Alabama Water Watch

A Program dedicated to developing Citizen Volunteer Monitoring of Alabama's Lakes, Streams and Coasts

ANNUAL REPORT
(October 1, 2006 - September 30, 2007)

prepared for the

Alabama Department of Environmental Management
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and

U.S. Environmental Protection Agency, Region 4

by

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Cover photo: Collage of 2007 AWW activities, clockwise from top right, 1) *Exploring Alabama's Living Streams* workshop at Camp McDowell, 2)W. Deutsch receiving the 2007 Environmental Education Award, Truman Pierce Institute Summer Camp 07, 3) Clara Clothiaux, citizen monitor, sampling *E. coli* side by side with ADEM at Parkerson Mill Creek in Auburn, Alabama, 4) AU graduate student, Shelley England and Executive Director of Alabama Rivers Alliance, Cindy Lowry visiting Veracruz, Mexico on a GWW trip, 5) Winston County Smith Lake Advocacy Inc group members being trained near Arley, Alabama, and 6) Lake Guntersville, location of the 2007 AWWA Annual Meeting and Picnic where Ray Kelley (center) received a lifetime Achievement Award and lifetime membership in the AWW Association.

TABLE OF CONTENTS

Section **Page**

1. EXECUTIVE SUMMARY

1. Alabama Water Watch (AWW) is a statewide program dedicated to developing citizen volunteer monitoring of Alabama's lakes, streams, and coasts. 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 of Auburn University (AU). This report covers activities from October 1, 2006 through September 30, 2007.

2. AWW conducted 87 training sessions and certified 420 people. Program staff conducted the Training-of-Trainer workshops, while citizen trainers conducted 83% of other training sessions. Twenty-eight Water Chemistry Workshops (262 people), thirty Recertification Sessions (110 people), thirteen Bacteriological Workshops (132 people) and two Stream Biomonitoring Workshops (34 people) were conducted. Ten new trainers were certified during four Training-of-Trainer workshops. Thirty-six people are currently certified as AWW Trainers.

3. Sixty-five citizen groups submitted data from nine of ten major watersheds. More than eighty percent of AWW data received during the report period were entered online and about 800 people subscribed to the AWW Listserve. Most AWW groups monitored in the Tennessee, Warrior, Tallapoosa and Coosa watersheds (17, 15, 13 and 11 groups, respectively). Eleven groups (17% of total) were composed of teachers and students and five groups (8%) were formed mainly by professionals; the remaining forty-eight groups (74%) were primarily composed of citizen volunteers. Three Data Interpretation Sessions were conducted. About 9% percent of the groups sampled on the coast, while 19% sampled on lakes and 71% on streams across Alabama. A total of 3,370 chemistry data records (86% online) and 1,017 (76%) bacteriological data records were submitted. The most active groups were in the Coastal Plain (24% of data received), Tennessee (23% of data) and Tallapoosa (17% of data) watersheds.

4. Many meetings and events were attended to promote AWW activities. AWW staff participated in 18 outreach activities, 11 group meetings and events such as the Save Our Saugahatchee *E. coli* sampling blitz, and 13 miscellaneous meetings. AWW personnel attended and presented papers and posters at 17 Conferences and Seminars. Requested AWW publications and data were distributed to six states and other organizations such as ADEM, US-FDA, and TetraTech. AWW staff attended four AWW Association Meetings and several Clean Water Partnership and AWW group meetings. Approximately 60 people attended the AWW Annual Meeting and Picnic held at Guntersville State Park, AL on May 19, 2007, hosted by the Marshall County Retired and Senior Volunteer Program (RSVP).

5. Program Accomplishments and Initiatives included development of several educational and outreach materials and tools. The extensively revised *Exploring Alabama's Living Streams* curriculum workbook was printed. Several publications were produced including a waterbody report (*Citizen Volunteer Water Monitoring on Wolf Bay)* two AWWareness Newsletters and three brochures were developed and printed. Two editions of the Global Water Watch brochure were revised and translated into Spanish and Portuguese. The AWW Association brochure was redesigned, revised and printed. The AWW website has been regularly updated, and visited over 117,000 times since its creation. AWW staff was actively involved in related projects including the ACES Extension Team Project, Global Water Watch, the Tallapoosa Watershed Project, and the Saugahatchee Creek Watershed Management Plan. Since 1993, AWW has received over 50,510 water chemistry and 8,825 bacteriological data records, and more than 2,126 sites have been monitored on 760 waterbodies across Alabama. Citizens volunteered over 17,000 hours for training and monitoring valued at $314,304 during the report period.

2. PROJECT MILESTONES

Project Milestones from October 1, 2006 - September 30, 2007.

	Activities and Practices to Assure that Project Implementation is Timely and Reasonable
1	**Activity: Conduct at least twenty Water Chemistry Workshops** Twenty-Eight Water Chemistry Workshops were conducted during the report period.
2	**Activity: Conduct at least twelve QA Recertification Workshops** Thirty Recertification Sessions were conducted during the report period.
3	**Activity: Conduct at least eight Bacteriological Monitoring Workshops** Thirteen Bacteriological Monitoring Workshops were conducted during the report period.
4	**Activity: Conduct at least three Stream Biomonitoring Workshops** Two Stream Biomonitoring Workshops were conducted during the report period.
5	**Activity: Conduct at least one Training of Trainer Workshop, if needed** Two Chemistry Trainer of Trainer workshops (ten trainees) and two bacteriological Training of Trainer (nine trainees) were conducted during the report period.
6	**Activity: Conduct at least one Trainer Refresher Workshop, if needed** Four Trainer Refresher Sessions have been conducted during this period.
7	**Activity: Assist with coordination of the Annual Meeting** One Annual Meeting was conducted during this report period (May 19, 2007).
8	**Activity: Produce and Distribute at least three volumes of the Waterbody Report Series of Citizen Data** (Reservoir, Stream and Coastal) A waterbody report for Wolf Bay was produced during the report period. In addition, two new GWW brochures and an AWW Association brochure were produced during this report period.
9	**Activity: Maintain the AWW Office and regularly communicate with citizen volunteers via telephone, email listserve, website, personal contacts, etc.** The AWW Listserve had 796 people subscribed during this report period. About 30 - 50 weekly communications were conducted by AWW personnel via telephone, email, regular mail and personal meetings.
10	**Activity: Maintain the Water Quality and Citizen Monitor Database and Regularly Disseminate Data to Monitors** Data charting on the AWW website was reviewed and the entire homepage was revamped and updated. Three Data Interpretation Sessions were conducted for groups monitoring on Smith Lake, Lake Wedowee, and Saugahatchee Watershed. Visits to the Water Data section of the website have steadily increased since October 2004.
11	**Activity: Produce at least two AWW AWWareness Newsletters** Two AWW AWWareness Newsletters were produced and made available on the AWW website. In addition, the "AWWareness" section of the AWW homepage was regularly updated.
12	**Activity: Produce a Semi-annual Report for ADEM/EPA** A Semi-annual report was sent to ADEM in August 2007.
13	**Activity: Produce an Annual Report and Final Report for ADEM/EPA** The Annual Report for FY06 was sent to ADEM in December 2007.

3. WATER CHEMISTRY WORKSHOPS

Water Chemistry Workshops (6-hour sessions) train citizens in the program's goals and how to monitor and evaluate physical and chemical features of water using a specially designed water test kit. All groups monitor the same six parameters: temperature, dissolved oxygen, total alkalinity, total hardness, pH and turbidity. The U.S. EPA first approved the AWW QA Plan for water chemistry in 1994 and a revised plan was approved in 2004 (Appendix A). Fifteen trainers conducted 28 Water Chemistry Workshops during the report period; 83% were conducted by or with AWW citizen trainers and 262 people were certified (Table 1).

Table 1. Water Chemistry Workshops conducted from October 1, 2006 to September 30, 2007.

	Date	Place	Trainer(s)	Coordinator(s)	Citizen Trainer	Number Certified
1	8-Oct-06	Tuscaloosa, AL	H. Burwinkle and T. Steele	J. Rodriguez	Y	6
2	14-Oct-06	Henagar, AL	Ray O'Donnell	Ray O'Donnell	Y	4
3	3-Nov-06	Huntsville, AL	B. Deutsch and S. Ruiz-Córdova	Tia Gonzales	N	18
4	10-Nov-06	Guntersville, AL	Marshall Carter	Tia Gonzales	Y	4
5	10-Nov-06	Gulf Shores, AL	Liz Langston	Liz Langston	Y	5
6	9-Dec-06	Weeks Bay, AL	L. Langston and M. Shelton	L. Langston and M. Shelton	Y	16
7	11-Dec-06	Wedowee, AL	S. Ruiz-Córdova	S. Ruiz-Córdova	N	1
8	5-Jan-07	Birmingham, AL	Hana Burwinkle	F. Gross	Y	14
9	13-Jan-07	Locust Fork, AL	H. Burwinkle and T. Steele	Tia Gonzales	Y	13
10	17-Feb-07	Arley, AL	B. Deutsch and S. Ruiz-Córdova	Tia Gonzales	N	26
11	17-Feb-07	Mobile, AL	Mimi Fearn	Tia Gonzales	Y	14
12	28-Feb-07	Montgomery, AL	Patti Hurley	Judy Palfrey	Y	10
13	10-Mar-07	Weeks Bay, AL	Mike Shelton	Mike Shelton	Y	6
14	29-Mar-07	Weeks Bay, AL	Mike Shelton	Tia Gonzales	Y	1
15	30-Mar-07	Guntersville, AL	Ray O'Donnell	Tia Gonzales	Y	13
16	14-Apr-07	Arley, AL	B. Deutsch and S. Ruiz-Córdova	Laverne Matheson	N	14
17	4-May-07	Guntersville, AL	Ray O'Donnell	Ray O'Donnell	Y	1
18	2-Jun-07	Mentone, AL	Francine Hutchinson	Francine Hutchinson	Y	10
19	27-Jun-07	Rainsville, AL	Frances Patterson	Frances Patterson	Y	1
20	7-Jul-07	Homewood, AL	Hana Burwinkle	Hana Burwinkle	Y	2
21	21-Jul-07	Fultondale, AL	H. Burwinkle and T. Steele	Hana Burwinkle	Y	9
22	21-Jul-07	Fayetteville, AL	D. and L. Cunningham	D. and L. Cunningham	Y	3
23	21-Jul-07	Auburn, AL	S. Ruiz-Córdova	Tia Gonzales	N	11
24	4-Aug-07	Pell City, AL	D. and L. Cunningham and D. Hughes	D. and L. Cunningham	Y	2
25	5-Aug-07	Dog River, AL	Mimi Fearn	Mimi Fearn	Y	17
26	11-Aug-07	Foley, AL	Liz Langston	Liz Langston	Y	4
27	8-Sep-07	Birmingham, AL	H. Burwinkle and T. Steele	Bryan Burgess	Y	28
28	10-Sep-07	Weeks Bay, AL	Mike Shelton	Mike Shelton	Y	9
					83 %	Total 262

4. RECERTIFICATION SESSIONS

Maintaining quality assurance protocols to "keep the data credible" is one of the highest priorities and challenges of AWW. As part of EPA-approved quality assurance protocols for citizen data (Appendix A), all monitors are periodically recertified and their test kits replenished with fresh reagents. The basic approach for recertification involves careful observation of monitor techniques and inspection of the test kit by a QA Officer. Some QA Officers also choose to use chemical reagent standards, or to sample side-by-side with the monitor. In this way, monitor techniques and test kit quality is periodically checked in a non-intimidating, yet reliable, way. Fourteen QA Officers conducted 30 Recertification Sessions during the report period; 90% were conducted by or with citizen QA Officers. A total of 104 people were recertified (Table 2). Reagents and glassware valued at $8,382 were distributed in 209 orders shipped or hand-delivered by AWW staff.

Table 2. Recertification Workshops conducted from October 1, 2006 to September 30, 2007.

	Date	Place	Trainer(s)	Coordinator(s)	Citizen Trainer	No. Certified
1	3-Nov-06	Huntsville, AL	B. Deutsch and S. Ruiz-Córdova	Tia Gonzales	N	10
2	11-Nov-06	Guntersville, AL	Marshall Carter	Tia Gonzales	Y	5
3	22-Nov-06	Guntersville, AL	Ray O'Donnell	Tia Gonzales	Y	1
4	11-Dec-06	Pine Creek, AL	Ginger Taylor	Tia Gonzales	Y	2
5	11-Dec-06	Wedowee, AL	S. Ruiz-Córdova	S. Ruiz-Córdova	N	1
6	19-Jan-07	Gulf Shore, AL	Mike Shelton	Tia Gonzales	Y	1
7	28-Feb-07	Montgomery, AL	Ginger Taylor	Ginger Taylor	Y	2
8	1-Mar-07	Montgomery, AL	Ginger Taylor	Ginger Taylor	Y	1
9	10-Mar-07	Brookside, AL	Hana Burwinkle	Hana Burwinkle	Y	1
10	31-Mar-07	Lay Lake, Al	D. and L. Cunningham	Tia Gonzales	Y	1
11	7-Apr-07	Wilsonville, AL	D. and L. Cunningham	L. Cunningham	Y	1
12	7-Apr-07	Weeks Bay, AL	Mike Shelton	Mike Shelton	Y	1
13	21-Apr-07	Pell City, AL	Isabella Trussell	Isabella Trussell	Y	15
14	4-May-07	Guntersville, AL	Marshall Carter	Marshall Carter	Y	12
15	5-May-07	Guntersville, AL	M. Carter and R. O'Donnell	M. Carter and R. O'Donnell	Y	2
16	19-May-07	Guntersville, AL	Michael Mullen	Michael Mullen	Y	6
17	2-Jun-07	Mentone, AL	Francine Hutchinson	F. Hutchinson	Y	5
18	25-Jun-07	Homewood, AL	Hana Burwinkle	Hana Burwinkle	Y	2
19	27-Jun-07	Rainsville, AL	Frances Patterson	Frances Patterson	Y	9
20	28-Jun-07	Fairhope, AL	Mike Shelton	Mike Shelton	Y	4
21	30-Jun-07	Rockford, AL	Sam Piccolo	Sam Piccolo	Y	7
22	21-Jul-07	Auburn, AL	S. Ruiz-Córdova	Tia Gonzales	N	2
23	24-Jul-07	Guntersville, AL	Ray O'Donnell	Tia Gonzales	Y	1
24	24-Jul-07	Auburn, AL	S. Ruiz-Córdova	S. Ruiz-Córdova	N	4
25	28-Jul-07	Pine Creek, AL	Ginger Taylor	Tia Gonzales	Y	2

Table 2. Recertification Workshops conducted from October 1, 2006 to September 30, 2007 (continued).						
	Date	**Place**	**Trainer(s)**	**Coordinator(s)**	**Citizen Trainer**	**No. Certified**
26	29-Jul-07	Guntersville, AL	Marshall Carter	Tia Gonzales	Y	1
27	2-Aug-07	Loxley, AL	Mike Shelton	Mike Shelton	Y	2
28	3-Sep-07	Wetumpka, AL	Ginger Taylor	Ginger Taylor	Y	1
29	15-Sep-07	Verbena, AL	Sam Piccolo	Sam Piccolo	Y	1
30	19-Sep-07	Weeks Bay, AL	Mike Shelton	Mike Shelton	Y	1
					87%	104

5. BACTERIOLOGICAL MONITORING WORKSHOPS

Bacteriological monitoring was initiated through the AWW program in May 1996, and the EPA approved the protocols of an AWW Bacteriological QA Plan in 1999 (Appendix A). Monitoring for bacteria added the dimension of human health to AWW protocols. The workshop usually takes 2-3 hours and the objectives include: 1) an introduction to bacteriological testing and water quality standards, 2) demonstration of plate techniques and bacterial counts and 3) developing a monitoring plan. Eight trainers conducted 13 Bacteriological Workshops during the report period; 54% were conducted by or with AWW citizen trainers and 132 people were certified. (Table 3).

Table 3. Bacteriological Monitoring Workshops conducted from October 1, 2006 to September 30, 2007.						
	Date	**Place**	**Trainer(s)**	**Coordinator(s)**	**Citizen Trainer**	**No. Certified**
1	4-Nov-06	Huntsville, AL	B. Deutsch and S. Ruiz-Córdova	Tia Gonzales	N	15
2	10-Nov-06	Gulf Shore, AL	Liz Langston	Liz Langston	Y	5
3	10-Nov-06	Pensacola, FL	Liz Langston	Tia Gonzales	Y	2
4	9-Dec-06	Weeks Bay, AL	L. Langston and M. Shelton	L. Langston and M. Shelton	N	16
5	17-Feb-07	Arley, AL	B. Deutsch and S. Ruiz-Córdova	Tia Gonzales	N	24
6	28-Feb-07	Montgomery, AL	Patti Hurley	Tia Gonzales	Y	11
7	31-Mar-07	Pell City, AL	S. Ruiz-Córdova	Tia Gonzales	N	10
8	14-Apr-07	Arley, AL	B. Deutsch and S. Ruiz-Córdova	Laverne Matheson	N	15
9	5-May-07	Guntersville, AL	R. O'Donnell	R. O'Donnell	Y	2
10	7-May-07	Guntersville, AL	R. O'Donnell	R. O'Donnell	Y	6
11	14-Jul-07	Mentone, AL	M. Carter	Marshall Carter	Y	12
12	28-Jul-07	Auburn, AL	T. Gonzales and S. Ruiz-Córdova	Tia Gonzales	N	10
13	11-Aug-07	Foley, AL	Liz Langston	Tia Gonzales	Y	4
					54%	Total 132

Bill Deutsch trains volunteer monitors in water chemistry, bacteria and stream biomonitoring near Huntsville, AL in November 2006.

Volunteer monitors practicing new skills with water chemistry monitoring at Smith Lake, near Arley, AL. February 2007

6. STREAM BIOMONITORING WORKSHOPS

Stream Biomonitoring Workshops teach the principles and practice of using stream macro invertebrates to evaluate water quality. This information was initially incorporated into the Water Chemistry Workshops, but is now a stand-alone workshop that lasts 3-4 hours. Two trainers conducted two Stream Biomonitoring Workshops during the report period; no AWW citizen trainers participated on these workshops and 34 people were certified (Table 4).

Table 4. Stream Biomonitoring Workshops conducted from October 1, 2006 to September 30, 2007.

	Date	Place	Trainer(s)	Coordinator(s)	Citizen Trainer	No. Certified
1	04-Nov-06	Huntsville, AL	B. Deutsch and S. Ruiz-Córdova	T. Gonzales	N	16
2	12-Jul-07	Nauvoo, AL	S. Ruiz-Córdova	T. Gonzales	N	18
						Total 34

7. TRAINING OF TRAINER/QA OFFICER WORKSHOPS

Training-of-Trainer (ToT) workshops are conducted so that experienced monitors may become AWW certified Trainers or QA Officers (4 types of certifications). Ideally, all large AWW groups will have local Trainers and QA Officers so that all monitors may be served.
0
Before a new Trainer can officially conduct a workshop, he/she is required to "intern" with a certified citizen Trainer or AWW Trainer. New Water Chemistry and Bacteriological Trainers must complete two internships (1st workshop, intern assists the trainer with various aspects of training; 2nd workshop, intern conducts entire Workshop while a certified Trainer observes and evaluates performance). Currently Stream Biomonitoring Trainers are not required to intern before conducting workshops. After the internships are completed, AWW personnel evaluate comments provided by certified Trainers to determine if the intern needs additional practice. Every two years, all trainers are required to attend a Trainer Refresher Course. The Trainer Refresher Course provides an avenue for discussion of updated protocols and procedures and enhances communication between AWW staff and Trainers.

During the report period, 10 Trainers were certified during eight workshops: two Chemistry Trainer Intern I (two trainees), two bacteriological Training of Trainer (nine trainees) and two bacteriological trainer internships (Table 5).

Table 5. Trainer Workshops conducted from October 1, 2006 to September 30, 2007.

	Date	Place	Trainer(s)	Course Type	Trainee(s)
1	23-Mar-07	Auburn, AL	B. Deutsch and S. Ruiz-Córdova	Trainer Refresher	3
2	23-Mar-07	Auburn, AL	B. Deutsch and S. Ruiz-Córdova	Water Chemistry ToT	5
3	23-Mar-07	Auburn, AL	B. Deutsch and S. Ruiz-Córdova	Bacteriological ToT	5
4	31-Mar-07	Pell City, AL	S. Ruiz-Córdova	Bacteriological Intern	1
5	18-May-07	Guntersville, AL	B. Deutsch and S. Ruiz-Córdova	Trainer Refresher	6
6	21-Jul-07	Fayetteville, AL	L. and D. Cunningham	Water Chemistry Intern	1
7	28-Jul-07	Auburn, AL	B. Deutsch and S. Ruiz-Córdova	Trainer Refresher	3
8	28-Jul-07	Auburn, AL	S. Ruiz-Córdova	Bacteriological Intern	1
9	04-Aug-07	Cropwell, AL	L. and D. Cunningham	Water Chemistry Intern	1
10	07-Sep-07	Elberta, AL	B. Deutsch and S. Ruiz-Córdova	Trainer Refresher	3
11	08-Sep-07	Elberta, AL	B. Deutsch and S. Ruiz-Córdova	Water Chemistry ToT	5
12	08-Sep-07	Elberta, AL	B. Deutsch and S. Ruiz-Córdova	Bacteriological ToT	4
				Total	38

A current list of the AWW Trainers by specialty and Water Chemistry QA Officers is provided in Table 6. A map of their location is shown in the map below (Figure 1).

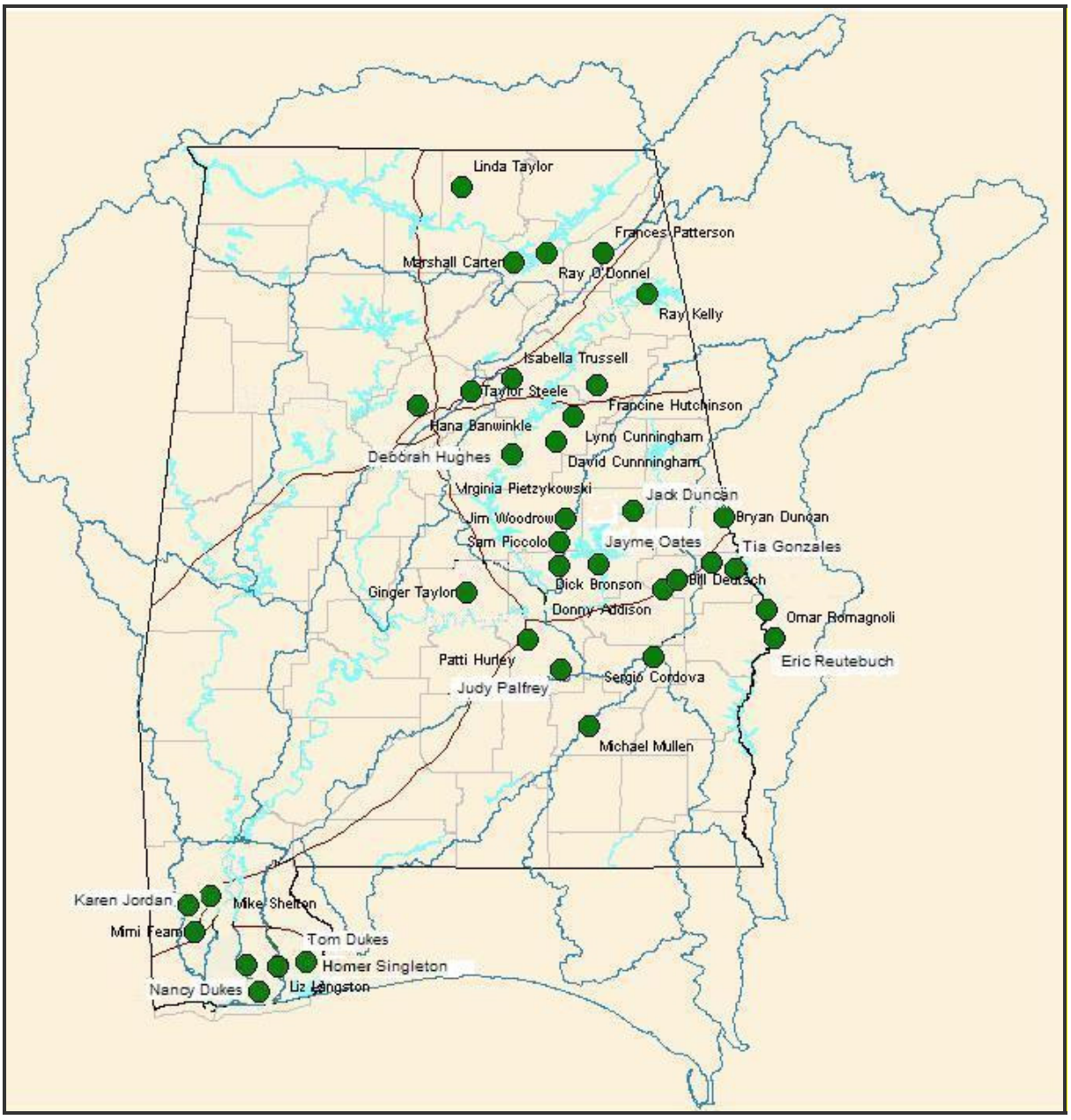


Figure 1. Location of AWW Trainers and QA Officers, 2006-07 (from the AWW website at https://www.alabamawaterwatch.org/calendarofevents/trainermap.aspx).

Table 6. Active Trainers and Interns from October 1, 2006 to September 30, 2007.					
Trainers		Trainers			QA Officers
		Water Chemistry	Bacteriological	Stream Biomonitoring	Water Chemistry
1	Donny Addison	X			X
2	Dick Bronson	X	X	X	X
3	Hana Burwinkle	X			X
4	Marshall Carter	X	X		X
5	David Cunningham	X	X		X
6	Lynn Cunningham	X	X		X
7	Bill Deutsch	X	X	X	X
8	Bryan Duncan	X	X		X
9	Mimi Fearn	X			X
10	Deborah Hughes	X	X		X
11	Patti Hurley	X	X	X	X
12	Francine Hutchinson	X	X	X	X
13	Ray Kelley	X	X		X
14	Liz Langston	X	X	X	X
15	Michael Mullen	X	X	X	X
16	Ray O'Donnell	X	X		X
17	Frances Patterson	X			X
18	Sam Piccolo	X			X
19	Virginia Pietrzykowski	X			X
20	Omar Romagnoli	X			X
21	Sergio Ruiz-Córdova	X	X	X	X
22	Mike Shelton	X	X	X	X
23	Taylor Steele	X	X	X	X
24	Ginger Taylor	X			X
25	Linda Taylor	X	X	X	X
26	Isabella Trussell	X			X
27	Jim Woodrow	X	X		X
	Interns				
1	Nancy Dukes	X	X		X
2	Tom Dukes	X	X		X
3	Jack Duncan	X	X		X
4	Karen Jordan	X			X
5	Tia Gonzales	X	X		X
6	Jayme Oates	X	X		X
7	Judy Palfrey	X	X		X
8	Eric Reutebuch	X			X
9	Homer Singleton	X	X		X
	TOTAL	**36**	**24**	**10**	**36**

8. CITIZEN DATA AND GROUPS

Sixty-five groups participated in AWW and submitted water quality data from nine of ten major watersheds during the report period. Eleven groups (17% of total) were formed by teachers and students, and five groups (8%) were formed mainly by professionals. The remaining 74% of groups were primarily composed of citizen volunteers. About nine percent of the groups sampled on the coast, while 19% sampled on lakes and 71% on streams across Alabama. During the report period, most AWW groups were located in the Tennessee Watershed followed closely by the Warrior, Tallapoosa, Coosa and Watersheds (17, 15, 13 and 11 groups, respectively). The most active groups were in the Coastal Plain (24% of data received), Tennessee (23% of data) and Tallapoosa (17% of data) watersheds. These three watersheds provided nearly 64% of the total data. Nine new monitoring groups were established during the report period and submitted 108 records from 28 monitoring sites (Table 8).

Table 8. New Monitoring Groups from October 1, 2006 to September 30, 2007.

	Group Name	Date Established	No. Sites	Samples
1	Blount County Soil and Water Conservation District	11-Aug-07	3	9
2	Chattahoochee River Watch	3-Aug-07	3	3
3	Elk River Watch	31-Mar-07	2	24
4	Gran-Knights of the Waterhole	3-Feb-07	2	7
5	Karst Water Watch	17-Mar-07	2	4
6	Little Lagoon Preservation Society	13-Nov-07	1	11
7	Phenix City Beautiful	17-Aug-07	1	4
8	Watercress Darter Water Quality Monitoring Program	20-Mar-07	3	6
9	Winston County Smith Lake Advocacy Inc	1-Apr-07	11	40
		Total	**28**	**108**

About 820 citizens held current AWW certifications during the report period. AWW received 3,370 water chemistry records (averaging 281 data forms per month) and 1,017 bacteriological data forms (averaging 85 data forms per month). Since 1993, Alabama Water Watch has received approximately 50,510 chemistry and 8,825 bacteriological data forms from citizen monitors in all of the major watersheds in Alabama. All data have been entered into the AWW statewide computer database.

During the report period, 310 monitors collected chemistry data at 408 sites and 111 monitors collected bacteriological data at 192 sites. There are now approximately 2,126 cumulative sites on more than 760 waterbodies that have been monitored statewide. Each site has a unique code, which is explained in Appendix B. Samples of the new and improved water chemistry and bacteriological data forms are shown in Appendix C.

A summary of the number of active groups, and chemistry and bacteriological data forms submitted from 1993 to 2006 (calendar year), is presented in Figure 2. Summaries of the number of water chemistry and bacteria records received, sorted by watershed and citizen group, are presented in Appendix D and E, respectively. A list of active citizen groups with a corresponding map of group locations by watershed is presented in Table 9 and Figure 3, respectively.

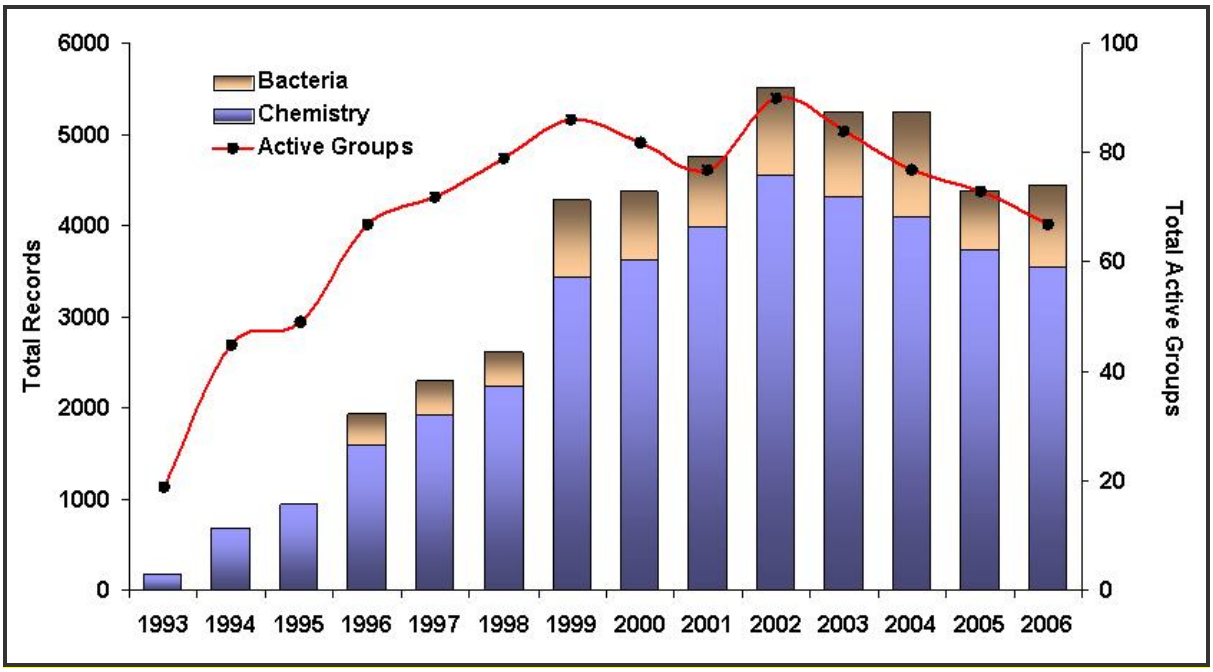


Figure 2. Total number of Active Groups, Chemistry Records and Bacteria Records received per calendar year from 1993 through 2006.

The value of the time citizen volunteers have contributed in attending AWW training workshops and collecting water quality samples has been an important component of the AU cost share on the ADEM/EPA 319 grant for the program. During the report period, citizens contributed 16,745 volunteer hours. This amount is nearly nine-fold the maximum citizen time (1,865 hours) that may be used as cost share (Appendix F). As a result of the strong volunteer effort, approximately $279,000 in excess cost share may be used by ADEM to match funding for other environmental projects.

Table 9. Citizen groups that submitted data between October 1, 2006 and September 30, 2007, listed by major watershed.

		Alabama [01]
1	(1)	Tri-River Region Water Watch*
		Cahaba [02]
1	(2)	CRAWSA
2	(3)	Friends of Shades Creek
3	(4)	Gargis & Guin Cahaba Watch
		Chattahoochee [03]
1	(5)	Chattahoochee River Watch
2	(6)	Phenix City Beautiful
		Coastal Plain [04]
1	(7)	Alabama Coastal Foundation
2	(8)	Coastal Plain Streams Water Watch
3	(9)	Little Lagoon Preservation Society
4	(10)	Wolf Bay Watershed Watch
		Coosa [05]
1	(11)	Coosa River Basin Initiative
2	(12)	Friends of Little River
3	(13)	Friends of Yellow Leaf Creek
4	(14)	H. Neely Henry Lake Association
5	(15)	Lake Jordan HOBO
6	(16)	Lake Mitchell HOBO
7	(17)	Lay Lake HOBO
8	(18)	Logan Martin Lake Protection Association
9	(19)	SOULS Water Watch
10		Tri-River Region Water Watch*
11	(20)	Valley Head School*
		Mobile [06]
1	(21)	Dog River Clearwater Revival
2	(22)	Fairhope Water Watch
3	(23)	Weeks Bay Water Watch
		Tallapoosa [07]
1	(24)	Auburn Outing Club
2	(25)	Chewacla Water Watch
3	(26)	E Cubed
4	(27)	Environmental Awareness Organization
5	(28)	Forestry Ecology Preserve
6	(29)	Friends of Chewacla-Uphapee Watershed
7	(30)	Friends of Hodnett Creek
8	(31)	Gran-Knights of the Waterhole
9	(32)	Jake & Donny Water Watch
10	(33)	Lake Watch of Lake Martin
11	(34)	Lake Wedowee Property Owners Association
12	(35)	Save Our Saugahatchee
13		Tri-River Region Water Watch*
		Tennessee [08]
1	(36)	Academy for Science & Foreign Language
2	(37)	Albertville High School Geology Class
3	(38)	Aldridge Creek Outdoor Classroom
4	(39)	Elk River Watch
5	(40)	Flint River Action Team
6	(41)	Flint River Conservation Association
7	(42)	Huntsville Senior Environment Corps
8	(43)	Karst Water Watch
9	(44)	Limestone County RSVP
10	(45)	Marshall County RSVP *
11	(46)	North Sand Mountain School
12	(47)	Paint Rock Valley Water Logs
13	(48)	Rocket City Water Watch
14	(49)	Sardis High School FFA
15	(50)	Scott Branch Water Watch
16	(51)	Sylvania High School Science
17		Valley Head School*
		Warrior [10]
1	(52)	Birmingham Environmental Clearinghouse
2	(53)	Black Warrior Riverkeeper
3	(54)	Blount County SWCD
4	(55)	Camp McDowell
5	(56)	Cullman County SWCD
6	(57)	Friends of Hurricane Creek
7	(58)	Friends of Locust Fork River
8	(59)	Hydrangea Water Watch
9	(60)	Mulberry Old Bridge Road Wildlife Sanctuary
10	(61)	North River Watch
11		Marshall County RSVP*
12	(62)	Smith Lake Civic Association
13	(63)	Smith Lake Environmental Preservation Committee
14	(64)	Watercress Darter Water Quality Monitoring Prog
15	(65)	Winston County Smith Lake Advocacy Inc

* Groups active in more than one watershed. Cumulative number of groups is in parentheses.

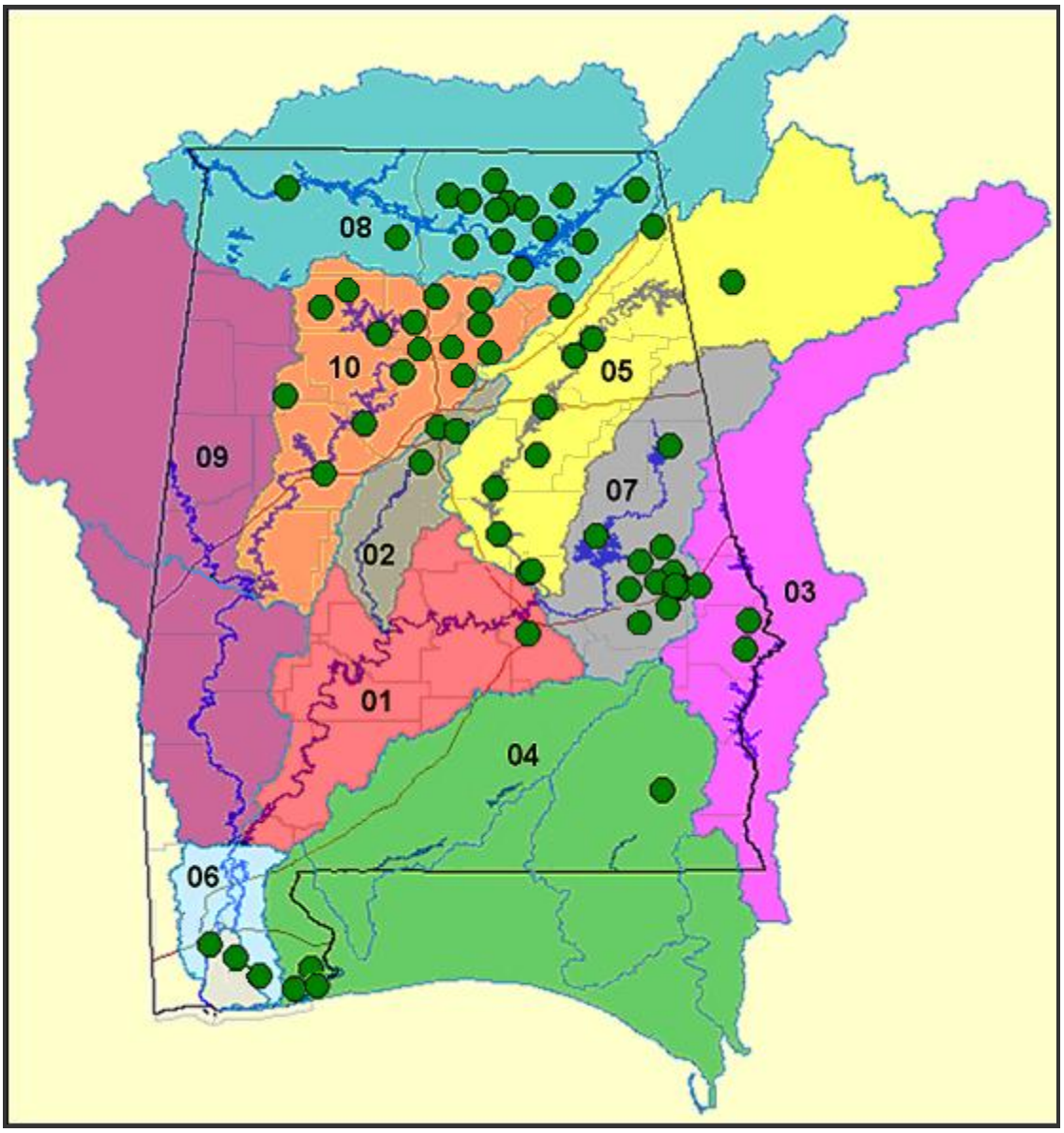


Figure 3. Locations of citizen groups that submitted water quality data between October 1, 2006 and September 30, 2007.

9. DATA INTERPRETATION SESSIONS

Citizen Data Interpretation sessions are regional meetings where AWW personnel and citizen monitors present water quality data and interpret this data. This serves as a tangible summary of years of monitoring effort and puts the group's work into a larger context. Citizens are able to share information about sites in their area and discuss future monitoring plans. Three Citizen Data Interpretation Sessions were presented during the reporting period. All sessions were interactive, with many questions and concerns. The groups appeared enthusiastic about assisting the AWW office with producing waterbody reports highlighting their activities.

1. Smith Lake Environmental Preservation Committee: October 21, 2006

Bill Deutsch and Eric Reutebuch presented the 10th Annual, State of the Lake Address at a meeting of the Smith Lake Environmental Preservation Committee, held at Bethany Baptist Church near Cullman. The presentation included a game to test Smith Lake knowledge, SLEPC and Smith Lake Civic Association water quality trend data, and comments about AWW accomplishments and water issues in Alabama. Debbie Berry, SLEPC President, coordinated the meeting. Among the attendants were representatives of the Smith Lake Improvement and Stakeholder Association and The Winston County Smith Lake Advocacy, Inc.

2. Lake Wedowee Property Owners Association: December 11, 2006

Eric Reutebuch, Sergio Ruiz-Córdova and Tia Gonzales attended the annual meeting of the LWPOA. Eric Reutebuch gave a presentation of TWP results of growing season averages and ranges of AU standard methods results compared to LWPOA results from seven months of side-by-side testing at four sites on Lake Wedowee, April-October 2005. Eric also presented some long-term graphs, and stressed the value of regular, year-round water chemistry sampling. Sergio Ruiz-Córdova re-certified a LWPOA monitor, and Tia Gonzales distributed fresh water chemistry testing chemicals to all LWPOA monitors (11) present. The $1,100 dollars worth of chemicals had been purchased by the TWP for the LWPOA group. Eric presented Mr. Sut Smith and Mr. Jack Duncan with Certificates of Appreciation for their generous assistance in TWP sampling efforts on Lake Wedowee.

3. Save Our Saugahatchee: February 28, 2007

A data interpretation of *E. coli* sampling in Saugahatchee and Chewacla Creek Watersheds was prepared by Eric Reutebuch and presented by Wendy Seesock. This was a combined meeting of Save Our Saugahatchee and the Friends of Chewacla Creek and Uphapee Watershed, held in the Fisheries Building on the Auburn University campus. Bill Deutsch briefly presented the AWW *E. coli* monitoring protocols used by the citizen volunteers. This was followed by an update of City of Auburn's watershed monitoring activities and a discussion on how the city and citizen monitors can interact more productively. Special guests included Dr Laurel Gardner, Environmental Management Commissioner; Christopher Plymale from USEPA Region 4, Missy Middlebrooks from ADEM and Dr Mudiayi Ngandu from Tuskegee University. Staffs in attendance were Bill Deutsch, Jayme Oates, Tia Gonzales and Sergio Ruiz-Córdova.

10. REQUESTS FOR AWW RESOURCES

AWW received requests for various materials and data. All requests for AWW data were accommodated.

Publications

Requests for publications and brochures were received from citizens, environmental groups, policy makers, universities, schools from Alabama and other states and government agencies such as ADEM and EPA. Items requested included copies of the Bacteriological Monitoring and Chemistry Monitoring manuals, volumes from the *Citizen Guide to Alabama Rivers* series, volumes from the AWW Waterbody Report series, QA plans, and brochures.

Numerous AWW publications were distributed during conferences, group meetings, workshops and other events such as Loachapoka Syrup Soppin' and the Second River Revival, at Locust Fork. Additional publications were distributed to water quality professionals on the Auburn University campus and citizens throughout the region. The AWW Annual Report for September 1, 2005 through October 31, 2006 was submitted electronically to ADEM on December 19, 2006. A hardcopy version was delivered in January 2007.

AWW Water Quality Data

Several requests for citizen and water quality data were received and accommodated. Data from the Mobile Bay Basin were supplied to TetraTech, all AWW data were submitted to ADEM and special data sets were submitted to several monitoring groups during the report period. The Alabama Cooperative Extension System requested a summary of citizen data recording lower water levels in streams or dry sites. In addition, data are available on-line and can be accessed via the Internet without formal AWW request.

Monitoring Supplies

A total of 209 requests for chemical reagent replacements, valued $8,382, were received and filled. Active monitors are provided with reagent refills at no cost. The new online ordering system allowed for greater shipping efficiency, inventory tracking, and more efficient use of valuable staff time. Seven BIO-ASSESS games and three remote samplers were purchased by groups, educators and individual monitors. Coliscan Easygel bacterial plates were also purchased for special projects and instruction.

11. MEETINGS

AWW staff represented the program in 46 meetings during this report period, all where expanding partnerships, outreach, public relations, and support of AWW groups. AWW staff meetings were held monthly to update staff on the different activities and projects.

Alabama Water Watch Association

AWWA Board Meetings

1. Clanton, AL. November 17, 2006

Bill Deutsch, Sergio Ruiz-Córdova and Tia Gonzales attended the AWWA Board Meeting at the AL Power Water Course in Clanton, AL. Bill gave updates about the AWW program, including the hiring of a Monitor Coordinator, award of a $15,000 grant to the AWWA from the World Wildlife Fund, plans for the AWWA support person who will work through the AWW office at AU, and the upcoming Strategic Planning Meeting for AWW program staff.

2. Clanton, AL. February 9, 2007

Bill Deutsch and Jayme Oates attended the AWWA Board Meeting at the Alabama Power Water Course Building, in Clanton, AL. Attending members included Dan Murchison, Jim Woodrow, Judy Palfrey, Kellie Johnston, and Jerald Conway. Also in attendance was Walter Cartwright, who was inducted as a new board member. Jay Grantland stepped down as AWWA president and Jim Woodrow assumed the office as interim president. Jayme was introduced as the AWWA-AWW program liaison. She will perform AWWA duties from the AWW program office, supported in part by AWWA funds. Bill gave an AWW update and displayed the new ADEM annual report.

3. Clanton, AL. April 27, 2007

Bill Deutsch and Jayme Oates attended the AWWA Board Meeting at the Alabama Power Water Course Building, in Clanton, AL. Plans for the 2007 AWW Annual Meeting and Picnic were reviewed. Bill gave an AWW program update. Jim Woodrow presided as Interim President.

Annual Meeting and Picnic

1. Guntersville, AL. May 18, 2007

Bill Deutsch, Jayme Oates, Tia Gonzales, Sergio Ruiz-Córdova, and Bryan Duncan attended the AWW Association Strategic Planning meeting at Guntersville State Park, AL. The meeting opened with a presentation by Enio Giuliano Girão, from Brazil's Embrapa Agroindústria Tropical, describing some water quality issues and GWW activities in Brazil. Bryan Duncan translated from Portuguese. Following, plans were made for production of a corporate brochure, outreach, fund-raising, leadership and other aspects of the AWWA.

2. AWWA Annual Meeting and Picnic, May 19, 2007

Bill Deutsch, Sergio Ruiz-Córdova, Bryan Duncan, Tia Gonzales and Jayme Oates attended the Annual AWW Picnic, hosted by the Guntersville Retired Seniors Volunteer Program, at Guntersville State Park. About 60 people attended, representing AWW monitoring groups statewide. A Global Water Watch visitor from Brazil, Enio Giuliano Girão, attended.

Alabama Water Watch Program

Outreach

1. Auburn Rotary Club: October 19, 2006

Bill Deutsch gave a presentation entitled, "Alabama Water Watch...Citizen Volunteers and Watershed Stewardship," to the Auburn Rotary Club. The talk gave an overview of AWW's history and accomplishments, and also presented the history and activities of the SWaMP project. The meeting was held at the Elk's Lodge, Auburn, AL and was coordinated by Carolyn Ellis.

2. Loachapoka Syrup Soppin': Oct 28, 2006

Bill Deutsch, Eric Reutebuch and Wendy Seesock set up a booth at the Loachapoka Syrup Soppin' Day in Loachapoka, AL. Several AWW monitors, including Ron Estridge, Missy Middlebrooks, Chris Anderson, David and Rita Grub helped interpret educational materials and to answer questions about AWW and the SWaMP project. A map of the Saugahatchee watershed and an aquarium of local fishes were on display. Many brochures, coloring books, bumper stickers and AWW publications were distributed to the general public.

3. Clanton Middle School: November 17, 2006

Bill Deutsch, Sergio Ruiz-Córdova and Tia Gonzales met with about 25 students in a science club at the Clanton Middle School, to teach about water issues and AWW activities. Dan Murchison and Jim Woodrow, from the Lake Mitchell Home Owner/Boat Owner Association also attended and spoke to the students about Lake Mitchell and the HOBOs. Teacher Garry Jones, certified in Water Chemistry at a workshop at Camp McDowell in July 2006, coordinated the meeting.

4. Alabama Water Center: December 1, 2006

Bill Deutsch represented the Fisheries Department on a conference call of a group of AU faculty and staff to discuss the creation of the Alabama Water Center on Auburn University campus. The Center may receive line item funding from the Alabama State Legislature and promote water-related outreach, research and teaching. AWW may become one of the Center's outreach programs.

5. Alabama Water Center: December 11, 2006

Bill Deutsch represented the Fisheries Department in a meeting of a group of AU faculty and staff to discuss the creation of the Alabama Water Center on Auburn University campus. Active, water-related projects of AU, including AWW, will be listed and recommendations about structure and function of the Center will be submitted to AU administrators by December 15, 2006. This information will be used to attempt to secure a line item for the Center from the Alabama State Legislature. Bill Deutsch, Donn Rodekohr and Puneet Srivastava will develop a paragraph description of water-related projects in the College of Agriculture.

6. Environmental Field School Instructors 4-H Center: February 20, 2007

Bill Deutsch taught a 4-hour session on Environmental Education, Alabama's Water Resources and Biomonitoring for the Environmental Field School Instructors of the 4-H Center. The Alabama 4-H Center is located on Lay Lake, near Columbiana, AL. Greg Fisher, Environmental Field School Director, coordinated the session.

7. Auburn University AG1000 Class: February 22, 2007

Bill Deutsch, Sergio Ruiz-Córdova and Jayme Oates taught a 50-minute session for the Ag 1000 course of Auburn University. Bill introduced the group to the AWW program and the value of citizen monitoring. Sergio and Jayme gave a field demonstration of the AWW water quality monitoring test kit. Tracy Cline, AU Fisheries Department, coordinated the session.

8. Camp ASSCA: March 22, 2007

Jayme Oates assisted Dick and Mary Ann Bronson with an outdoor classroom/*Exploring Alabama's Living Streams* program for Radney Middle School (Alexander City, AL) students. The activities were held at a stream at Camp ASSCA, Jackson's Gap, AL.

9. Auburn University Limnology Class: April 10, 2007

Bill Deutsch and Sergio Ruiz-Córdova conducted a 4-hour field session for the Auburn University Limnology Lab. Students were given demonstrations in chemical and biological monitoring techniques of AWW followed by hands-on sampling at Parkerson Mill Creek and Hodnett Creek.

10. Winston County Stakeholders: April 13, 2007

Bill Deutsch met with representatives from the Winston County Commission, County Engineering office, Wastewater Treatment Plant, Bankhead National Forest and the Winston County Smith Lake Advocacy, Inc. in the Double Springs, AL Courthouse Annex, to discuss AWW monitoring and coordination of watershed management activities for Smith Lake. He also presented the Enviroscape. Laverne Matheson, of Winston County Smith Lake Advocacy, Inc, coordinated the meeting.

11. Auburn Democratic Club: April 18, 2007

Bill Deutsch gave a presentation entitled, "Water Issues Global to Local", to the Auburn Democratic Club at the Elks Lodge in Auburn, AL. The talk included the local bacteriological sampling of AWW groups and the successful efforts of local monitor, Clara Clothiaux.

12. Earth Day at the Gardens: April 22, 2007

Hana Burwinkle, AWW Trainer, presented a poster and distributed AWW outreach publications at the Birmingham Botanical Garden sponsored Earth Day event.

13. Auburn City Fest: April 28, 2007

Wendy Seesock, Eric Reutebuch Cliff Webber and Matthew Williams joined Mary Lou and Harry Smith to conduct outreach and environmental education related to Saugahatchee and Chewacla watersheds. AWW/ SOS/CHEWUP/SWaMP shared a booth at the Auburn City Fest. Over 1,000 people attended the event

14. Storm Drain Marking: May 5, 2007

Eric Reutebuch, Sergio Ruiz-Córdova, Jayme Oates, Ron Estridge and Eve Brantley joined about 20 stakeholders to install storm drain markers. Activities were directed by Matthew Williams of the AU Sustainability Initiative/Auburn Clean Streams Program and Dan Ballard of the City of Auburn. Markers were installed in dozens of storm drains in the Moore's Mill, Town Creek and Saugahatchee watersheds. Markers were designed by children of Dean Road, Ogletree, Wrights Mill, Yarbrough and Cary Woods schools. The City of Auburn paid for all of the markers and door hangers.

15. Drake Middle School: May 8, 2007

Bill Deutsch, Jayme Oates and volunteers from Save Our Saugahatchee, Inc. taught field sessions for students from Drake Middle School of Auburn, AL. All sessions were held at a tributary stream of Loblockee Creek near Waverly, AL. Students arrived in city buses in two groups and each group was divided between stream biomonitoring (AWW staff) and water chemistry (SOS volunteers) activities. Groups of students rotated between activities so that four sessions of each were offered. Dr. Cliff Webber coordinated the activity.

16. Lee County Water Festival: May 11, 2007

Bill Deutsch and Jayme Oates conducted six consecutive sessions of Edible Aquifer while Sergio Ruiz-Córdova conducted Water Filtration sessions in an adjacent classroom. Each session was presented to groups of about fifteen fourth-grade students. The Lee County Water Festival was held at the Haley Center of Auburn University.

17. USAID Outreach: June 1, 2007

Eric Reutebuch gave a presentation titled "The 'TWP' – Summary of Research Findings" to a group of about a dozen farmers from Uzbekistan. The farmers were visiting Auburn University on a USAID-sponsored international Outreach Program, to learn about water policy, irrigation efficiency and multi-use technologies.

18. Auburn University Arboretum: September 8, 2007

Eric Reutebuch, David Chunn and Jayme Oates conducted a program at the Arboretum called "Water Watchers Day". They introduced children aged four to twelve years to watershed stewardship and AWW methods of chemical, bacteriological and biological water analysis. The Enviroscape, provided to AWW by Legacy, was used to demonstrate the concepts of a watershed, Point and Nonpoint pollution, and Best Management Practices (BMP's).

Mary Ann Bronson, Lake Watch of Lake Martin member with *Exploring Alabama's Living Streams* students at Camp ASCCA, AL in March 2007.

Sergio Ruiz-Córdova training volunteer monitors in water chemistry at the Auburn University Arboretum in Auburn, AL in July 2007.

AWW Group Meetings and Events

1. Friends of The Locust Fork River Meeting: October 10, 2006

Sergio Ruiz-Córdova and Jim Johnson attended a Town meeting in Cleveland, Al. The meeting was coordinated by Nancy Jackson and attended by about 50 people including members of the Friends of Locust Fork River (FLFR) and other community members. The meeting was held to discuss the present and future health of the Locust Fork River. Concerns were voiced regarding the construction of the new bridge on Hwy 79. Sergio gave a presentation about Total Suspended Solids (TSS) monitoring, as requested by the AWW monitors with FLFR.

2. Save Our Saugahatchee Meeting: October 19, 2006

Bill Deutsch attended the group meeting of Save Our Saugahatchee, Inc., held in Loachapoka, AL., where he gave an update about the SWaMP project. The group discussed SOS and SWaMP booths at the upcoming Loachapoka Syrup Soppin' Day. Wendy Seesock, SOS President, presided.

3. Smith Lake State of the Lake Address: October 21, 2006

Bill Deutsch and Eric Reutebuch presented the 10th Annual, State of the Lake Address at a meeting of the Smith Lake Environmental Preservation Committee. The presentation included a game designed to test Smith Lake knowledge, SLEPC and Smith Lake Civic Association water quality trend data, and comments about AWW accomplishments and water issues in Alabama. Debbie Berry, SLEPC President, coordinated the meeting. About 50 people attended the meeting with positive response to our Smith Lake quiz. A new group called the Smith Lake Improvement and Stakeholder Association sent representatives. Also in attendance was LaVerne Matheson, president of the newly formed Winston County Smith Lake Advocacy, Inc.

4. Save Our Saugahatchee *E. coli* Testing Blitz: January 31, 2007

SOS and CHEWUP teamed up for the first watershed-level bacteria sampling of the Saugahatchee and Chewacla watersheds in the Auburn Opelika area. Field monitoring was conducted by Wendy Seesock, Cliff Webber, Mary Lou Smith and Clara Clothiaux, Tia Gonzales, Ron and Barbara Estridge. Dr. Webber incubated and counted plates; Eric Reutebuch took photos and provided data analyses and mapping.

5. Save Our Saugahatchee/ADEM side-by-side *E. coli* Testing: February 15, 2007

SOS member and AWW bacteria monitor, Clara Clothiaux, conducted bacteria monitoring coincident with ADEM monitoring at two sites on Parkerson's Mill Creek. Sampling occurred during a five week ADEM study aimed at identifying local areas of bacteria contamination. Wendy Seesock and Eric Reutebuch assisted in plating and counting on both February 8 and 15.

6. Saugahatchee post- *E. coli* Sampling Evaluation: February 28, 2007

Bill Deutsch, Sergio Ruiz-Córdova, Jayme Oates and Tia Gonzales attended a combined meeting of Save Our Saugahatchee and the Friends of Chewacla Creek and Uphapee Watershed, held in the Fisheries Building on the Auburn University campus. During the meeting, Wendy Seesock, SOS President, presented the results of the *E. coli* blitz sampling performed by SOS and CHEWUP volunteers. Bill briefly presented the AWW *E. coli* monitoring protocols used by AWW citizen volunteers. Chris Plymale, from USEPA Region 4, Atlanta, also attended this meeting.

7. Save Our Saugahatchee/Stream Cleanup: April 7, 2007

Bill Deutsch and Eric Reutebuch joined a dozen other SOS citizen volunteers to clean up trash at several bridge crossings across the creek from Opelika to Reeltown. The general consensus was that the volume of trash was less than a year ago, and that true progress was being made.

8. Winston County Smith Lake Advocacy, Inc: April 13, 2007

Sergio Ruiz-Córdova met with members of the Winston County Smith Lake Advocacy, Inc. at the Meek High school in Arley, AL. Sergio and the group of nine recently trained monitors then traveled to the Duncan Bridge area of Smith Lake, where they conducted water chemistry testing.

9. Save Our Saugahatchee Meeting: May 3, 2007

Eric Reutebuch and Sergio Ruiz-Córdova represented AWW at a meeting where Lynn Sisk, of ADEM, presented results from the bacteriological sampling conducted by ADEM in the Saugahatchee watershed. Members of SOS and the Friends of Chewacla-Uphapee Watershed were present as well as other personalities such as Mike Speakman, Matt Dunn, Scott Cummins, Dan Ballard, Sheila Eckmann, Tom McCallan, and citizen monitor, Clara Clothiaux.

10. Saugahatchee/Chewacla *E. coli* Sampling Blitz: June 14, 2007

Eric Reutebuch assisted with sampling, incubation of bacteria plates, and later creation of maps and PowerPoint presentation of results of an *E. coli* testing blitz coordinated by SOS and CHEWUP volunteer monitors. Water testing was conducted at 23 sites, 10 of which were in the Saugahatchee Watershed.

11. Second Alabama Rivers Alliance River Revival: September 30, 2007

Jayme Oates and Sergio Ruiz-Córdova attended the Second River Revival held at Kings Bend on the Locust Fork River. The Revival was organized by the Alabama Rivers Alliance and hosted by the Friends of The Locust Fork River. About 300 people attended. AWW had a booth with publications, brochures, an interpretive poster and the Enviroscape. Members of several AWW monitoring groups were present including Susan Webber of the Flint River Conservation Association, Jennifer Pinkley of Karst Water Watch and Nelson Brooke, the Black Warrior Riverkeeper.

Winston County Smith Lake Advocacy Inc. volunteer monitors in water chemistry at Smith Lake in Arley, AL in April 2007.

Black Warrior Riverkeeper, Nelson Brooke attending a recertification session in Lake Guntersville, AL in May 2007.

Miscellaneous Meetings

1. Twenty First Century Programs in Alabama: October 31, 2006

Bill Deutsch and Jenny Fuller presented the *Exploring Alabama's Living Streams* curriculum to about 25 Community Center directors, all recipients of 21st Century Community Learning Center grants. The Twenty First Century grants are designed to improve the outreach capabilities of Community Learning Centers. The presentation discussed the Living Streams curriculum and how it might be used in after-school and summer-school Community Center programs. Also in attendance was Bob Ritchie from the State Department of Education. Bob Ritchie administers federal funds for the 21st Century programs in Alabama.

2. Alabama Water Watch Strategic Planning Meeting: December 4, 2006

AWW staff spent the day evaluating AWW activities and accomplishments of 2006 and planning for 2007. Extensive notes were taken and are saved electronically. The group was optimistic about new staff, greater services to monitors, and the potential to see an increase in active groups and data submitted in 2007. In attendance were Bill Deutsch, Sergio Ruiz-Córdova, Eric Reutebuch, Tia Gonzales, Jennifer Fuller, Emile Elias, Laura Robinson, Jim Johnson and Bryan Duncan.

3. Saugahatchee TMDL Review: January 22, 2007

Bill Deutsch, Eric Reutebuch and Wendy Seesock met as SWaMP representatives with representatives from ADEM, City of Auburn and WestPoint Home to discuss the new TMDL for Saugahatchee Creek. Lynn Sisk from ADEM clarified several points of the TMDL and implications for compliance. Also representing ADEM were Marla Smith, Glenda Dean, Missy Middlebrooks and Daphne Smart. The meeting was coordinated by Scott Cummings of the City of Auburn and was held in the Bailey-Alexander Water Resources Building in Auburn

4. Alabama Clean Water Partnership Meeting: January 30, 2007

Tia Gonzales and Sergio Ruiz-Córdova attended a CWP meeting organized and coordinated by Allison Jenkins. Allison's vision could lead to the start a of a signage campaign, with the goal of engendering greater community pride and attention to stewardship. The new signs would make travelers and residents aware of waterbody names, watershed identity and boundaries and the value clean roadsides. Ms Jenkins will send minutes of the meeting and call for a second meeting. Twenty people were present, representing ADEM, AL Dept. of Economic and Community Development (ADECA), Black Warrior Riverkeeper, AL Department of Health, AL Dept of Transportation, Alabama Forestry Commission, City of Montgomery, People Against a Littered State (PALS), Alabama Dept of Natural Resources and Conservation and AWW.

5. AWW Hosts EPA: February 28, 2007-March 1, 2007

From February 28 through March 1, AWW Program Staff hosted Chris Plymale of the USEPA, Region 4, Atlanta. Chris overviewed the AWW program and the Saugahatchee Watershed Management Plan (SWaMP) Phase 1 Implementation project. He attended meetings of SWaMP stakeholders and a Save Our Saugahatchee. Chris and Bill discussed how EPA and AWW could work together more closely, including the possibility of the AWW database serving the Region 4 for citizen data.

6. Exploring Alabama's Living Streams Workshop: February 28, 2007

Jennifer Fuller and Bill Deutsch conducted a two hour, evening workshop on use of the *Exploring Alabama's Living Streams* curriculum. The curriculum has been developed through a USDA-CSREES grant (Tallapoosa Watershed Project) and has been piloted in ten schools. The Truman Pierce Institute provided funding for this workshop to be repeated six times in 2007, with the primary audience being professional educators.

7. Lower Tallapoosa Clean Water Partnership Stakeholder Committee Meeting: April 24, 2007

Bill Deutsch and Sergio Ruiz-Córdova attended a Lower Tallapoosa River Basin Clean Water Partnership Stakeholder Committee Meeting at the Moore's Mill Golf Club, in Auburn, AL. The objective of the meeting was to update and discuss the Moore's Mill Creek Restoration Project to take place along 10,000 feet along the golf course. Acer Environmental from Raleigh, NC, is conducting the restoration work. Attendees included Buddy Morgan with Montgomery Water Works, Scott Hughes and Norm Blakley from ADEM, Chris Plymale from EPA-Atlanta, Dan Ballard, Matt Dunn and Scott Cummings from the City of Auburn Water Resources Office, Sheila Eckman from the Auburn City Council, Robert Montgomery with the Alabama Forestry Commission, Laura Reed with the Tallapoosa CWP/CH2MHILL and Dr. Charlene LeBleu, Chair of the AU Landscape Architecture Department. The meeting was coordinated by Sabra Sutton of CH2MHill.

8. Conservation Education, April 26, 2007

Bill Deutsch attended a meeting about Conservation Education called by the Alabama Soil and Water Conservation Committee and *Discovering Alabama*. The meeting was held in the RSA Building in Montgomery, AL. Doug Phillips and Beth Stevens presented the plan for Project Community. AWW will partner with Project Community using the *Exploring Alabama's Living Streams* curriculum.

9. AU Water Initiative Committee Meeting: May 2, 2007

Bill Deutsch attended the AU Water Initiative committee meeting held at the School of Forestry and Wildlife Sciences. Plans were made and updates given for the water conference at AU, June 14-15, 2007.

Chris Plymale, from USEPA Region 4, Atlanta and Clara Clothiaux attending a SOS meeting at Auburn University AL in February 2007.

Jennifer Fuller conducting *Exploring Alabama's Living Streams* in Loachapoka, AL in June 2007.

10. Project Community Meeting: May 24, 2007

Bill Deutsch attended a planning meeting for organizations that will partner with *Discovering Alabama* to implement Project Community at Lanark. Lanark, located in Millbrook, AL, is the state headquarters for the Alabama Wildlife Federation. Each organization will present various aspects of Conservation Education in teacher workshops. AWW has planned to work with *Discovering Alabama* and others to offer seven teacher workshops in *Exploring Alabama's Living Streams*, June and July 2007, funded in part by the Truman Pierce Institute of Auburn University. Doug Phillips and Beth Stevens coordinated the meeting.

11. Stream Morphology Workshop: September 20-21, 2007

Eric Reutebuch and Wendy Seesock attended a two-day Stream Morphology Assessment training held on the Auburn University campus, sponsored by ACES. Eve Brantley organized the workshop.

12. EPA Region 4 Watershed Workshop: September 20-21, 2007

River Network Director, Don Elder, invited Bill Deutsch to join him and Gayle Killam to conduct a two-day workshop on watersheds and community action at the EPA Region 4 Headquarters in Atlanta, GA. About 35 people attended, including Water Division Director, Jim Giatina, Bill Cox and other Branch Chiefs and State Coordinators. Bill presented case studies from AWW, approach and accomplishments of the Tallapoosa Watershed Project and implementation of the Saugahatchee Watershed Management Plan. Bill also participated in group discussions about implementing the watershed approach in Region 4.

13. Servants in Faith and Technology: September 24, 2007

The Alabama Water Watch and Global Water Watch programs hosted a group of visitors from SIFAT. SIFAT is a faith-based organization dedicated to bringing appropriate technology and community support to underserved communities in the US and other countries. Sergio Ruiz-Córdova gave a presentation for the group. Of the 25 participants, 12 countries and multiple disciplines were represented. All of the participants were enthusiastic about the program and regarded Community-Based Water Monitoring as a superior tool for Watershed Stewardship. Tom Corson Executive Director and Ms Katie Bryson International Training Director of SIFAT coordinated the meeting.

Bill Deutsch, Sergio Ruiz-Córdova and Emile Elias conducting stream bioassessment in Parkerson Mill Creek, Lee County, AL in Feb 2007.

Sergio Ruiz-Córdova shown with guests from SIFAT in September 2007 at Auburn University.

12. CONFERENCES AND SEMINARS

Seventeen conferences and seminars were attended where the AWW staff represented the program in diverse activities, such as expanding AWW partnerships, public relations, and support of AWW groups. AWW staff made presentations at conferences within and outside Alabama. Most conference presentations were financed by related projects including the Tallapoosa Watershed Project, Truman Pierce Institute, Global Water Watch and ACES.

1. Alabama Science Teachers Association Annual Conference: October 3, 2006

Jennifer Fuller traveled to Birmingham, AL to present "*Exploring Alabama's Living Streams*: An Integrated Aquatic Science Curriculum for Alabama Youth" as a classroom-tested program that raises awareness for Alabama water quality issues while promoting community collaboration. It was presented during the middle school and high school aquatic science session, with emphasis was placed on the upcoming completion and statewide availability.

2. EDGE OUTREACH Water Purification Training Conference: November 8, 2006

Bill Deutsch was an invited speaker at an EDGE OUTREACH Water Purification Training conference of in Louisville, KY, November 7-10. Bill made a presentation entitled, "Community-Based Approaches for Addressing Global Water Issues". Most participants came to receive training in the installation of the water purifier in countries of the developing world. Some expressed interest in becoming involved with GWW.

3. Alabama - Mississippi Bays and Bayous Symposium: November 28, 2006

Bill Deutsch and Sergio Ruiz-Córdova attended the Alabama-Mississippi Bays and Bayous Symposium held in Mobile, Alabama. They presented a poster entitled "Alabama Water Watch, a Citizen Volunteer Water Monitoring Program". The two-day event featured scientific presentations on water quality, living resources, habitat management, natural hazards and coastal development in Alabama and Mississippi. Keynote speaker Dr. Sylvia Earle, presented "Sea Change", a talk examining human impacts on the world oceans. The symposium was hosted by the Mobile Bay National Estuary Program, Mississippi-Alabama Sea Grant Consortium, and the Alabama Center for Estuarine Studies and the University of Southern Mississippi's Gulf Coast Research Laboratory, and attracted about 300 scientists, resource managers, and the general public.

4. Alabama Clean Water Partnership Annual Conference: December 6, 2006

Tia Gonzales and Sergio Ruiz-Córdova attended the Alabama Clean Water Partnership second Annual Watersheds Conference at the Alabama Power Water Course in Clanton. The conference was coordinated by Allison Jenkins and attended by about seventy people from across the state. Several AWWA members were present. The revised and recently printed AWW Water Chemistry manual was presented to Mr. John Grogan with a letter of thanks for the support that Alabama Power has provided to Alabama Water Watch.

5. ADEM 18th Annual Nonpoint Source Conference: January 24, 2007

Bill Deutsch, Tia Gonzales, Jayme Oates, Eric Reutebuch and Sergio Ruiz-Córdova attended The 18th Annual NPS Conference in Montgomery, AL. Several AWW monitors were present including Bob Keefe and Joe Scanlan. Bill Deutsch gave the presentation, "Accomplishments and Initiatives of Alabama Water Watch", to an audience of about 250 people. The new poster titled, "Alabama Water Watch, a Citizen Volunteer Water Quality Monitoring Program" was displayed.

6. USDA-CSREES National Water Conference: January 29-31, 2007

AWW was well represented at the at the USDA-CSREES National Water Conference in Savannah, GA. Bill Deutsch and Laura Robinson gave a one-hour presentation entitled, "Life Cycle of a Volunteer Water Monitoring Program and Implications for Credibility…a Case From Alabama", in a Volunteer Monitoring Workshop. Bill Deutsch also gave a presentation (with Eric Reutebuch as co-author) entitled "Validity and Usefulness of Citizen Volunteer Water Data in River Basin Management". Jennifer Fuller presented the talk: "*Exploring Alabama's Living Streams*: A Flexible Aquatic Science Curriculum for Educating Youth about Nutrients and Other Non-Point Source Pollution Issues". About eight states were represented at the workshop. Linda Green, Kris Stepenuk, Elizabeth Herron of the USDA Volunteer Monitoring National Facilitation Project and Jerry Iles were also presenters and coordinated this conference.

7. Environmental Education Association of Alabama's Annual Meeting: February 1, 2007

Bill Deutsch attended the Environmental Education Association of Alabama's Annual Meeting at Mt. Cheaha State Park, February 1-2. He participated in break-out groups of environmental educational centers and the evening plenary session where Doug Phillips was the keynote speaker. Bill Deutsch met Beth Stevens (*Discovering Alabama*) and this led to productive meetings regarding the Tallapoosa Watershed Project (TWP2) proposal.

8. Alabama Rural Water Association Annual Conference: March 20, 2007

Bill Deutsch attended a Forum as an invited participant at the Alabama Rural Water Association Annual Conference at the Mobile Convention Center, Mobile, AL. Taylor Ezell, Source Water Specialist with the ARWA, gave an overview of his USDA-funded work with municipalities in AL and the members of the forum commented and offered suggestions. Among the participants were Tom Littlepage from ADECA and others representatives from ADEM. Bill met Taylor Ezell and discussed the TWP2 proposal.

9. Alabama Community Educators Association Annual Conference: March 29, 2007

Jenny Fuller gave the presentation entitled "*Exploring Alabama's Living Streams*: Integrated Flexible Aquatic Science Modules for Alabama Youth" to educators at the Alabama Community Educators Association annual conference in Mobile, AL. Educators were provided with of dates and locations of upcoming *Exploring Alabama's Living Streams* summer workshops.

10. Wallace State College, Earth Day: April 19, 2007

Bill Deutsch gave a presentation entitled, "Water Issues...Global to Local", as an invited speaker of the ACES Speakers Bureau for the Earth Day celebration of Wallace State College in Hanceville, AL. The presentation included the projects and groups of AWW and GWW facts about the Lewis Smith Lake watershed. Dr. Bill Moss of Wallace State Biology Department coordinated the meeting.

11. State of Our Watershed Conference: April 20, 2007

Bill Deutsch presented the conference overview, Eric Reutebuch presented a summary of TWP research results, Jayme Oates did poster presentations on the AWW Program and the Living Streams Curriculum, and Sergio Ruiz-Córdova oversaw registration and photographed the conference. Eric Reutebuch coordinated the conference that was attended by about 70 people.

12. Water Resources Conference: June 14-15, 2007

Eric Reutebuch and Wendy Seesock presented a poster titled 'The Saugahatchee Watershed Management Plan", Eric Reutebuch, William Deutsch, David Bayne, Wendy Seesock, Luoheng Han and Emile Elias presented an abstract titled "Nutrient Dynamics and Lake Trophic State in the Tallapoosa River Basin" at the 2007 Auburn University Water Resources Conference at the Auburn University Conference Center.

13. AU Fisheries Class: July 10, 2007

Sergio Ruiz-Córdova gave a presentation titled "Alabama Water Watch History and Overview" to ten students in the FISH 2100 Introduction to Fisheries Science class at Auburn University, AL. A demonstration of water chemistry monitoring testing was conducted at the Arboretum Pond. Jeff Terhune coordinated the course.

14. *Exploring Alabama's Living Streams*: July 12, 2007

Sergio Ruiz-Córdova presented an overview of the AWW program, Alabama waters and their physical and aquatic biodiversity to a group of educators attending an *Exploring Alabama's Living Streams* workshop in Camp McDowell, Nauvoo, Alabama.

15. Project Community Press Conference: July 10, 2007

Bill Deutsch and Jayme Oates attended the press conference for the Alabama Schools Pilot Project Community, a public/private partnership to enhance science education in 12 pilot schools. Project Community uses interdisciplinary design to make learning locally relevant. Speakers included the AL Superintendent of Education, Dr. Joe Morton; Dr. Doug Phillips, Project Community Director; Noopie Cosby, Conservation Districts Spokesperson; Steve Cauthen, Executive Director of the Soil and Water Conservation Commission; Craig Sizemore, president of the Alabama Association of Conservation Districts; Beth Stevens, Project Community Coordinator; and Ron Sparks, Alabama Commissioner of Agriculture and Industries.

16. Alabama Water Resources Conference: September 5-7, 2007

Jennifer Fuller attended the Annual Alabama Water Resources Conference in Orange Beach, AL. Jenny gave a presentation titled "Technical Aspects of Stream Biomonitoring for Citizen Volunteers in Alabama".

17. AU Fisheries Seminar: September 14, 2007

Bill Deutsch and Sergio Ruiz-Córdova presented the seminar, "Community-Based Watershed Stewardship…Local to International," to about 30 people from the AU Fisheries Department.

13. RELATED PROJECTS

Global Water Watch

GWW is a worldwide network of community-based water monitoring (CBWM) groups committed to expanding knowledge about water issues and improving both water quality and policy. The GWW Program, funded in part by Heifer International (HPI), the Christian Children's Fund and the Tankersley Endowment, is coordinated through the Auburn University Department of Fisheries and Allied Aquacultures and provides training resources, technical backstopping and data management. GWW helps communities to train and establish teams of citizen volunteers to monitor surface waters measuring physical, chemical and biological indicators of watershed fitness. Citizen volunteers may then submit data to the GWW database via the Internet. GWW also assists in implementing environmental education and other watershed stewardship programs for the public.

Tallapoosa Watershed Project

The AWW staff participated in the organization and facilitation of the *Third Annual State of Our Watershed Conference – the Tallapoosa River Basin*, held at the Camp ASCCA Environmental Center, Jacksons Gap, AL on April 20, 2007. Bill Deutsch presented an overview of the conference as well as an overview of the Tallapoosa Watershed Project, which co-sponsored the conference, along with the Middle Tallapoosa Clean Water Partnership. The morning session of the conference concentrated on social, economic and ecological *Elements of Sustainable Development* and the afternoon session focused on the *Plan for Sustainable Development*, including aspect of policy and regulations, community participation, and environmental education. Certificates of Appreciation were awarded to Charles Smith and Jack Duncan of Lake Wedowee Property Owners Association for TWP logistical support, to Dick and Mary Ann Bronson for environmental education, to John Glasier for innovations in citizen water monitoring, and to Tommy Futral for environmental extension. Eric Reutebuch organized the conference, and gave a presentation titled "Water Quality and TWP Findings. Sergio Ruiz-Córdova coordinated conference registration. Approximately 70 people attended this year's conference. (see TWP Annual Reports at *www.twp.auburn.edu/Publications.aspx* for details).

Saugahatchee Watershed Management Plan (SWaMP)

Saugahatchee Watershed Management Plan was written to address specific water quality issues related to impairments in two 303(d) listed stream segments in the Saugahatchee Creek. Part of the plan will implement a nine-year phase to clean up polluted segments of Saugahatchee Creek. The goal of Phase 1 implementation of SWaMP is to reduce phosphorus loading into the Saugahatchee Embayment by 15 percent, through the strategic placement of BMP's. The goals of the SWaMP stakeholder group pertain to how ecological integrity, water resources management and quality of life can be best sustained with inevitable population growth and accompanying development. Eric Reutebuch and Wendy Seesock coordinate this project.

Exploring Alabama's Living Streams

Through funds made available by USDA/CREES, Truman Pierce Institute (TPI) and Legacy, AWW developed an aquatic science curriculum called *Exploring Alabama's Living Streams*. The curriculum was presented to about 75 educators through four aquatic science workshops during the summer of 2007, jointly held by AWW staff and natural resource educators. Project evaluation suggested the curriculum provides an avenue for overcoming inadequate teacher training in aquatic science and water quality while creating a valuable community support network for educators. Jennifer Fuller developed and piloted this curriculum as part of her graduate work and thesis.

World Wildlife Fund

Bill Deutsch, Eric Reutebuch, Sergio Ruiz-Córdova and the AWW Association, received a $15,000 grant from the World Wildlife Fund, Inc. to improve AWW web-based citizen data analysis tools such as easily produced local watershed maps with locations of AWW monitoring sites, graphs of water chemistry and bacteria data, and graphs of long-term trend analyses of water quality parameters, and a mechanism of interpreting what these trends mean. The pamphlet titled "Community-Based Water Monitoring Data Credibility and Applications" is being finalized for publication.

Alabama Cooperative Extension System

Bill Deutsch and Dr. Kathryn Flynn (AU School of Forestry and Wildlife Sciences) developed an Extension Team Project (ETP) for water-related activities that will be within the activities of the Natural Resources programs of ACES. The new ETP was submitted to ACES on November 20, 2006 for the 2007 calendar year. ACES agents statewide will be able to commit time to this ETP, which include support of AWW activities.

14. ACCOMPLISHMENTS AND INITIATIVES

Online chemical orders became available to active monitors. The revamped process of distributing reagents; improved tracking, streamlined shipping efficiency and saved valuable staff time. Monitors were able to order more easily and receive reagents more quickly.

The making of Certification Cards and Certification Letters for monitors was enhanced in the office database allowing for trainees with multiple certifications to receive one letter rather than two or three. Both Cards and Letters were redesigned with the Cards now displaying the AWW certification number. Revised letters provided easier to understand instructions for monitors.

Bill Deutsch, Sergio Ruiz-Córdova and Laura Robinson wrote two manuscripts about the history and characteristics of AWW groups. The first paper, "Resource Trends and Challenges of a Long-Term Volunteer Water Monitoring Program: A Case Study from Alabama," was accepted for publication in the journal Society and Natural Resources, in October 2007. The second paper, "Resource Availability and Volunteer Environmental Monitoring: Group Dynamics within a Long-Term Volunteer Water Monitoring Program", will be finalized in the spring of 2008 and submitted to a professional journal.

The manuscript titled "Validity and applications of citizen volunteer water-quality data: a case from Alabama," submitted by William Deutsch, Eric Reutebuch and Sergio Ruiz-Córdova, was published in the September 2007 (volume 9, no. 5) issue of Water Resources Impact, a bi-monthly publication of the American Water Resources Association. The article showcases 15 years of citizen volunteer monitoring, web-based tools for interpreting AWW water quality data, and two specific case studies of application of the data: one involving a decade of extensive monitoring in the Wolf Bay Watershed that led to its upgrade to 'Outstanding Alabama Water' classification, and the other, a single citizen monitor in Auburn, Alabama resolving a leaking sewer line in a matter of weeks through her bacteria monitoring efforts.

On 26 November 2006 a grant was awarded from Legacy Inc Partners in Environmental Education to the AWWA through Jenny Fuller to conduct the program "Living Streams: Linking Classrooms with Communities".

Bill Deutsch represented the Fisheries Department 1 December 06, and 11 December 06 in meetings with AU faculty and staff to discuss the creation of the Alabama Water Center on the Auburn University campus. AWW may become one of the Center's outreach programs. Active, water-related projects of AU, including AWW, will be compiled. Recommendations about structure and function of the Center will be submitted to AU administrators by December 15. This information will be used for an attempt to secure a line item for the Center from the Alabama State Legislature.

On 21 December 06 the AWW FY06 base grant was approved by ADEM for $140,000 as proposed, and a cooperative agreement was received for AU signatures

AWW received a $504,909 grant in January 2007 from Alabama Department of Environmental Management for phase 1 implementation of a nine-year plan to clean up polluted segments of Saugahatchee Creek. The Saugahatchee drains the Auburn/Opelika metropolitan statistical area (MSA),

the fastest growing MSA in Alabama (U.S. Census Bureau 2000), which is experiencing dramatic land use changes associated with urbanization and forestry/agricultural land conversions. With the three-year grant, Deutsch will lead a diverse group of stakeholders in the Auburn-Opelika area in implementing the Saugahatchee Watershed Management Plan, or SWaMP, developed by the stakeholders over a two-year period. The goal of Phase 1 implementation of SWaMP is to control non-point source phosphorus pollution and reduce phosphorus loading into the Saugahatchee Embayment by 15 percent through the strategic placement of best management practices. The stakeholder team includes representatives from the cities of Auburn and Opelika, MeadWestvaco, WestPoint Home Inc., the Natural Resources Conservation Service, the Alabama Cooperative Extension System, Save Our Saugahatchee Inc., Alabama Water Watch and Auburn University. A key component to the success of the project will be educating landowners, developers, homeowners, municipal water resource managers, elected officials, teachers and the general public about SWaMP, and to educate citizens on how their actions impact waters of Saugahatchee Creek.

An Alabama Water Watch bumper sticker was printed in February 2007 (Appendix H). Updated versions of the AWW Data Reporting forms for Water Chemistry and Bacteriological Monitoring were printed and Stream Biomonitoring and Sampling Site forms were updated and all posted online. The Stream Biomonitoring Manual and the Training of Trainers Manual are being revised for printing. Online data forms were also revised to match the new format of the hardcopy versions.

The AWW Volunteer Monitor Coordinator position was filled. Three of five applicants were interviewed on 25 January 2007. Tia Gonzales accepted the position and began working full-time in March 2007. Jayme Oates, also an interviewed candidate, was hired under AU Temporary Employment Services to assist with special projects.

From 28 February through 1 March 2007, Bill Deutsch and the AWW Office Staff hosted Chris Plymale, Alabama Coordinator for the Watershed Management Office, EPA Region 4, Atlanta. Chris and Bill discussed how EPA and AWW could work together more closely, including the possibility of the AWW database serving the EPA region for citizen data.

The TWP organized and co-sponsored a conference: *The Third Annual State of Our Watershed Conference - The Tallapoosa River Basin*, which was held on April 20, 2007 at Camp ASCCA, Jacksons Gap, AL, with about 70 attendees (for details, go to *www.twp.auburn.edu/ExtSOWconf07.aspx*). The conference evolved from merely reporting research results and education/outreach activities in its first and second years, into an important forum of information exchange relative to watershed management of the Tallapoosa River Basin. As a result, the Middle Tallapoosa Clean Water Partnership accepted primary sponsorship of this year's conference. A well-rounded distribution of stakeholders participated, including business representatives, environmental citizen groups, post-secondary education-research personnel, as well as representatives from municipal, state and federal agencies, real estate, and public schools.

Bill Deutsch received an award plaque for Alabama Water Watch at the *Discovering Alabama* Awards Luncheon, RSA Terrace, Montgomery, AL in May 2007. The award was for Outstanding Statewide Leadership in Conservation Education and was presented by the Alabama Association of Conservation Districts and *Discovering Alabama*, in cooperation with the Alabama Soil and Water Conservation Committee.

Revised and redesigned AWWA brochures were printed in May 2007. GWW brochures were translated into Spanish and published in May 2007.

On August 2007, Eric Reutebuch submitted the 8-page "Citizen Volunteer Water Monitoring on Wolf Bay" for publication. Wolf Bay Watershed Watch, who had collaborated in the creation of the publication, ordered 4000 copies.

01 August 2007, Bill Deutsch submitted two Abstracts to Linda Watts of the LaMotte Company for workshops to be presented at the National Science Teachers Association Meeting in Birmingham, AL, December 2007. Both workshops, to be conducted by Bill and Jennifer Fuller, will highlight AWW activities and AWW relationship with the LaMotte Company.
The AWW website has been regularly updated, and visited over 117,000 times since its creation. The AWW homepage has been visited over 99,000 times and the Water Data section has received 18,000 hits since they were posted on the Internet in August 1998 and September 2002, respectively. People from almost every state in the U.S. have visited the Water Data section of the AWW website. Since it was posted, the Water Data section of AWW website has been a very useful tool for monitors and citizens throughout Alabama and other states.

About 83% of AWW data received during the report period were entered online.

The AWW Listserve, a free e-mail service, was used by about 800 subscribers. Most of these subscribers are AWW monitors, and others include interested citizens from around the world, supporters and constituents.

15. AWW PERSONNEL AT AUBURN UNIVERSITY

Throughout the report period there were no full-time employees with the AWW Program, except the Volunteer Monitor Coordinator. Budget constraints have limited staff time. The following people work 8-20 hours per week with the Program.

William Deutsch, Ph.D.

Program Director (October 1992 - present) - Bill has been on the faculty of the AU Department of Fisheries and Allied Aquacultures since 1990. In addition to AWW responsibilities, he works through the International Center for Aquaculture and Aquatic Environments conducting environmental studies and training with international projects.

Eric Reutebuch, M.S.

Publications Coordinator (January 1996 - present) - Eric has an M.S. in Fisheries from Auburn University. His work with AWW primarily involves creating publications that feature specific AWW groups, their local issues, their water monitoring data and how they are using the data to better manage their watersheds. In addition to publishing responsibilities, he enjoys traveling around the state and participating in data interpretation sessions with local citizen monitoring groups.

Sergio S. Ruiz-Córdova, B.S.

Data Quality Coordinator (April 2001 - present) - Sergio has a B.S. in Biology and his work with AWW involves programming and maintaining the statewide database and creating data reports. In addition to AWW responsibilities, he works through the International Center for Aquaculture and Aquatic Environments conducting environmental studies and training with Global Water Watch projects in other countries.

Tia Gonzales, B.S.

Volunteer Monitor Coordinator (July 2006 – Present) - Tia has a B.S. in Horticulture from Auburn University. Her work with AWW primarily involves working with AWW monitors and trainers coordinating workshops and certifications. Tia also serves as office manager for AWW, keeping up with monitoring supplies, orders and inventory, scheduling, communications and other office duties.

Jennifer Fuller, B.S.

Education Coordinator (July 2005 – Present) - Jenny is finishing her M.S. degree in Fisheries at Auburn University. Her work as part of her thesis research and with the AWW program includes development of a *Exploring Alabama's Living Streams* aquatic science curriculum and AWW Stream Biomonitoring protocols and QA Plan.

Jayme Oates, M.S.

Program Associate (February 2007 – Present) – Jayme has a B.S. in Biology with minor in Chemistry from the University of South Alabama and a M.S. in Horticulture from Auburn University. She works on AWW special projects.

David Chunn

Student Assistant (August 2006 – Present) - David is working on his undergraduate degree in History with a minor in Political Science. His work with the AWW program involves data proofing, data and file maintenance, preparations of workshops, chemical inventory and other office duties.

16. APPENDICES

A. AWW Quality Assurance Plans

B. AWW Site Code Format

C. AWW Data Reporting Forms

D. Monthly Water Chemistry Sampling Activity by Watershed and Citizen Group

E. Monthly Bacteriological Sampling Activity by Watershed and Citizen Group

F. AWW Cost Share and Citizen Time

G. AWW Articles

H. AWW Publications

APPENDIX A

AWW Quality Assurance Plans

AWW Water Chemistry Quality Assurance Plan
Cover Page

WATER CHEMISTRY QUALITY ASSURANCE PLAN

(Revision of the Quality Assurance Plan Approved June, 1994)

For

Alabama Water Watch

A Program dedicated to developing Citizen Volunteer Monitoring of Alabama's Lakes, Streams and Coasts

Funded in part by a grant from the U.S. EPA, Region 4
Clean Water Act, Section 319
And the Alabama Department of Environmental Management

Prepared for
U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 4

January 23, 2004

APPROVALS

Ronald E. Estridge — 1/23/04
Ronald E. Estridge, M.S., Data Quality Coordinator — Date

William G. Deutsch — 1/23/04
William G. Deutsch, Ph.D., AWW Program Manager — Date

Norman Blakey — 1/26/04
Norman Blakey, ADEM Project Director — Date

Marilyn Thornton — March 9, 2004
Marilyn Thornton, U.S. EPA Region 4, Quality Assurance Manager — Date

2

TABLE OF CONTENTS

ELEMENT **PAGE**

AWW Bacteriological Monitoring Quality Assurance Plan
Cover Page

Revision No. _____
Date _____

QUALITY ASSURANCE PLAN FOR BACTERIOLOGICAL MONITORING

(Addendum to the Quality Assurance Plan approved on March, 1995)

for

Alabama Water Watch

A Program dedicated to developing
Citizen Volunteer Monitoring of
Alabama's Lakes, Streams and Wetlands
Funded in part by a grant from the U.S. EPA, Region 4
Clean Water Act, Section 319
and the Alabama Department of Environmental Management

prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 4, Section 319

November 10, 1999

APPROVALS:

Allison L. Busby, M.S., AWW QA/QC Officer — 11/16/99 Date

William G. Deutsch, Ph.D., AWW Program Manager — 11/16/99 Date

Norman Blakey, ADEM Project Director — 12/3/99 Date

Gary Bennett, U.S. EPA Region 4, Quality Assurance Officer — 12-20-99 Date

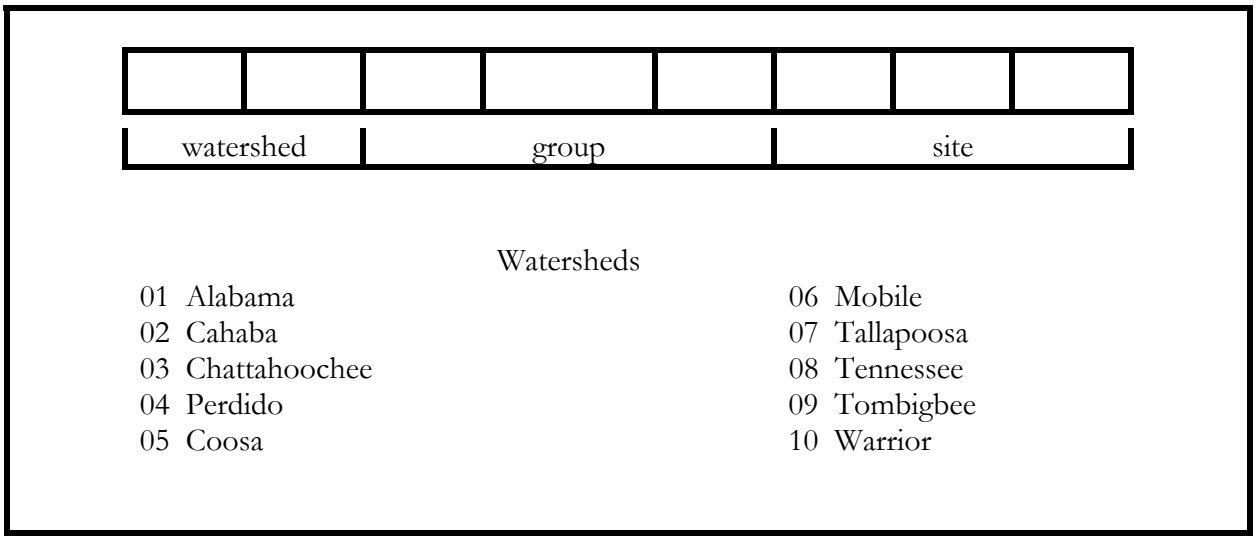
AWW Bacteriological Monitoring Quality Assurance Plan
Table of Contents

2 TABLE OF CONTENTS

APPENDIX B

AWW Site Code Format

AWW Site Code format



The AWW Site Code is an eight-digit number, formatted to eight spaces. An example would be:

07016009

This Site Code is built on the relationship between natural boundaries (watersheds), groups and sites. The AWW (8-digit) Site Code is defined below.

The first two digits represent the major watershed in Alabama where the site is located e.g.

07: **Tallapoosa**

The next three digits represent a group monitoring in that watershed. In the example, the six-teenth group (since AWW was conceived) monitoring in the Tallapoosa watershed:

016: **Friends of the Chewacla-Uphapee Watershed**

Finally, the last three digits in the Site Code represent the number of the site at the exact and unique location where the water sampling is taking place. In the example is the ninth site sampled by the Friends of the Chewacla-Uphapee Watershed group.

009: **Chewacla Creek at Lee County Road 159 at bridge**

APPENDIX C

Data Reporting Forms

ALABAMA WATER WATCH
WATER CHEMISTRY MONITORING DATA FORM

☐ online

Group Name:_____

Collector(s): _____ Address:_____

City:_____ State:_____ Zip:_____ Phone N°:_____

Sample Date:_____ Sample Time:_____ AWW Site Code: _____

Watershed: _____ Waterbody:_____ County & State:_____

Sampling site location: _____

(Notify the AWW office about any changes in sampling site location.)

Waterbody condition: ☐ Adequate Depth ☐ Inadequate Depth ☐ Dry ☐ No Access

Tidally influenced streams and rivers: ☐ Rising Tide ☐ Falling Tide ☐ Uncertain

Parameter	Value	Comments
Air Temperature	_____ °C	Measure air temperature before water temperature.
Water Temperature	_____ °C	Avoid touching thermometer bulb.
pH	_____ Standard international units	Record to nearest 0.5 unit.
Dissolved Oxygen (DO)	Rep #1: _____ ppm Rep #2: _____ ppm	Make sure two readings are within 0.6 ppm.
Specific Gravity / Salinity	S. G. _____ Salinity: _____ ppt	If salinity is present do not test for hardness.
% Oxygen Saturation	_____ Avg DO _____ % DO Sat	Estimate from chart found in the AWW manual.
Total Alkalinity	_____ # drops x 5 = _____ mg/L	Add drops until no more color change. Record number of drops that produced final change.
Total Hardness	_____ # drops x 10 = _____ mg/L	
Turbidity	_____ # 0.5 mL x 5 (50mL) = _____ JTU _____ # 0.5 mL x 10 (25mL) = _____ JTU	Enter zero (0) mL and 2 JTU if less than one addition of reagent was needed.
Secchi Depth	_____ meters	Do not record depth if disk hits bottom while visible.
Other Chemistry Tests		Nitrates, Phosphate, etc.
Comments: Note evidence of rainfall, runoff within previous 24 hours, unusual smell, unusual color, cows or other animals in creek, etc.		AWW Office Use

I hereby declare that at the time of this water sampling my AWW Water Chemistry Certification was current and that I confirmed the freshness of each reagent used for these tests.

Signature: _____

Alabama Water Watch

Alabama Water Watch
250 Upchurch Hall
Auburn University, AL 36849-5419

Toll Free: 1-888-844-4785
Fax: 334-844-9208
Email: awwprog@auburn.edu
Website: www.alabamawaterwatch.org

Revised Feb-07

ALABAMA WATER WATCH
BACTERIOLOGICAL MONITORING DATA FORM

☐ online

Group Name:_____

Collector(s): _____ Address:_____

City:_____ State:_____ Zip:_____ Phone N°:_____

Sample Date:_____ Sample Time:_____ AWW Site Code: _____

Watershed: _____ Waterbody:_____ County & State:_____

Sampling site location: _____

(Notify the AWW office about any changes in sampling site location.)

Waterbody condition: ☐ Adequate Depth ☐ Inadequate Depth ☐ Dry ☐ No Access

Tidally influenced streams and rivers: ☐ Rising Tide ☐ Falling Tide ☐ Uncertain

Parameter	Value	Comments
Air Temperature	_____°C.	Measure air temperature before water temperature.
Water Temperature	_____°C.	Avoid touching thermometer bulb.
Sample Volume	_____ mL	Use same volume for all replicates.
Incubation Start Time	_____	Use 24 hour format e.g. 1:45 pm = 1345.
Incubation Temperature	_____°C.	Keep incubation temperature between 29 and 37°C.
Incubation Period	_____ hrs	Count bacteria within 30 - 48 hrs of incubation.
Media Expiration Date	_____ - _____	Use short date format e.g. May – 07.
Plated on Site	☐ Yes ☐ No	Plate off sampling site if possible.
Transported on Ice	☐ < 3 hrs ☐ No Ice < 30 minutes	Samples should be plated within 3 hours if in Ice and within 30 minutes if without Ice.

Replicate No.	No. of E. coli colonies in plate (blue green to dark blue-purple) *	Text Code for general coliform colonies in plate (pink to dark red) **	No. of general coliform colonies *
1			
2			
3			

* If colonies are too numerous to count report 250,
** Text Code for general coliform: None (0), Rare (1-9), Common (10-100), Abundant (101-200), Too Numerous To Count (>200).

Comments: Note evidence of rainfall, runoff within previous 24 hours, unusual smell, unusual color, cows or other animals in creek, etc.	AWW Office Use

I hereby declare that at the time of this water sampling my AWW Bacteriological Monitoring Certification was current and that I confirmed the freshness of the sample media used for these tests.

Signature: _____

Alabama Water Watch

Alabama Water Watch
250 Upchurch Hall
Auburn University, AL 36849-5419

Toll Free: 1-888-844-4785
Fax: 334-844-9208
Email: awwprog@auburn.edu
Website: www.alabamawaterwatch.org

Revised Feb-07

ALABAMA WATER WATCH
STREAM BIOMONITORING DATA FORM

☐ online

Group Name:_____

Collector(s): _____ Address:_____

City:_____ State:_____ Zip:_____ Phone #: _____

Sample Date:_____ Sample Time:_____ AWW Site Code: _____

Watershed: _____ Waterbody:_____ County & State:_____

Sampling site location: _____
(Notify the AWW office about any changes in sampling site location.)

Waterbody condition: ☐ Adequate Depth ☐ Inadequate Depth ☐ Dry ☐ No Access

Tidally influenced streams and rivers: ☐ Rising Tide ☐ Falling Tide ☐ Uncertain

Group I Taxa	Letter Code *	Group II Taxa	Letter Code *	Group III Taxa	Letter Code *
Stonefly		Dragonfly		Midge	
Mayfly		Damselfly		Aquatic Worm	
Caddisfly		Cranefly		Leech	
Riffle Beetle		Blackfly		Pouch Snail***	
Water Penny Beetle		Filtering Caddisfly**			
Snail		Hellgramite			
		Scud			
		Sowbug			
		Crayfish			
		Asiatic Clam			
Number of Taxa= _____		Number of Taxa= _____		Number of Taxa= _____	
Multiply by 3 = _____ (Index Value)		Multiply by 2 = _____ (Index Value)		Multiply by 1 = _____ (Index Value)	

*** Letter Code**: **R** = 0 to 3 (Rare); **C** = 4 to 9 (Common); **A** = 10 or more (Abundant)

** Filtering Caddisflies are in the Family Hydropsychidae (gills on abdomen; common caddisfly)

*** Pouch snails are in the Family Physidae (shell opens to the left; air-breathing snail)

STREAM BIOTIC INDICES		STREAM QUALITY ASSESSMENT	
		(Check box corresponding to Cumulative Index Value)	
Total Number of Taxa (*Sum of Number of Taxa in each group*)		**POOR** <11	**FAIR** 11-16
Cumulative Index Value (*Sum of Index Values for each group*)		**GOOD** 17-22	**EXCELLENT** >22

Page 1 of 2

ALABAMA WATER WATCH
STREAM BIOMONITORING DATA FORM

Habitat Assessment

Canopy cover: ☐ open ☐ partly shaded ☐ shaded

Predominate streamside vegetation:

☐ trees ☐ shrubs ☐ grasses ☐ bare

Predominant surrounding land use:

☐ forest ☐ agriculture ☐ field/pasture
☐ residential ☐ commercial ☐ industrial
☐ other _____

Chemical Assessment (optional)	
Water depth (cm)	
Air Temperature (°C)	
Water Temperature (°C)	
pH	
Alkalinity (mg/L)	
Hardness (mg/L)	
Dissolved Oxygen 1 (mg/L)	
Dissolved Oxygen 2 (mg/L)	
Turbidity (JTU)	
Other	

Streambed Composition	
Width of riffle:	
Bed composition of riffle (%):	
Silt	
Sand	
Gravel (1/4"-2")	
Cobbles (2"-10")	
Boulders (>10")	
Describe water conditions:	
(color, odor, bedgrowths, surface scum, etc.)	

Sketch Site:

Comments: Note evidence of rainfall, runoff within previous 24 hours, cows or other animals in creek, etc.

AWW Office Use

☐ I have a current AWW certification in Stream Biomonitoring.

☐ I do not have a current AWW certification in Stream Biomonitoring, but I am entering data for educational purposes.

Signature:

Alabama Water Watch

Alabama Water Watch
250 Upchurch Hall
Auburn University, AL 36849-5419

Toll Free: 1-888-844-4785
Fax: 334-844-9208
Email: awwprog@auburn.edu
Website: www.alabamawaterwatch.org

Revised May-07

Page 2 of 2

ALABAMA WATER WATCH
SAMPLING SITE DATA FORM

Sampling Sites: Remember the general factors to consider when selecting a water monitoring site: to be safe, convenient and accessible, to have legal access and to be strategic. Optimal water monitoring sites are those that provide the best information to satisfy objectives with the least amount of effort. Choose a site that is not too difficult or dangerous to access and is strategically located to be tested in an efficient manner. It is essential to know the precise location of a monitoring site for full use of the data. Please carefully describe your site information.

Monitor(s):_____

Contact Phone Number:_____

AWW Group Affiliation (e.g. Little River Watch) _____

Waterbody: _____

Watershed: _____

County and State Where Site Is Located: _____

Site Location Description: Be very detailed. Include information such as the name or number of the nearest road. Indicate if it is upstream or downstream of a bridge, etc. Please submit a map, a photo (optional) and a geo-reference. Call the AWW office for assistance.

_____

_____

_____

Latitude: _____ **Longitude** _____

**********Do not write below this line. AWW office use only. **********

AWW Site Code Number* _____

* An 8-digit number will be assigned by the Alabama Water Watch office when the above information is submitted along with the first water monitoring data form. This Site Code is based on the watershed, group and specific location of the site.

Alabama Water Watch

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Revised Feb-07

APPENDIX D

Monthly Water Chemistry Sampling Activity (October 1, 2006 - September 30, 2007), by Watershed and Citizen Group

Water Chemistry records collected and received during the AWW Fiscal Year from October 1, 2006 to September 30, 2007.

Watershed / Group Name	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Alabama													
Tri-River Region Water Watch	3	3	3	4	7	5	6	7	8	8	7	6	**67**
Total/Watershed	**3**	**3**	**3**	**4**	**7**	**5**	**6**	**7**	**8**	**8**	**7**	**6**	**67**
Cahaba													
CRAWSA		3		3									**6**
Friends of Shades Creek	1	1	2	1	2	1	1	1	3	1	1	1	**16**
Gargis & Guin Cahaba Watch				1	2	1	1	1	1				**7**
Total/Watershed	**1**	**4**	**2**	**5**	**4**	**2**	**2**	**2**	**4**	**1**	**1**	**1**	**29**
Chattahoochee													
Chattahoochee River Watch											3		**3**
Phenix City Beautiful											1	1	**2**
Total/Watershed											**4**	**1**	**5**
Coastal Plain													
Alabama Coastal Foundation	5	6	4	3	3	1		2	1	2	1	1	**29**
Coastal Plain Streams Water Watch	46	48	48	48	49	48	48	66	35	40	12	29	**517**
Little Lagoon Preservation Society		2	2	2	2	2	1						**11**
Wolf Bay Watershed Watch	18	21	19	21	19	19	20	14	21	19	14	13	**218**
Total/Watershed	**69**	**77**	**73**	**74**	**73**	**70**	**69**	**82**	**57**	**61**	**27**	**43**	**775**

Water Chemistry records collected and received (continued).

Watershed / Group Name	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Coosa													
Coosa River Basin Initiative	5	1	1	1	1	1	1	1	1	1	1		**15**
Friends of Little River	1		1	1	1	1	1	2	1	2	1	1	**13**
Friends of YellowLeaf Creek	1	1		1	1		1	1				1	**7**
H. Neely Henry Lake Association	3	3	3	3	2	1		1	2				**18**
Lake Jordan HOBO	2	2	2	2	2	2	1	1	1	1	1		**17**
Lake Mitchell HOBO	5	7	5	6	6	7	7	8	7	7	7	5	**77**
Lay Lake HOBO	6	4	3	7	5	4	7	6	3	7	6	4	**62**
Logan Martin Lake Protection Association	11	9	8	9	10	10	9	11	11	10	10	9	**117**
SOULS Water Watch	2	2		1			1	2	2	2	2	1	**15**
Tri-River Region Water Watch	1	1	1	1	1	1	1	1	1	1	1	1	**12**
Valley Head School	1		1										**2**
Total/Watershed	**38**	**30**	**25**	**32**	**29**	**27**	**29**	**34**	**29**	**31**	**29**	**22**	**355**
Mobile													
Dog River Clearwater Revival	2		4	2	3	1	3	2	3	3	2	3	**28**
Fairhope Water Watch	2	2	1	2	2	2	2	2	2	2	2	2	**23**
Weeks Bay Water Watch	17	12	17	16	12	17	10	13	14	19	9	9	**165**
Total/Watershed	**21**	**14**	**22**	**20**	**17**	**20**	**15**	**17**	**19**	**24**	**13**	**14**	**216**
Tallapoosa													
Auburn Outing Club	2	2	2	2	2	2			2	2	2	2	**20**
Chewacla Water Watch	1	5		2	4	3	3	3	5	3			**29**
E Cubed	1	1	1		1	1	1	1	1				**8**
Environmental Awareness Organization	1	1		1	1	1	1	1	1	3			**11**
Friends of Chewacla-Uphapee Watershed	10	10	7	9	9	9	12	7	8	8	1	1	**91**
Friends of Hodnett Creek	1	2	1	1	1	1	1	1	1	1			**11**
Gran-Knights of the Waterhole					3	1	1	1					**6**
Jake & Donny Water Watch	2	6		3	5	5	5	2	5	3			**36**
Lake Watch of Lake Martin	6	5	6	6	5	6	4	5	6	6	4	4	**63**
Lake Wedowee Property Owners Association	8	8	2	2	1	3	3	3	1	1	1	1	**34**
Save Our Saugahatchee	15	14	9	18	14	16	14	14	17	10	5	4	**150**
Tri-River Region Water Watch	4	4	4	4	4	2	4	5	5	5	5	2	**48**
Total/Watershed	**60**	**67**	**39**	**48**	**50**	**50**	**49**	**43**	**52**	**42**	**18**	**14**	**532**

Water Chemistry records collected and received (continued).

Watershed / Group Name	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Tennessee													
Academy for Science & Foreign Language	2	2	2			4	4	4					**18**
Albertville High School Geology Class	1	1	1	2	1	1	1	1					**9**
Aldridge Creek Outdoor Classroom						1							**1**
Elk River Watch						1	2	1	3	1	2	1	**11**
Flint River Action Team	2	2	2	1	2	3	1	2	1	1	1	2	**20**
Flint River Conservation Association	4		4		4	4		4	4	4	5	4	**37**
Huntsville Senior Environment Corps	2	1	1	2	2	2	2	1	2	2	1	2	**20**
Karst Water Watch						2							**2**
Limestone County RSVP											1		**1**
North Sand Mountain School	4	5	4	4	4	4	4	2	2	2	2	2	**39**
Paint Rock Valley Water Logs	1	1		1	1	1	1	1	1	1	1	1	**11**
Rocket City Water Watch	4	1		4	3	5	2	4	1	5	5	1	**35**
RSVP/ Marshall County	38	41	41	37	42	42	37	44	45	46	48	34	**495**
Sardis High School FFA	2	2		2	2	2	2						**12**
Scott Branch Water Watch	2	4	2	2	2	2	2	2	2	2	1	2	**25**
Sylvania High School Science	1			1			1						**3**
Valley Head School	1	1				2	2	2				2	**10**
Total/Watershed	**64**	**61**	**57**	**56**	**63**	**76**	**61**	**68**	**61**	**64**	**67**	**51**	**749**

Water Chemistry records collected and received (continued).

Watershed / Group Name	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Total*
Warrior													
Birmingham Environmental Clearinghouse							2						**2**
Black Warrior Riverkeeper	2	2	2	2	2	1	2	2	2	2	2	1	**22**
Blount County SWCD											3	3	**6**
Camp McDowell											2		**2**
Cullman County SWCD	19	15	17	17	17	17	17	17	17	14	18	17	**202**
Friends of Hurricane Creek		1	1	1	1	1	1	1	1	1	1		**10**
Friends of Locust Fork River	3	3	2	3	2	3	3	2	3	2	2	1	**29**
Hydrangia Water Watch						1	1						**2**
Mulberry Old Bridge Road Wildlife Sanctuary					1	1				1			**3**
North River Watch	4		4	4									**12**
RSVP/ Marshall County	4	7	4	4	4	6	7	6	5	4	6	3	**60**
Smith Lake Civic Association	1	3	5	3	5	7		5	5	5	5	3	**47**
Smith Lake Environ. Preservation Committee		1	1	2		3	3	2	2	1	2	1	**18**
Watercress Darter Water Quality Mon. Prog.						2	3	1					**6**
Winston County Smith Lake Advocacy Inc								6	6	7	8	8	**35**
Total/Watershed	**33**	**32**	**36**	**36**	**32**	**42**	**39**	**42**	**41**	**37**	**49**	**37**	**456**
Grand Total	**289**	**288**	**257**	**275**	**275**	**292**	**270**	**295**	**271**	**268**	**215**	**189**	**3184**

A total of 186 records, which were collected in previous dates, were received in the AWW office during this fiscal year.

APPENDIX E

Monthly Bacteriological Sampling Activity (October 1, 2006 - September 30, 2007), by Watershed and Citizen Group

Bacteriological records collected and received during the AWW Fiscal Year from October 1, 2006 to September 30, 2007.

Watershed / Group Name	***Oct***	***Nov***	***Dec***	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***Jun***	***Jul***	***Aug***	***Sep***	***Total***
Chattahoochee													
Phenix City Beautiful											1	1	**2**
Total/Watershed											**1**	**1**	**2**
Coastal_Plain													
Alabama Coastal Foundation	1	1	1	2	2	1		2	1	2	1	1	**15**
Coastal Plain Streams Water Watch					1								**1**
Wolf Bay Watershed Watch	13	17	16	16	10	15	16	13	18	16	13	12	**175**
Total/Watershed	**14**	**18**	**17**	**18**	**13**	**16**	**16**	**15**	**19**	**18**	**14**	**13**	**191**
Coosa													
Friends of Little River									1	1	1		**3**
Lay Lake HOBO	3	1				1		6	2	4	2	2	**21**
Logan Martin Lake Protection Association	3	2	2	2	3	3	3	4		3	4	1	**30**
Total/Watershed	**6**	**3**	**2**	**2**	**3**	**4**	**3**	**10**	**3**	**8**	**7**	**3**	**54**
Mobile													
Fairhope Water Watch	2	2	2	2	2	2	2	2	2	2	2	2	**24**
Weeks Bay Water Watch	8	7	10	10	5	7	5	5	3	7	3	3	**73**
Total/Watershed	**10**	**9**	**12**	**12**	**7**	**9**	**7**	**7**	**5**	**9**	**5**	**5**	**97**

Bacteriological records collected and received (continued)

Watershed / Group Name	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Tallapoosa													
Chewacla Water Watch		1		1	1			1	2			1	**7**
E Cubed		1		1	1				1				**4**
Environmental Awareness Organization	1			1	1				2			1	**6**
Forest Ecology Preserve			2							3			**5**
Friends of Chewacla-Uphapee Watershed		3		1		2			5	1			**12**
Jake & Donny Water Watch		3		5	1	1		1	3	1		1	**16**
Lake Wedowee Property Owners Assoc.	4	1											**5**
Save Our Saugahatchee	7	10	4	16	4	6	3	3	12		3		**68**
Tri-River Region Water Watch	2	2	2	2	2		2	2	2	2	2		**20**
Total/Watershed	**14**	**21**	**8**	**27**	**10**	**9**	**5**	**7**	**27**	**7**	**5**	**3**	**143**
Tennessee													
Elk River Watch						1	2	1	3	1	2	1	**11**
Flint River Conservation Association											1		**1**
Huntsville Senior Environment Corps			1			1	1		1	1		1	**6**
Karst Water Watch						2							**2**
Limestone County RSVP											1		**1**
Rocket City Water Watch	5							2		2			**9**
RSVP/ Marshall County	3	3	3					38	37	35	36	23	**178**
Total/Watershed	**8**	**3**	**4**	**0**	**0**	**4**	**3**	**41**	**41**	**39**	**40**	**25**	**208**
Warrior													
Cullman County SWCD	14	11	14	17	14	16	17	17	12	12	15	15	**174**
Friends of Locust Fork River	2										2		**4**
RSVP/ Marshall County								3	3	3	3	3	**15**
Winston County Smith Lake Advocacy Inc										1	1		**2**
Total/Watershed	**16**	**11**	**14**	**17**	**14**	**16**	**17**	**20**	**15**	**16**	**21**	**18**	**195**
Grand Total	**68**	**65**	**57**	**76**	**47**	**58**	**51**	**100**	**110**	**97**	**93**	**68**	**890**

A total of 127 records, that were collected in previous dates, were received in the AWW office during this fiscal year.

APPENDIX F

AWW Cost Share and Citizen Time

AWW Citizen Volunteer Participation at Workshops and Meetings with Value of Time (October 2006 - September 2007)

Workshops	No. Participants	Hours/ Meeting	Citizen Hours	Value of Time*
28 Water Chemistry Monitoring	262	8	2,096	$39,342
30 Water Monitoring Recertification	104	4	416	$7,808
13 Bacteriological Monitoring	132	4	528	$9,911
2 Stream Biomonitoring	34	4	136	$2,553
12 Training-of-Trainer	12	4	48	$901
Total	544	24	3,224	$60,515
AWW Meetings				
AWW/AWWA Annual Meeting - May 2007	60	6	360	$6,757
Total	60	6	360	$6,757

AWW Citizen Volunteer Samples and Value of Time (October 2006 - September 2007)
(Based on an average of 3 hrs/sample, including time for preparation, travel, sampling, record keeping, etc.)

Sample Type	No. Samples Collected	Citizen Hours	Value of Time*
Bacteria Data	1,017	3,051	$57,267
Water Chemistry Data	3,370	10,110	$189,765
Total	4,387	13,161	$247,032

AGY C70591022, (October 2006 - September 2007)	
Total Project Budget	**$233,333**
AWW Budget (60%)	**$140,000**
Committed Match (40%)	**$93,333**
Auburn University	$57,708
Contribution from AWWA for printing water body reports	$625
Volunteer Time @ $18.77/hr (15% of total project cost)	$35,000
Citizen Hours Required	1,865

Citizen Time/Value Contributed (October 2006 - September 2007)	
Total Hours Contributed	16,745
Total Value of Citizen Time* Contributed	$314,304

Citizen Time and Value that Exceeded Requirements	
Value of Citizen Time* not used for Match	$279,304
Citzen Hours not used for Match	14,880
% of Total Hours Contributed over Required	898%

*NOTE: Based on $18.77 per hour rate. The value of citizen time was applied as cost share to AGY C70591022.

APPENDIX G

AWW Articles

CULLMANTIMES.COM
SERVING ALL OF CULLMAN COUNTY

Published: October 26, 2006 05:16 am

Lake Smith water quality top notch

By Nancy Glasscock
The Cullman Times

- Studies by volunteer citizen monitors show Smith Lake is one of the cleanest lakes in Alabama, said Dr. Bill Deutsch, director of the Alabama Water Watch Program.

Deutsch said according to a recent list by the Alabama Department of Environmental Management of about 40 lakes around the state, Smith Lake is in the top ranks and is attracting more residents than ever.

"It is a real gem," he said. "And that's why it's exploding with people wanting to live there because people want, obviously, a beautiful, clean lake to live on."

The Smith Lake Environmental Preservation Committee hosted its annual meeting and State of the Lake Address recently to discuss water quality of the lake, trends over time and activities going on within the Alabama Water Watch Program. Deutch was a keynote speaker at the event.

The Smith Lake Environmental Preservation Committee monitors the east side of the lake while the Smith Lake Civic Association monitors the lake's western portion. Deutsch said data compiled by a group monitoring the lake's eastern section led by Deb Berry revealed Smith Lake is becoming increasingly clear. The citizens monitored the clarity of the lake by lowering a disk into the water with a rope and measuring the length from the water's surface to the distance at which the rope disappears from sight.

"Both groups have been monitoring for 10 years," Deutsch said. "So their information is some of the best and most consistent and long term water quality data for the lake ever. Specialists come in, the power company or a university, or ADEM, but usually not nearly as consistent or long term as the community groups are doing now."

In 1997, the portion of the lake where Berry's group conducted the clarity test revealed only about three feet of visibility. Recently, the disk could be seen nine feet below the water's surface, which Deutsch said is a good sign and evidence the lake is becoming cleaner on the east side, which faces Cullman and is near agricultural development and poultry farms. The west side of Smith Lake, Deutsch said, has always been cleaner because of the Sipsey wilderness and Bankhead Forest.

Deutsch said a top concern is lake-front development after recent hurricanes have driven former coastal residents to homes along Smith Lake. He said residents have expressed concern about how much development the lake can handle.

"Things that people do on their land next to the lake might end up in the lake and affect the fisheries, affect the quality, affect the beauty, the health and the swimming and all of that," he said.

Deutch said the on-going population growth around Smith Lake could be detrimental if residents are careless about septic tank maintenance, placement of lawn fertilizer or boat sewage. He said another concern is fluctuation in lake levels which topped out at 17 feet in the past year.

"They're trying to get the power company to minimize those wide fluctuations, and, of course, you can see why," he said. "Some people, it's because they can't get to their boat or dock, but for others, on the environmental side, they're concerned that when the lake is dropped so far, that a lot of the bank is exposed and with the boat traffic and everything else, it erodes."

Deutch said the erosion causes sediment to enter the lake causing it to gradually fill. Some residents said they have lost several feet of their lake-front property because of the erosion, he said.

"It's a real political issue, " he said. "It's going to be a hot button up there."

JASPER, ALABAMA

Email Us!

Daily Mountain Eagle

ONLINE EDITION

Water watching

DANIEL GADDY
The Daily Mountain Eagle
Published February 18, 2007 1:10 AM CST

LaVerne Matheson holds up a tiny bottle of creek water against the light. He injects it with chemicals that have names like Thiosulfate and watches the water change colors. He is one of 25 people who took their Saturday to attend a water chemistry monitoring workshop at Meek High School.

Representatives from Auburn University's fishery department led the workshop. The attendees will soon be certified to test water from local water sources and report the data back to the instructors for their Alabama Water Watch program.

"It's all for community members who want to get involved in protecting their lakes and streams," said Dr. Bill Deutsch, director of of the Alabama Water Watch program and workshop instructor.

Matheson arranged for the group to come to Arley and give the workshop. He is the president of Winston County Smith Lake Advocacy Inc., and the workshop is one of the events his group organizes to further their cause of conserving the quality of Smith Lake.

"I just think a lake this size is a jewel to the county and the people living in it," Matheson said.

Attendants to the workshop learned how to measure pollution and the chemical composition of water to determine if it is suitable for swimming and aquatic life.

The attendees will check water content in numerous streams that feed into Smith Lake on a monthly basis and will soon be able to determine whether the streams are improving or deteriorating.

Matheson said he was happy that the attendees came from a variety of locations near Smith Lake. He said the group will be able to monitor the majority of the streams that feed into the lake.

The data they gather will also be put in a state database produced by the workshop instructors.

"They're the best people to monitor because they are close and have a strong interest in the (water body)," Deutsch said.

Dean Gilette and her husband Paul said they attended the workshop because they have a personal interest in seeing Smith Lake stay clean.

"We have a place on the lake. We love to swim, and I don't want to get E. coli," she said. "We wanted to keep the water safe for our children and grandchildren."

Sergio Ruiz-Cordova, data quality coordinator for Alabama Water Watch and workshop instructor, said he was encouraged by the turnout of the workshop.

"I think that means a lot of people in this area care about the water here," he said. "Not many people go out and give a Saturday so they can do a service to their community."

WEDNESDAY, MARCH 14, 2007

Ask Aubie

Ryu Rassamountry

Dr. Agne

Dear Aubie,

"When will we use up all the fresh water on Earth?"

Ryu Rassamountry
Ms. Jackson's 3rd Grade Class
Morris Avenue Intermediate School

Helping Aubie this week is Dr. Bill Deutsch, a professor of Fisheries at AU.

Dear Ryu,

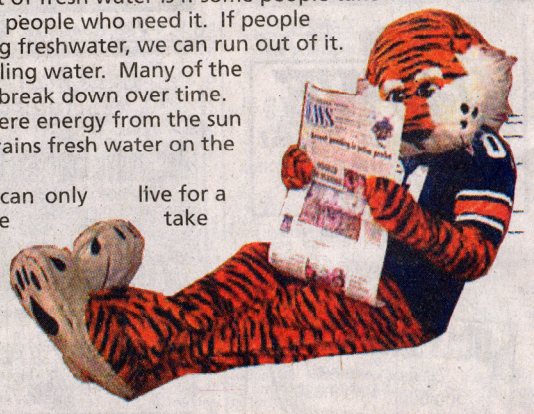
That's a very good question, and one that shows you are concerned about one of our most valuable natural resources...water. When we look at a large lake or river, we sometimes think that there will always be lots of fresh water for everyone. It's important to know, however, that 97% of the earth's water is salt water that's not drinkable, and much of the fresh water is in the form of ice or groundwater that's too deep for wells. Only a relatively small amount of the earth's water is fresh water that we can easily get to for our needs.

So, can we ever use up all the fresh water on Earth? The answer is "It depends." There are already many people around the world who don't have enough clean water for their daily lives. In some cities, people are only provided water in their homes during a few days of the week, and they need to store water in bottles and pails to have some for the other days. Some people have to collect rainwater from their rooftops to drink, bathe and cook with. About one billion people do not have any clean water within a fifteen minute walk from their home.

There are many ways that people can run out of fresh water. One is by dumping chemicals, waste and other things into our streams so that they are too polluted or dirty to drink or swim in. Another way is by cutting down lots of trees and covering the land with concrete and blacktop so that the rain water can not slowly soak into the ground and flow underground to rivers and lakes. If people do that, their waterbodies often dry up. A third way of running out of fresh water is if some people take too much water out of a river before it flows to other people who need it. If people don't know or don't care about protecting and sharing freshwater, we can run out of it.

Fortunately, nature has ways of cleaning up and recycling water. Many of the things that make fresh water dirty are filtered out or break down over time. The earth has a gigantic water recycling program, where energy from the sun evaporates water from the oceans, forms clouds and rains fresh water on the land to replenish lakes, streams and groundwater.

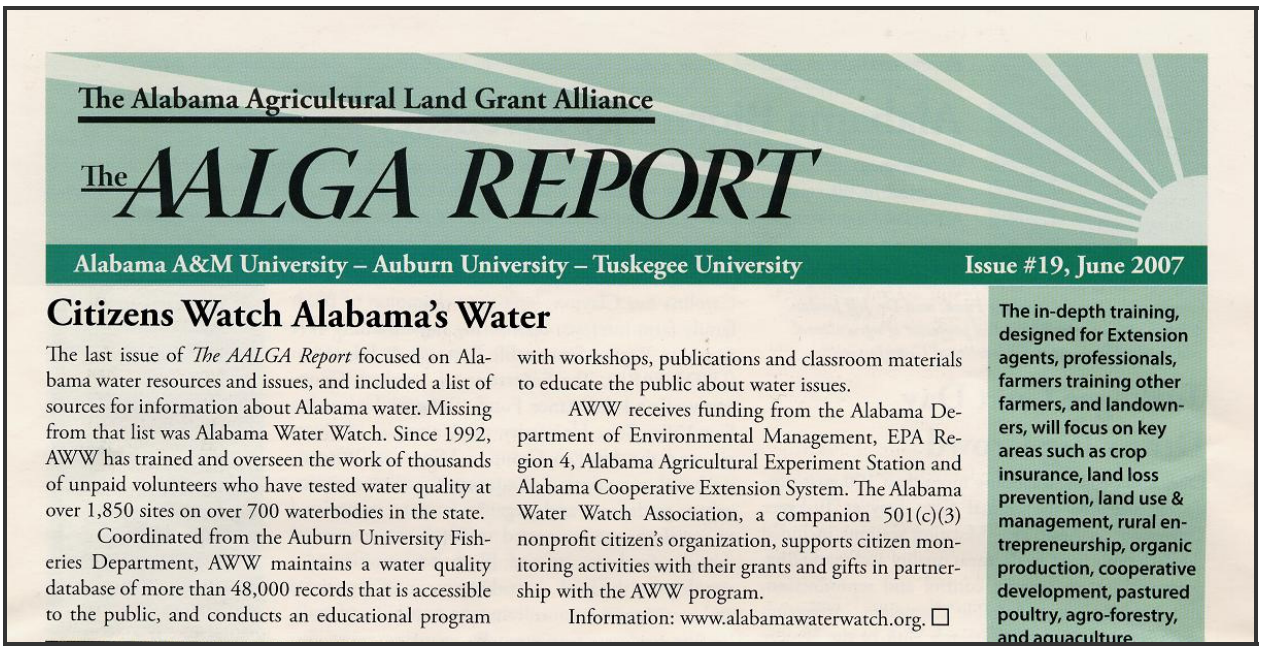
Because our bodies are about 70% water, and we can only live for a few days without water, it's really important that we take care of what we've got. The earth will probably never completely run out of fresh water, but it is still very important that we conserve and protect our water and all natural resources.



Thanks for your question!
Aubie and Dr. Deutsch

received drip irrigation

The Alabama Agricultural Land Grant Alliance Report June 2007.



The Alabama Agricultural Land Grant Alliance

The AALGA REPORT

Alabama A&M University – Auburn University – Tuskegee University Issue #19, June 2007

Citizens Watch Alabama's Water

The last issue of *The AALGA Report* focused on Alabama water resources and issues, and included a list of sources for information about Alabama water. Missing from that list was Alabama Water Watch. Since 1992, AWW has trained and overseen the work of thousands of unpaid volunteers who have tested water quality at over 1,850 sites on over 700 waterbodies in the state.

Coordinated from the Auburn University Fisheries Department, AWW maintains a water quality database of more than 48,000 records that is accessible to the public, and conducts an educational program with workshops, publications and classroom materials to educate the public about water issues.

AWW receives funding from the Alabama Department of Environmental Management, EPA Region 4, Alabama Agricultural Experiment Station and Alabama Cooperative Extension System. The Alabama Water Watch Association, a companion 501(c)(3) nonprofit citizen's organization, supports citizen monitoring activities with their grants and gifts in partnership with the AWW program.

Information: www.alabamawaterwatch.org. ☐

The in-depth training, designed for Extension agents, professionals, farmers training other farmers, and landowners, will focus on key areas such as crop insurance, land loss prevention, land use & management, rural entrepreneurship, organic production, cooperative development, pastured poultry, agro-forestry, and aquaculture

The Auburn Villager Newspaper July 2007.

Thursday, July 19, 2007 The AUBURN Villager Page 7

Teachers get feet WET with streams workshop

The Lee County Soil & Water Conservation District recently sponsored a "Discovering Alabama's Living Streams" workshop in Auburn, with 16 teachers attending.

The first morning was spent in the classroom. In the afternoon, participants went to the creek at the AU Arboretum to complete a Water Quality index based on the "critters" they found in the creek. Afterwards, Doyle Keasal certified the teachers in Project WET, a sister curriculum to DALS.

The second day was spent in the classroom, covering more DALS and Project WET activities. As a wrap up, each teacher made his or her own kick seine to take back to the classroom.

Each teacher took home a kick seine, a two-way microscope, bug magnifier cubes, forceps and insect sorting trays provided with LCSWCD funding.

The U.S. Geological Service supplied teachers with laminated macroinvertebrate field guides, posters and fossils. The Sierra Club Water Sentinels provided "Discovering Alabama" DVDs and supplemental materials as well as the game Macromania.

All attendees were able to leave the workshop with everything they needed to take their students out to the creek this school year, noted Anne Miller of LCSWCD.

"Thank you Lee County Soil and Water Conservation District," said Jayme Oates with Alabama Water Watch at Auburn University. "With your sponsorship we were able to educate and facilitate 16 Alabama educators in the ways of water conservation—and we had fun doing it!"

The Birmingham News September 2007.

The Birmingham News

www.al.com

Sunday, September 9, 2007

Our 119th year • 50

One church becomes steward to a rare fish

Members protect the watercress darter

By BILL PLOTT
News staff writer

When Samford University biology professor Mike Howell told a class about the discovery of the rare watercress darter fish near a Powderly church, Priscilla Christian said she exclaimed, "That's my church!"

On Saturday, Christian joined more than 30 people at Faith Apostolic Church who learned how to test water near the church to make sure the tiny fish continues to have a habitat at the site.

Storm Water Management Authority staffers Hanna Burwinkle and Taylor Steele conducted a six-hour course in watershed management and testing procedures to teach them how to assess the water quality at Seven Springs. It is one of only three known habitats of the watercress darter.

"It is God's creation. When He created it to live, he put us here to assist his little critter."

Bishop Heron Johnson
referring to the rare watercress darter fish near a Powderly church

Christian, who will coordinate the church's testing team, said she was a student at Samford when Howell and biology professor Larry Davenport discovered the fish in 2002.

"I was hearing so much about it at school and then to find out it was on our property was so exciting," she said.

"We've had an excellent response from the church and the neighborhood," she said of the testing program. "We were expecting about 12 people today and we have 34 signed up."

After morning and afternoon classroom sessions that included introductions to chemical testing kits and other equipment, the participants went to Seven Springs for actual hands-on experience.

Steel compared testing the water to checking a person's temperature and blood pressure, a way to determine if Seven Springs was in good health.

The program was generated by the church's pastor, Bishop Heron Johnson. It has evolved into a joint project involving such diverse groups as the church, SWMA, Alabama Water-Watch, Sierra Sentinels, Samford, and the U. S. Fish and Wildlife Service.

Bishop Johnson said he sees preserving the fish as an extension of his ministry.

"It is God's creation. When He created it to live, he put us here to assist his little critter. It is something rare and not found very often," he said.

Daniel J. Drennen, endangered species biologist with the U.S. Fish and Wildlife Service's Jackson, Miss., office, said Seven Springs was likely one of the stagecoach stops on the old Tuscaloosa to Huntsville Highway. He said the darter's survival near land that once belonged to Belcher Lumber Co. is remarkable.

"Older people have said they can remember effluent running into the stream. I saw an aerial photograph of company housing and you could see outhouses lined up along the stream," he said.

He said he is encouraged by Faith Apostolic Church's embracement of the creature.

"In the past, people thought having an endangered species on your land was a negative. They've made it a positive, part of being good stewards of all of God's creatures," said Drennen.

E-MAIL: bplott@bhamnews.com

APPENDIX H

AWW Publications

Alabama Water Watch bumper sticker printed February 2007.

Alabama Water Watch Newsletter. AWWareness. Spring 2007 (cover).

Alabama Water Watch

AWWARENESS

Spring 2007

Newsletter of Alabama Water Watch

Fifteenth Annual Picnic

Hosted by Marshall County Retired and Senior Volunteer Program (RSVP)

Friday May 18 and Saturday May 19, 2007
Lake Guntersville State Park, Marshall County, Alabama.

Join us for a fun filled weekend on the lake!! Activities are planned for board members and trainers on Friday. On Saturday there will be a picnic and activities for monitors, members, family and friends. There will be plenty of time to explore the shore and waters of Lake Guntersville in Marshall County, Alabama.

Agenda

Friday May 18th

11am-1pm	AWWA Board and Trainer Check-in
1pm-4pm	Trainer Refresher Workshop and Activities on Your Own
5:30pm	AWWA Board members meet at cabins
6pm-7pm	Dinner at the Catfish Cabin
7pm	AWWA Strategic Planning Board Meeting

Saturday May 19th

9am-10am	Picnic Check-in
9am-12pm	Activities on Your Own (hiking, boat rides, swimming)
10am-12pm	AWW Chemistry Recertification
12pm-1pm	Lunch
1pm-3pm	Presentations: Marshall County RSVP Alabama Water Watch Program Alabama Water Watch Association Awards Ceremony Door Prize Give Away

Directions to Lake Guntersville State Park

From Birmingham: Take I-59 N to Hwy 431 in Attalla. Follow Hwy 431 to Guntersville. Once in Guntersville, turn right onto Hwy 227 N and follow it to the park.

From Huntsville: Take Hwy 431 S to Guntersville, turn left on Hwy 227 N to the park.

From Atlanta: Take I-20 W to Hwy 431 in Anniston. Take Hwy 431 N to Guntersville and turn right on Hwy227 N to the park.

REGISTER ONLINE AT:

https://aww.auburn.edu

or call the AWW office at 1-888-844-4785

Other Links of Interest:

http://www.guntersvillestatepark.com/;
http://www.lakeguntersville.org/;
http://www.marshallcountycvb.com/

Alabama Water Watch Newsletter. AWWareness. Summer 2007 (cover).

Alabama Water Watch

AWWARENESS

Newsletter of Alabama Water Watch

Summer 2007

AWW Annual Picnic Held at Lake Guntersville

Jayme Oates AWW Staff

The 15th Annual Water Watch Picnic was held on May 19th, 2007, hosted by Marshall Count RSVP at Lake Guntersville, Alabama. Twelve groups including 70 people attended. Four trainers were refreshed on training techniques, and six people were recertified in chemistry monitoring. Awards were received by seven individuals and groups. Ray Kelley (Cedar Bluff, Cherokee County) received a Lifetime Achievement Award for Watershed Stewardship. Wendy Seesock (Loachapoka, Lee Co) received the Mother Jones Award for advocacy, policy, and outreach in water stewardship. Clara Clothiaux (Auburn, Lee Co) received the Data to Action Award as an individual that quickly organized monitoring efforts in the past year. Sergio Ruiz-Cordova (Auburn, Lee Co) received the Oracle Award for outstanding performance in facilitating AWW monitors, members, and staff. Bob Keefe (Cullman, Cullman Co) received the Mike Mullen Award for submitting the most data records. Coastal Plains Stream Water Watch (Dale Co) received the Manic Mayfly Award for the most chemistry records collected. Wolf Bay Watershed Watch (Baldwin CO) received the Manic Mayfly Award for the most bacteria records collected. Marshall County RSVP (Marshall Co) received the Manic Mayfly Award for the most combined records collected. Thanks to everyone who participated in body and spirit!!

Letter from the President

Jim Woodrow

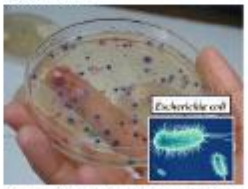
The Alabama Water Watch Association (AWWA) is made up of the water monitors in Alabama who act as the first line of defense when it comes to protecting Alabama's waters. The Association works with the Alabama Water Watch (AWW) program to provide support and provide the necessary people who have time and skills to educate, train, and qualify monitors using the program established by Alabama Water Watch. The Association also works to supply money for chemicals and educational materials such as brochures and books for use by the watershed monitoring groups.

Current activities of the Alabama Water Watch Association are:

- Revision of the AWWA membership brochure (completed April 2007)
- Revision of the AWWA corporate membership brochure (In process)
- AWWA worked with AWWA to establish job Responsibilities and staff a liaison position at AWW to assume duties beneficial to both AWW and AWWA.
- AWW / AWWA website is undergoing revision to enable the website to be utilized by both organizations.
- Newsletter is under development.
- Work is in process to merge the AWWA membership and AWW monitor database to allow both organizations to better utilize the data.

Now, getting to the bottom line. The goal of Alabama Water Watch for the 2007 / 2008 year is to increase membership. Membership money goes to support the water monitors mainly through the purchase of chemicals for testing. We need your help! If you are a current member, please renew your membership as current memberships expire in June. If you are not a member give us your consideration so that we may continue to evaluate the waters of this great state.

You Grab a Line, and I'll Grab a Pole...



We'll go down to the Crawdad Hole!!

Each blue dot on the plate is a colony of E. coli. Six or more blue dots in a 1ml sample of water means the water is unsafe for fishing, swimming, drinking, or touching.

You can help keep our waters clean with proper septic tank care:

- Pump/clean solids from tank regularly.
- Do not use septic tank additives for maintenance.
- Always clean the tank through the manhole.
- Inspect baffles at time of cleaning.
- Do not park vehicles on top of field lines
- Control water use
- Keep grease, lint, food, feminine hygiene, and plastic products out of septic system

Wolf Bay Waterbody Report cover printed August 2007.

Alabama Water Watch

Citizen Volunteer Water Monitoring on Wolf Bay

Bay Facts and Figures

- Wolf Bay is located on the Gulf of Mexico in Baldwin County, Alabama, nestled between Perdido Bay to the east and Mobile Bay to the west.

Local residents of the bay

- Wolf Bay is an estuary, where freshwater and saltwater mix and create a diverse environment that fosters a rich array of plant and animal life.
- The Wolf Bay watershed, the area of land that drains into Wolf Bay, covers about 44,000 acres, which is approximately 23% forest, 27% urban/suburban, 27% agricultural, 16% wetlands and 7% other uses (see map on page 5).
- Streams that flow into Wolf Bay include Wolf Creek, Sandy Creek, Miflin Creek, Graham Creek, Owens Bayou, Moccasin Bayou, and Hammock Creek. Wolf Bay, in turn, flows into the Intracoastal Waterway, which flows into either Perdido Bay or Mobile Bay, depending on the moon, wind, and tide, and ultimately into the Gulf of Mexico.
- Wolf Bay and its watershed hosts a tremendous diversity of habitats that historically supported and may still support several Federally listed species including black bears, bald eagles, Florida manatees, sea turtles, Gulf sturgeons, red-cockaded woodpeckers, American alligators, Alabama red-bellied turtles and Eastern indigo snakes.
- Baldwin County experienced a 43% increase in population from 1990-2000 (second highest in Alabama). The watershed is undergoing dramatic changes as forested and agricultural lands are converted into residential and commercial developments. Along with these man-made changes, the watershed suffered substantial structural and ecological damage from Hurricane Ivan in September of 2004. Local recovery efforts continue.

Wolf Bay Watershed Watch water quality sample sites (●)

shed as a whole is a challenge because it is located within the f the four municipalities: Foley, Elberta, Gulf Shores, Orange ing parcels of Baldwin County (see map at left).

have tested water in the watershed as a part of Alabama Water W) since 1996, and as monitors of Wolf Bay Watershed Watch WBWW) since 1998 when the group was formed.

- WBWW volunteer monitors have taken over 2,700 water chemistry measurements and more than 2,300 bacteria measurements at 44 sites (see map at left) which have been entered into the AWW statewide database.
- What can *YOU* do to help protect Wolf Bay for future generations?

WATER RESOURCES IMPACT

VALIDITY AND APPLICATIONS OF CITIZEN VOLUNTEER WATER-QUALITY DATA: A CASE FROM ALABAMA

William Deutsch, Eric Reutebuch, and Serio Ruiz-Córdova

INTRODUCTION

Alabama Water Watch (AWW) is a citizen-volunteer, water-quality monitoring program that is coordinated from the Auburn University Fisheries Department, with primary funding from the Alabama Department of Environmental Management (ADEM) and the U.S. Environmental Protection Agency (USEPA) Region 4. AWW's mission is to improve both water quality and policy through citizen monitoring and action. AWW envisions a citizen monitor on every stream, lake, and bay in Alabama. Since 1992, more than 240 citizen groups have participated, cumulatively sampling more than 1,900 sites on 700 waterbodies and submitting more than 48,000 water-quality data records to the AWW database. Several groups have submitted water data for more than 10 years. For many Alabama waterbodies, citizen data are the primary or only source of water quality information.

For many waterbodies in Alabama, citizen data are the primary or only source of water quality information.

Quality assurance plans were developed, submitted to USEPA, and approved for water-chemistry testing in 1994 (with revision in 2004) and for bacteriological monitoring in 1999. These plans outline the procedures and requirements of the AWW Program in training and certifying volunteer monitors, maintenance of accurate sampling equipment, and data management to ensure quality data. Monitors regularly submit their water data to the AWW Program Office. In 2001, AWW developed a relational database that not only streamlined management of water-quality data, sample-site locations, monitor information, and certification records, but also enabled the development of online data entry for monitors and a suite of powerful web-based tools for analyses, graphing, and retrieval of water-quality data.

MAKING THE DATA ACCESSIBLE

AWW employs numerous web-based tools, as well as data-interpretation presentations and water-body reports to compile, analyze, interpret, and showcase citizen volunteer-monitoring data. These tools assist volunteer groups in highlighting local environmental issues and influencing policy to address pollution and other threats to their watersheds. The primary tools of monitors are the water-chemistry and bacteriological monitoring test kits, manuals, and training/certification by the program that empower them to collect credible data. After monitors are trained and certified, and begin monitoring a local water body (usually on a monthly basis), they are encouraged to enter their data online from the AWW program website (http://www.alabamawaterwatch.org, accessed July 12, 2007), where they can also access web-based tools.

Web-based tools assist volunteer groups in highlighting local environmentl issues and influencing policy to address pollution and other threats to their watersheds.

Web-based tools consist of maps, graphs, basic statistical analyses, comparisons with related data, and tutorials. Monitors can access local watershed maps that display streams and lakes, monitoring sites, recognized impairments (303d-listed waters), and other geographic features. Numerous map features can be identified via a menu. Monitors can also access site-specific topographic maps and aerial photographs through links to Topozone™, EPA EnviroMapper™, Google Maps™, and Terraserver USA™.

Simple yet powerful tools enable monitors to easily produce a variety of water-quality graphs. Line graphs of water-quality parameters (water temperature, dissolved oxygen, pH, alkalinity, hardness, turbidity, and Secchi disk depth) (Figure 1) and bar graphs of *E. coli* bacteria counts (Figure 2) can be plotted. A least-squares trend line can then be fitted to graphs to answer the basic question, "Is my water quality getting better or worse?" More sophisticated graphing tools include streamflow versus water-quality graphs, multi-parameter graphs, multi-site graphs, and graphs of a site variable versus average values of other sites within a hydrologic unit code (HUC average).

Data interpretation presentations are regularly conducted by AWW staff at the request of monitoring groups that have monitored for at least two years. During these presentations, long-term trends in the group's data are analyzed relative to state water-quality standards. Causes of improving or degrading water-quality conditions are investigated relative to land-use maps, land management practices, and point and nonpoint sources of pollution. The groups are then engaged in discussing citizen action strategies to protect the local watersheds and address water degradation, if present.

After these presentations, the groups are asked to consider working with the AWW staff to produce a water-body report. Several lake, stream, and coastal groups have collaborated with AWW in the production of these reports. The reports build on the data interpretation presentations by presenting a monitoring group's history and activities, watershed facts, local water-quality issues, and what the citizen water-quality data indicate. Water-body reports are used by groups for environmental education, promoting group efforts, and influencing

Water Resources Impact, American Water Resources Association volume 9, no. 5 (continued).

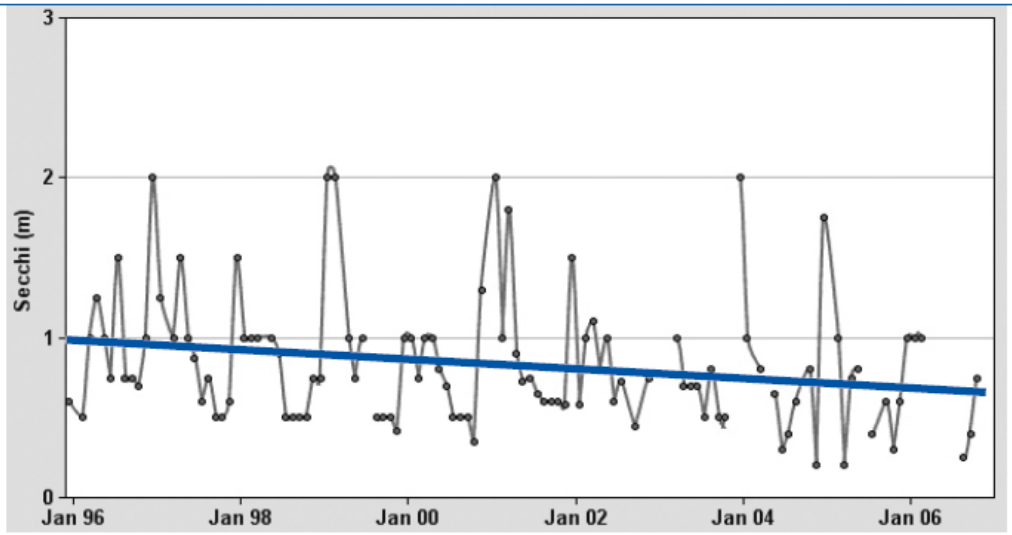


Figure 1. Example of a Multi-Year Water-Quality Trend Graph. Multi-year trend (blue line) showing declining Secchi disk depth measured monthly on Weiss Lake near Centre, Alabama, by a citizen monitor of the Coosa River Basin Initiative.

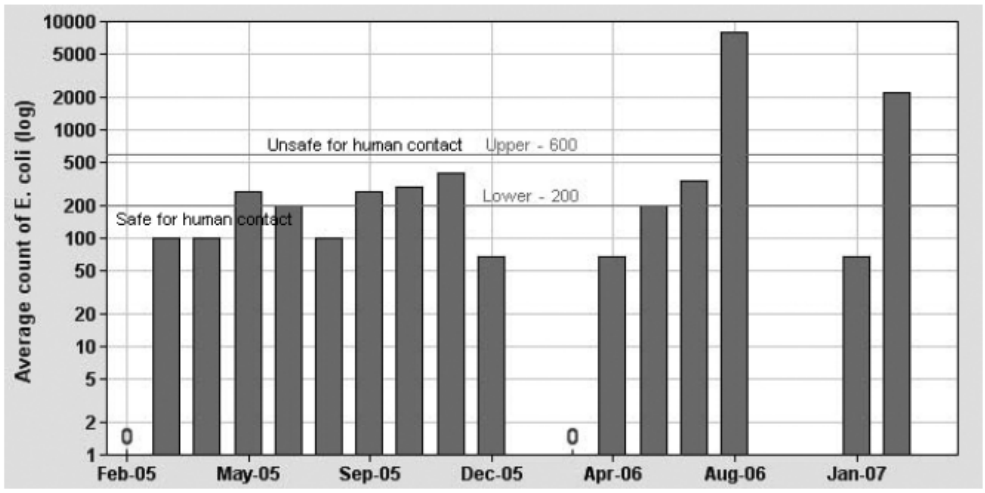


Figure 2. Example of a Multi-Year Graph of *E. coli* Concentrations. Multi-year trend showing increasing levels of *E. coli* measured monthly in Saugahatchee Creek near Auburn, Alabama, by a citizen monitor of Save Our Saugahatchee. The Lower line (200 *E. coli* colonies per 100 ml) is the maximum allowable concentration for waters designated for frequent human contact, and the Upper line (600 *E. coli* colonies per 100 ml) is the maximum allowable concentration for waters designated for infrequent human contact.

local watershed management policies. Thousands of copies of each report are printed for distribution to monitors, educators, and policy makers, and free downloads are available at the AWW Program website within the Monitor Resources → Publications section.

APPLICATIONS OF CITIZEN DATA

AWW monitoring groups have used their data in a variety of ways. Following are two examples, one from a coastal monitoring group, Wolf Bay Watershed Watch, and the other from a stream monitoring group, Save Our Saugahatchee. The coastal monitoring example is an illustration of a long-term watershed-level effort, while the stream monitoring example is an example of a rapid resolution of a specific pollution problem by an individual monitor.

The results of regular monthly monitoring of bacteria and water chemistry over several years indicated that the aquatic flora and fauna of the ecologically rich bay were threatened by rapid encroachment of development.

Wolf Bay Watershed Watch (WBWW) began monitoring water chemistry in the Wolf Bay Drainage in 1996. Wolf Bay is located on the Alabama Gulf Coast about 20 miles east of Mobile Bay. In 1998, the group became interested in AWW's bacteria monitoring protocol, and expanded monitoring for *E. coli* from one to ten sites. The results of regular monthly monitoring of bacteria and water chemistry over several years indicated that the aquatic flora and fauna of the ecologically-rich bay were threatened by rapid encroachment of development. Certain sites exhibited trends of increasing bacteria contamination, low dissolved-oxygen concentrations, and declining Secchi disk depth.

Armed with a growing body of watershed-level water quality data, WBWW began the daunting task of pursuing "Outstanding Alabama Waters" (OAW) classification for their bay in 2001. If successful, Wolf Bay would be the first bay in Alabama to be upgraded to OAW, and the bay would be protected by more stringent water-quality standards and restrictions on development. WBWW provided ADEM with thousands of data records from more than 40 sites monitored throughout the watershed that documented water-quality trends in the bay and its tributary streams. With the assistance of AWW, various data analyses have been performed for data interpretation presentations and for two volumes of a Wolf Bay water-body report.

Geographic analysis of repeated occurrences of high levels of *E. coli* bacteria (greater than 600 colonies per 100 ml of water) indicated that contamination was mainly concentrated in a single tributary, Wolf Creek (Figure 3).

A longitudinal analysis of water chemistry data indicated that water quality was poor in the headwaters of Wolf Creek near the city of Foley; average dissolved-oxygen concentrations were 2.2 mg/l (milligrams per liter). Water-quality conditions recovered downstream at the mouth of the creek where it empties into Wolf Bay (Figure 4); average dissolved-oxygen concentrations were 7.7 mg/l. Low dissolved-oxygen concentrations in Wolf Creek were likely the result of a combination of causes – natural (spring water and coastal black water effects) and human-induced (waste-water loads).

According to the chief of the Water Quality Branch of ADEM, "the Wolf Bay Watershed Watch water-quality data was used to pinpoint where the Department needed to focus its monitoring efforts and to highlight areas with potential water quality concerns. In addition, since the WBWW data had highlighted bacteria as a potential parameter of concern, the Department was able to concentrate on collecting bacteriological data for evaluation against the OAW criteria. This allowed us to clearly

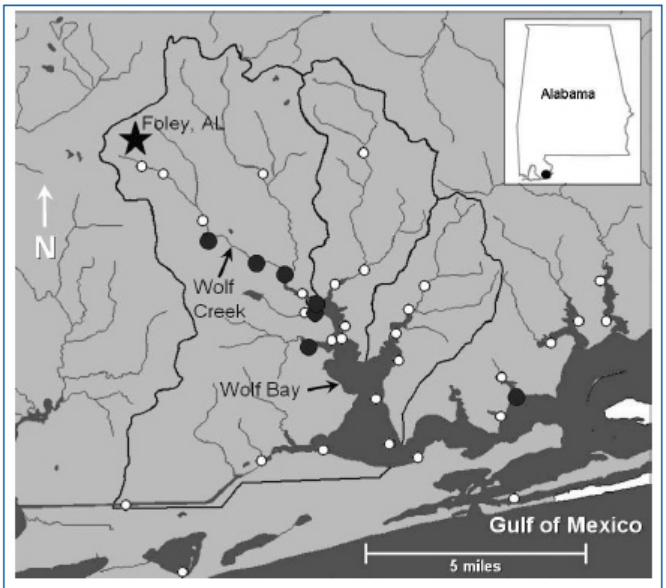


Figure 3. Geographic Analysis of Locations of High *E. coli* Counts in the Wolf Bay Watershed. Citizen sites (large dots – 7 of 30 sites monitored) in Wolf Bay Watershed near Foley, Alabama, with multiple occurrences of *E. coli* concentrations above 600 colonies per 100 ml. There were 715 measurements from 2003-2005, and *E. coli* ranged from 0-25,000 colonies per 100 ml.

Water Resources Impact, American Water Resources Association volume 9, no. 5 (continued).

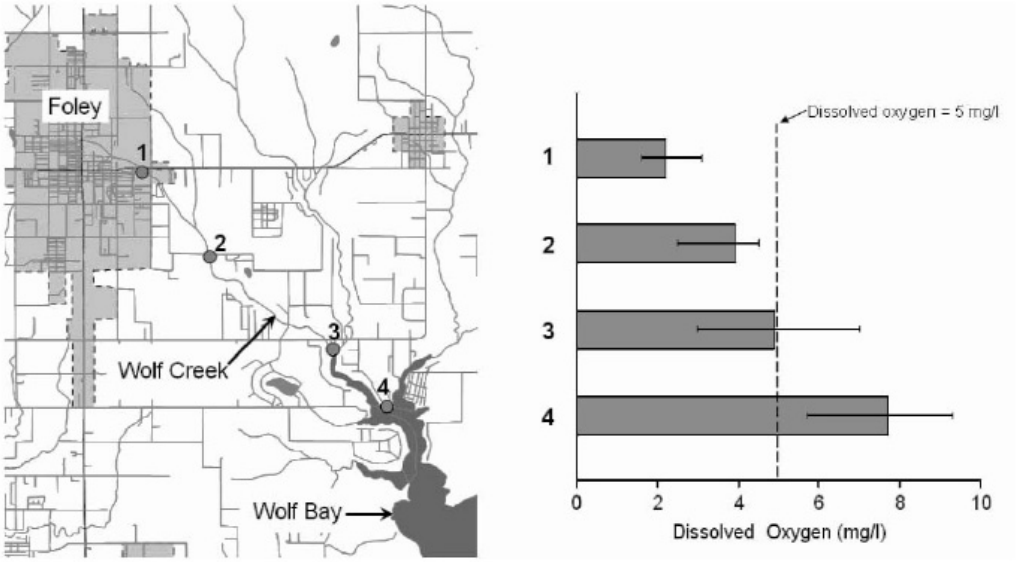


Figure 4. Longitudinal Analysis of Dissolved Oxygen Levels of Wolf Creek. Growing season (May-October 2006) average dissolved-oxygen concentrations were measured at four sites by the Wolf Bay Watershed Watch citizen monitors. The dashed line represents the minimum standard of dissolved oxygen (5 mg/l) for water bodies classified by the state as "Fish and Wildlife."

understand where the OAW classification should be applied."

In April 2007, after a decade of citizen efforts including water-quality monitoring, developing a watershed management plan, and public outreach, Wolf Bay was granted OAW status by the Alabama Environmental Management Commission. The WBWW executive director credited the achievement to years of citizen water data that verified the bay was deserving of OAW designation.

Save Our Saugahatchee (SOS) is a stream-monitoring group in east-central Alabama. SOS formed in 1997 to address local impacts to the Saugahatchee Creek Watershed, and began monitoring water chemistry at about 10 sites. Saugahatchee Creek originates near the city of Opelika, Alabama, and flows westward to the Tallapoosa River. In 2006, interest in bacteria monitoring greatly increased after a few monitors reported high *E. coli* levels in a couple of streams in the watershed. Several citizen monitors were trained and certified by AWW in bacteria monitoring. A retired school teacher began monitoring at multiple sites, particularly city parks that had streams flowing through them (Figure 5). She measured high levels of *E. coli* at a city park in Auburn, Alabama, that is a popular playground area for local children. Investigations in the upstream watershed revealed an underground sewer leak oozing from a suburban roadside slope, and flowing into the stream that drained to the city park. Bacteria testing verified that this water was indeed highly contaminated. Armed with the *E. coli* data, the citizen monitor contacted local city authorities, who were pleased with the citizen monitor effort in detecting and sourcing the contamination. The city promptly fixed the sewer leak, which resolved the bacteria contamination in the city park downstream.

These two examples demonstrate how local citizens use water monitoring and data analysis tools. The first involved nearly a decade of effort to establish long-term trend data necessary to influence watershed management policy, which resulted in upgrading the classification of Wolf Bay. The second example occurred over a period of a few weeks, and illustrates the power of a local citizen watchdog who was trained in monitoring and diagnosing water-quality problems. Like WBWW, the SOS monitoring group has also been actively involved in the drafting and implementation of a watershed management plan (the Saugahatchee Watershed Management Plan). An excerpt from the Mid-Coosa River Basin Watershed Management Plan underscores the increasing use of citizen-water data in water resource management: "Citizen volunteer monitoring, assessments, public education, and outreach are essential components of this Plan and may be the most effective management practices."

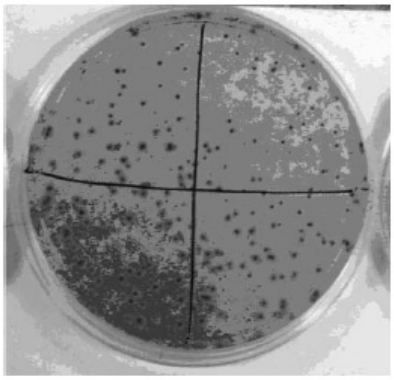


Figure 5. Volunteer Monitor Measuring Bacteria in a Local Stream. Save Our Saugahatchee citizen monitor testing local stream for *E. coli* (left), and results of incubated sample (right) showing extensive *E. coli* contamination.

In conclusion, volunteer monitor water data have become a valuable source of information for many waterbodies and a foundation for improving water policy in Alabama. The sustainability of the AWW approach is based on teaching citizens about water-testing methods that they can easily master and that yield meaningful and credible results. Group-monitoring sustainability is reinforced through online and personal feedback concerning the meaning and use of their data. To learn more about AWW and for contact information, visit the AWW Program website at www.alabamawaterwatch.org. Program staff would be pleased to discuss partnerships with other projects and programs in the U.S. or internationally.

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William Deutsch, the Director of Alabama Water Watch, holds a Ph.D. in Aquatic Ecology and has been a Research Fellow for 17 years. He also directs Global Water Watch, a worldwide network of community-based water monitoring groups. He often travels internationally to assist in environmental assessment and community-based watershed stewardship in several countries, including the Philippines, Thailand, Ecuador, Brazil, and Mexico.

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