape, following practices outlined in the recently published Alabama Smart Yards manual (see www.smartyards.org).

The first 50 registrants get a free copy of the Alabama Smart Yards manual (a \$15 value). ACES Extension turf specialist David Han, SWaMP personnel Eric Reutebuch and Wendy Seesock, and Eve Brantley, extension state water quality specialist, will conduct the workshop. Be sure to check the SWaMP (www.swamp.auburn.edu) or Lee County Extension (www.aces.edu/counties/Lee) websites for details. Registration will be 8:30 to 9 a.m. Saturday.

IMPACT Cleanup Photos – Student Volunteer Organization



Stream Repair Workshop Photos



CFS Water Day – June 26, 2012

Center for Forest Sustainability Hosts Outreach Day

1:39 PM, June 29, 2012

Nearly 50 young people from Tallassee and other area summer programs learned about environmental sciences urban forestry on Tuesday, June 26, at an outreach day hosted by the AU School of Forestry and Wildlife Sciences' Center for Forest Sustainability (CFS). The children participated in exercises designed to help them understand the research of the Center, primarily the interface between the urban and natural worlds.

The students circulated between a number of sessions over the course of the day, including a demonstration by the popular EcoDogs program, a wildlife station, an urban forestry exercise, a water resources station, and an interactive demonstration called Enviroscope.

Michelle Cole, CFS Outreach Director, says "We wanted to plan a program that would introduce natural resources to students of all ages." While she makes presentations to classrooms throughout the region, she typically is working with only one age group, instead of the diverse group of 1st through 6th graders attending Outreach Day. "People, especially kids, don't know that natural resources relate to many is about a lot of things – it's about water, wildlife, and urban forestry," she says.

The day's learning activities kicked off with a demonstration by two of the EcoDogs team, a project led by Dr. Todd Steury, assistant professor of Wildlife Ecology Management. First, a black Labrador retriever named Blue searched out previously placed bear scat, an example of how the dogs can help wildlife experts know whether a protected or endangered animal is active in a certain range. He was followed by Jake, another black lab who hunted down a hidden deer antler. After the successful hunt, the children crowded around for a chance to pet an excited Jake.

This and the other learning stations were based around highlighting research that is supported in part by the CFS. A wildlife session was conducted by Dr. Christina Romagosa, a wildlife researcher featured recently for her work with the EcoDogs, hunting pythons in the Florida Everglades. Reptiles are her specialty, and she surprised students (and some teachers) with real frogs and snakes in the classroom.

The Enviroscope session, led by water program specialist Kathyne Christian, highlighted pollution and water issues with an interactive model showing how different contaminants flow into local water systems. Dr. Chris Anderson took kids to the Arboretum to take a closer look at wetland water resources during an afternoon session, and Brenda Allen and Michelle Cole conducted the sessions on urban forestry.

The urban forestry exercise gives older children insight into the practice of urban forestry through an imaginative game. They get information about how cities manage natural resources, and then they are assigned roles and a problem to solve. "City managers" and "foresters" work together to decide where trees need to be planted and why, and then present their project.

"We were really pleased with the event," says Dr. Graeme Lockaby, Director of the Center and Associate Dean for Research at the School of Forestry and Wildlife Sciences. "This was the first time we tried something like this, and I think they had a good time."

Cole pointed out that another group of young people were engaged by the day. Volunteers from Minorities in Agriculture, Natural Resources, and Related Sciences (MANNRS) shepherded children, handed out wooden name badges, and helped ensure smooth transitions throughout the day.

For more information about the Center for Forest Sustainability, please visit <https://fp.auburn.edu/cfs/>

Posted by jsn0002

<http://content.auburn.edu/sfwsnews/?p=48>



SWaMP Blog Article Rain Garden Installation Workshop July 2012

Rain gardens make a splash in Auburn

Installation of rain gardens is a well-documented method to reduce the amount of nonpoint source pollution draining into streams, rivers and lakes. Auburn residents that attended the rain garden workshop in Willow Creek subdivision on July 11th 2012 not only learned about the many benefits of rain gardens, they helped create one! The workshop was sponsored by the Saugahatchee Watershed Management Plan (SWaMP) in partnership with the Parkerson Mill Creek Watershed Management Plan (PMC), the Alabama Cooperative Extension System (ACES), the City of Auburn, the Alabama Department of Environmental Management and Bodine's Landscape Services.



Benefits of a rain garden, enumerated by Eric Reutebuch, SWaMP coordinator, Kaye Christian, PMC coordinator, and Eve Brantley, ACES State Water Quality Specialist, include: Intercepting and infiltrating excessive stormwater runoff, reducing the need for lawn irrigation by increasing the amount of stormwater that soaks into the ground, reducing the pollution flushing into streams, rivers and lakes through rain garden plant uptake, the settling out of sediment, and via filtering action by the garden's soil-organic matter mix, and adding aesthetics and plant diversity to the landscape.

Joshua Martin, Landscape Specialist with Bodine's Landscape Services, instructed the group on the nuts-and-bolts of rain garden placement and construction. He advised on the need for customized soil amendments, since some land contains too much clay and is too unporous, while other land contains too much sand and is too porous.

Following the 'listening' portion of the workshop, participants got a bit of dirt under their fingernails while planting river birch, ferns, oakleaf hydrangea and dwarf yaupon holly – just a few of the many plants suitable for rain gardens.

Project partners were pleased with the crowd that showed up, and hope that these community workshops will promote rain gardens and other stormwater management practices in the Auburn area. The City of Auburn is promoting the installation of rain gardens by facilitating a *Smart Yard*

Incentive Program, a program that assists residents with the cost of rain garden installation (see www.swamp.auburn.edu or email reuteem@auburn.edu). Ultimately, the hope is that these landscape practices restore local streams from their current impaired condition to environments that support healthy, diverse populations of aquatic life.

For additional information on installing rain gardens, check out the following references:

Alabama Smart Yards (ACES): www.smartyards.org , or get the hardcopy at: <https://store.aces.edu>

Residential Rain Gardens (ACES): www.aces.edu/waterquality/mg.htm

Rain Gardening in the South (Helen Kraus & Anne Spafford): www.enopublishers.org/Site/Rain_Gardening.html

Backyard Rain Gardens (North Carolina Cooperative Extension): www.bae.ncsu.edu/topic/raingarden

Rain Gardens – a How-to Manual for Home Owners: (U of Wisconsin Extension): www.learningstore.uwex.edu/pdf/GWQ037.pdf

RainGardens.org: www.raingardens.org

IMPACT Welcome Week Activity - August 15, 2012



Plant Science Research Center Open House - Rain Garden and Rain Water Harvesting Workshop
- October 30, 2012



Parkerson Mill Creek Showdown – February 23, 2013



Parkerson Mill Creek Hosts Invasive Plant Removal Days



The Parkerson Mill Creek Project recently hosted the “Parkerson Mill Creek Showdown” in partnership with the Donald E. Davis Arboretum, Facilities Management and Landscape Services, Office of Sustainability, Athletics, Alabama Invasive Plant Council, Department of Horticulture, IMPACT, and the Alabama Cooperative Extension System. Nearly 50 volunteers, ranging from students, professors, and interested community

individuals, came out to support the invasive plant removal efforts along the creek behind the McWhorter Center. In the coming weeks, Facilities Management will begin to remove invasive plant species along the creek and follow up with herbicide treatments for management of the streambanks. Understory clearing and grinding has begun and will continue in several areas along Parkerson Mill Creek at Biggio Drive and Hemlock Drive to create more greenspace, allowing access to the creek and raising awareness of this campus amenity. Planting of streamside vegetation is also planned once the understory clearing is completed. Visit www.aces.edu/pmc for more information, future work, and updates. Photo by Patrick Thompson, Davis Arboretum

Hemlock Triangle Land Clearing - March 2013

Before –



After -



Campus Conversation – January 28, 2013



Rain Garden Certification Program – December 6-7, 2012



CFS Water Fun Day May 2013



Media Reports:

Featured on WSFA 12 in Montomery, AL and WTVM channel 9 in Columbus, GA

<http://www.wtvm.com/story/23459435/au-saves-water-on-campus-with-prototype-project>

AU saves water on campus with prototype project

Posted: Sep 17, 2013 8:36 PM CDT Updated: Sep 18, 2013 6:53 AM CDT

By Annie Hubbell - [bio](#) | [email](#)



AUBURN, AL (WTVM) -

A large cistern situated on Auburn University's campus collects rain from the roof of a building and feeds a nearby rain garden.

This project, lead by the Office of Sustainability, introduces the community to practices in water conservation and storm water management.

"It is captured in the cistern and it can hold up to 1,000 gallons and when the landscaping services needs the water they can use it as well as overflow. They can also water the rain garden in this area," explains Jennifer Morse with AU's Office of Sustainability.

In an urban setting, rain runs off into storm drains, collecting pollutants on its way downstream.

On AU's campus, the water flows into Parkerson Mill Creek, on to Mobile Bay and ultimately into the Gulf of Mexico.

"Everywhere we live is hardening and is covered with driveways and roads and when it rains, especially as heavy as it does here, it just runs down and floods the creek and we get flash flooding," says Morse, "This system allows us to capture and slow down the water."

Over the next three years, a team will monitor the chemical analysis of the roof water. They also will see which plants grow the best and how effective rain gardens are in clay-type soil.

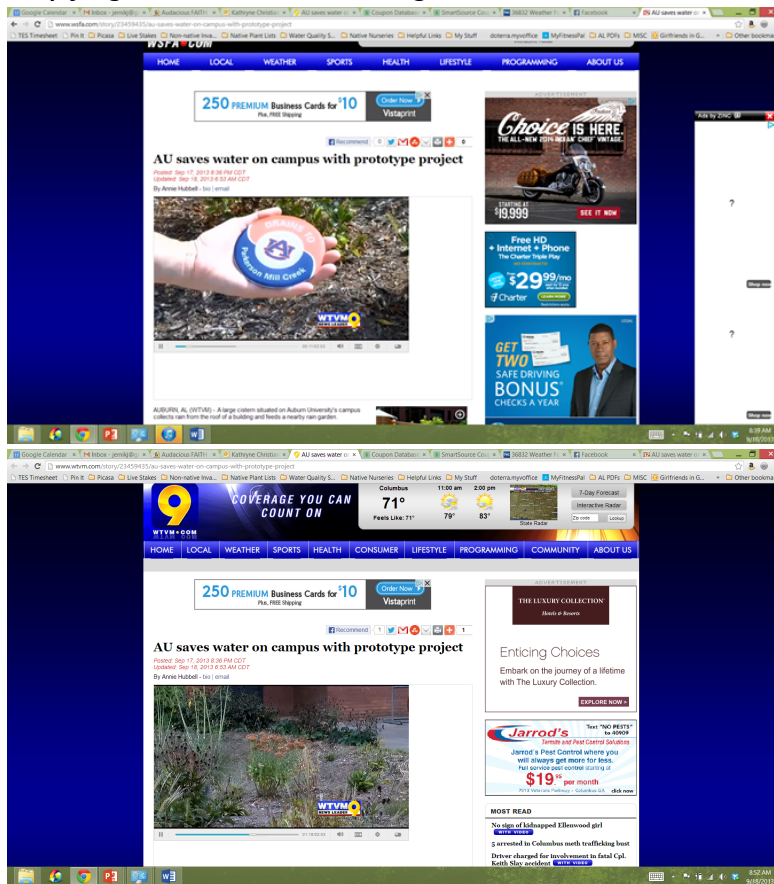
Although this a pilot project, Auburn hopes these concepts will be expanded and implemented regionally.

Experts say this method basically produces free water that can be used for anything except drinking water.

"If everyone installed these throughout their neighborhoods and campus, there would be a lot less water to contribute to flash flooding," explains Morse.

On Tuesday, October 8th, officials are inviting the community meet on Cater Lawn from 3:30 PM to 5:30 PM to help install storm drain markers around campus as a friendly reminder not to litter.

Copyright 2013 *WTVM*. All rights reserved.



http://ocm.auburn.edu/featured_story/rainwater.html?utm_source=commons&utm_medium=post&utm_campaign=commons#.Ujm0d8ZQEpg

Prototype project on Auburn campus saves water, feeds beautiful rain garden



Stormwater runoff in urban areas has long had detrimental effects on the environment as buildings and pavement prevent rainwater from filtering into the ground the way it does in a forest or natural field. In an urban setting, the water runs off into storm drains, collecting pollutants on its way downstream. On the Auburn University campus, the water flows into Parkerson Mill Creek, on to Mobile Bay and ultimately into the Gulf of Mexico.

Pulling together funding from Auburn's Facilities Management and a Parkerson Mill Creek grant, a team of Auburn experts has developed a way to mimic that natural infiltration process. On a shop building adjacent to Dudley Hall, rainwater is collected through a draining system and flows to a 1,000-gallon cistern. The overflow water is diverted to a neighboring rain garden, where it collects and seeps slowly into the ground.

"The rain garden is an interesting pilot project that introduces students to best practices in water conservation and stormwater management," said Dan King, assistant vice president for Facilities Management. "Achieving a sustainable campus environment will likely require many small-scale projects like this."

[Charlene LeBleu](#), associate professor of landscape architecture in the College of Architecture, Design and Construction, led a team of students in designing the project and selecting the plants that thrive in a rain garden environment. Building science students built the conveyance system that carries the water from the cistern to the garden.



"We want to work toward disconnecting more downspouts on campus so we can have more water infiltration," said LeBleu. "When water infiltrates, it raises the level of our stream water and you don't get flash floods after a hard rain."

Over the next three years, the team will monitor the chemical analysis of the roof water, particularly the level of nitrates in the water, and measure the infiltration of the water through the rain garden. They also will see which plants grow the best and how effective rain gardens are in clay-type soil. Water collected in the cisterns can be used for many things other than the garden.

"It's been a very successful project and we are delighted in what it's showing and what it presents for the future."

— Mike Kensler

"We don't have to use expensive city water to irrigate plants, so if we've got cisterns, that water can be used to water the landscape," said Mike Kensler, director of the Office of Sustainability and co-developer of the Dudley Hall project. "It's free water basically, and in some places it can be used to flush toilets, water plants, really anything except drinking water."

Similar projects have been built at Auburn's Southeastern Raptor Center and Donald E. Davis Arboretum.

— By Jourdan Cooper and [Mike Clardy](#), Office of Communications & Marketing

Live Staking to Build Healthy Streambanks

<http://auclastudentengagement.wordpress.com/2014/02/21/live-staking-to-build-healthy-streambanks/>

Posted on February 21, 2014 | [Leave a comment](#)

Students in LBAR 3910: Practicum in Liberal Arts spend some time “live-staking” a section of Parkerson Mill Creek on the campus of Auburn University with Dr. Eve Brantley and colleague Kaye Christian. Live stakes are dormant woody vegetation placed into a streambank to reduce further erosion and promote stream stability. The process is natural and inexpensive, completely cost-free if you harvest your own stakes from existing native species.



When these students travel to Eagan and Clairfield, Tennessee over spring break, they will work with local residents to live stake sections of the Clearfork River, especially the sections below and above the unfortunate Y Hollow Bridge. Our friends from the Clearfork Community Institute—Marie Cirillo, Marie Webster, Sam Marlow, and Jesse Scott—visited a stream restoration project in Auburn this past November, where Eve and partners with the City of Auburn have worked to find natural solutions to repair stream banks that exist in our city. Our friends from the mountains know all too well the importance of finding natural ways to repair human impact on streams and rivers.



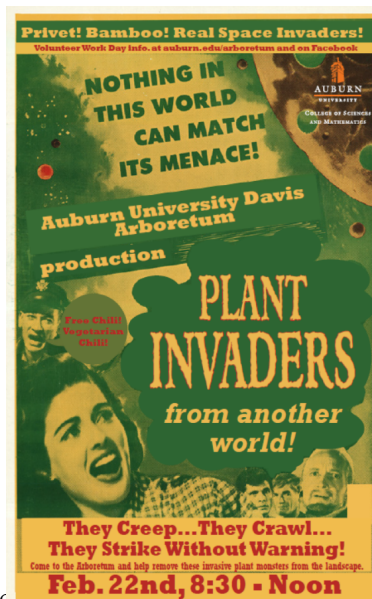
In a few short weeks, the live stakes will bud out, establish deep roots, and be a part of the firm foundation that keeps water flowing through Parkerson Mill Creek and further into the watershed that connects us all.

Please join us for “Plant Invaders from Another World!” – Saturday, February 22, 2014

Join forces with fellow nature lovers and environmental stewards on Saturday, Feb. 22, for an invasive-plant cleanup event taking place at the Davis Arboretum. The event is designed for those who are concerned about the impact of invasive plants on local habitats or would like to learn more about how to manage invasive plants. Participants should wear close-toed shoes or boots and bring work gloves. Tools will be provided, but participants may bring their own pruners. In the event inclement weather, the alternate date is March 1st.

“Plant Invaders from Another World” will start at 8:30 a.m. and go until noon. Meet at the Pavilion off Garden Drive. All participants will be treated to a chili lunch. There is no cost to attend, but registration is requested. To register, send an email to Dee Smith at drs0001@auburn.edu. The event is sponsored by Facilities Management, Donald E. Davis Arboretum, Parkerson Mill Creek Project, Office of Sustainability, Alabama Invasive Plant Council, Department of Horticulture and the Alabama Cooperative Extension System.

For more information, visit www.auburn.edu/arboretum

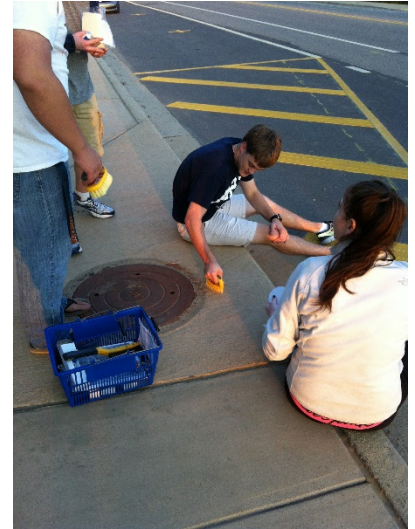
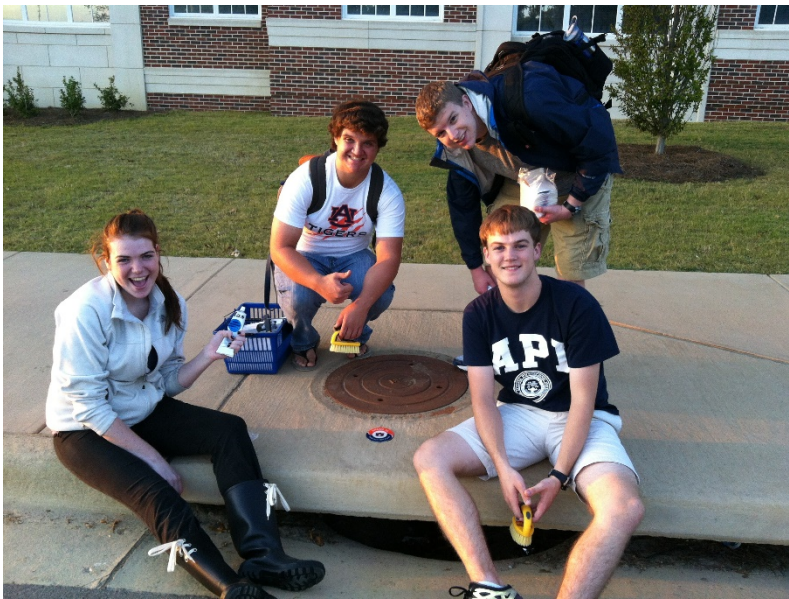


Intramural Bridge stream project

Signage at Compactor Site



Storm Drain Marking



English Department Student Video Fall 2013 Project



http://www.aces.edu/natural-resources/water-resources/watershed-planning/watershed-projects/parkersonmillcreek/PMCvideo_loRes.mp4

Auburn University Biosystems Corley Courtyard

