

SWPBA

Southeastern Water Pollution Biologist Association



**Newsletter
Volume 33, Number 1
February 2006**



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(Updates are unavailable for EPA Region IV)

SWPBA

Southeastern Water Pollution Biologists Association

Letter from the President

I hope everyone is doing great in the New Year! I would like to thank Mississippi for a wonderful conference in 2005. Mike Beiser and the rest of the MDEQ did a fantastic job of putting together a conference at the last minute, due to the huge natural disaster that affected several of our region four states.

I would like to give a special thank you to EPA Region IV for sponsoring the SWPBA Biologist of the Year Award and the SWPBA Lifetime Achievement Award. These are wonderful awards for our association and it is great to recognize biologists that contribute to our states. Please make sure to turn in your 2006 nominations. Nomination procedures and criteria are presented later in the newsletter, so begin thinking about worthy recipients for these awards.

Now turning to this years meeting I would like to take a second to recognize the people who will be making up this years executive committee. The committee includes Tim Pugh from Georgia EPD, Cody Jones from Georgia EPD, Mike Beiser from MDEQ, Chris Decker from EPA-Athens and myself. I would also like to recognize Tim Pugh and Mike Basmajian who are serving as secretary and newsletter editor respectively for this years meeting.

The 2006 annual conference will be November 13-16 and will be held at the Lake Blackshear Resort (www.lakeblackshearresort.com) located in the Georgia Veterans Memorial State Park near Cordele, Georgia. Double occupancy rooms in the lodge and villas will be \$100 while single occupancy will be \$80 per room. A limited number of cottages are available at \$149. The cottages have two rooms each with two double beds and a kitchen area. We have reserved a limited number of rooms because we believe states will probably prefer double occupancy due to budget constraints. Reservations can be made by calling the hotel directly at 229-276-1004 or 1-800-459-1230. Please be sure to let them know that you are with the Southeastern Water Pollution Biologists Association at the time of the reservation in order to receive the special group rate. All reservations must be called in on or before October 29, 2006. Please book early. **It will be very helpful if states can give us feedback on how many rooms they may require for the upcoming meeting.**

Please be thinking about topics for discussion for our annual meeting and e-mail me with these topic ideas.

We have discussed with EPA a potential of having a periphyton workshop during the conference. We hope Jan Stevenson, which conducted the "Workshop on Periphyton Bioassessment Methodology for Rivers and Streams" in 2004 and a follow up workshop

in 2005, sponsored by U.S.EPA will be able to lead the workshop. I will keep you updated.

In closing I want to say that all of us here in Georgia are looking forward to this year's meeting and making sure that everyone has the best experience possible.

Take care and hope to see you in November,

Michele Brossett
SWPBA President, 2006
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Lake Blackshear Resort and Accommodations



SWPBA

Southeastern Water Pollution Biologists Association

From the Secretary's Desk

A couple years back Alabama requested that SWPBA start an archive. At this time we have only one poster with twelve photos attached. We would like to work on building up this archive. We are asking everyone to send in pictures. Please send pictures from old SWPBA meetings and pictures of SWPBA members working in the field and/or laboratory. We would like old and new photos of meetings and SWPBA members. Send in those great caption shots of your fellow employee. Please send us a CD (address below) indicating the year of the photos, when possible. If your pictures were before digital cameras, please scan them and put them on a CD. We would like these photos by September 1st, 2006, so we will have time to sort through them. Please please try to locate old pictures!!!

Other archival information that we would like to collect if possible: old newsletters, the names of the executive committee members, editors & secretaries names from the last 8 years, and other pertinent information. Please send us this information by September 1st so we will have enough time to sort through the information prior to the meeting.

I would like to thank the states for sending in their state update information for the newsletter. It is always interesting to know what other states are working on. Under the Editor's update section you will find the dates for submission for the next two newsletters.

We have attached each States' database record to the e-mail. Please let me know if any corrections need to be made to this list. We have also included a SWPBA Database Record for new SWPBA members. Please e-mail me any new SWPBA memberships or any updates to old SWPBA memberships (timothy_pugh@dnr.state.ga.us).

Tim Pugh
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**2005 SOUTHEASTERN WATER POLLUTION BIOLOGISTS ASSOCIATION
GENERAL BUSINESS MEETING MINUTES
NOVEMBER 10, 2005**

- 9:27: Mike Beiser (MS) calls the 2005 business meeting to order.
- 9:28: Ann-Marie Denman (MS) does roll call. All member institutions are present, thus we have a quorum.
- 9:29: Ann-Marie Denman reads last year's minutes
- 9:32: Susan Cohn (KY) motions to approve last year's minutes. Dana Denson (FL) seconds the motion, and it is unanimously approved.

OLD BUSINESS

There was no old business discussed in the morning's executive committee meeting, however the following was brought up in the general meeting:

- 9:33: Susan Cohn asks about the Yahoo group being revived. Lisa Huff (AL) says it has not been revived. Michele Brossett (GA) asks about creating a website with the possibility of accessing it with a password. Chris Decker (EPA) has concerns about maintaining it and says he has looked into it and EPA has regulations about hosting web pages. Michele Brossett asks if it would be possible to appoint a committee to check into this. Lisa Huff states that Georgia can look into it for next year's meeting.
- 9:36: Jim Glover (SC) has remarks about nominations for the lifetime achievement award. He would like to see recent retirees have the chance for nomination. Mike Beiser reads the language of the nomination process. Jim Glover asks about having a grace period of a year after retirement to be considered for nomination. Morris Flexner (EPA) inquires if more than one person can receive the award. Jim Glover then motions to drop this discussion and Morris Flexner seconds. Bill Crouch (NC) brings up that he would like to see the grace period be 5 years so we could award people that have trained us and that have been instrumental in our field in the past. Bill McDermott (SC) adds that he thinks this is a good idea and it would be an opportunity to award and recognize founding members. Jim Glover then says he wishes to revise and amend his first motion, and this is done. After all this, Bill McDermott says we should send it to the new executive committee for them to discuss. Susan Cohn seconds the motion.
- 9:42: The motion to move this discussion to the executive committee for 2006's meeting is voted on and is unanimously approved.

NEW BUSINESS

- 9:43: Mike Beiser thanks the executive committee for their help with planning this year's meeting. He also thanks the local arrangements committee and others that helped make this year's meeting a success. He thanks Whispering Woods Conference Center and the sales manager. He then thanks Joe Flotemersch for the pre-meeting large rivers workshop, Lisa Huff for the data comparability session, Jim Harrison and others for the TALU workshop, and Susan Holdsworth and others for the WSA update.
- 9:47: Ann-Marie Denman reads the resolutions that the executive committee came up with to give to the conference center and vendors expressing gratitude for their involvement. Bill McDermott motions to approve these resolutions and Sharon Kington (TN) seconds.
- 9:48: Confirmation of host of SWPBA 2006- Michele Brossett accepts on behalf of Georgia to host in 2006.
Confirmation of host of SWPBA 2007- Bill Cosgrove accepts on behalf of EPA to host in 2007.
- 9:49: Nominations for the office of president and secretary for 2006 Georgia hosted SWPBA meeting- Cody Jones (GA) nominates Michele Brossett for president. Amy Fritz (TN) seconds the nomination. Motion is passed and Michele will be president for the 2006 meeting. Michele Brossett nominates Tim Pugh for secretary and Susan Cohn seconds. It is unanimously approved.
- 9:50: Mike Beiser asks if there is any other new business. There is none. He then passes the worm to Michele Brossett and she presents potential meeting locations for next year's meeting.
- 9:52: Morris Flexner motions to adjourn this year's meeting. Barb Viskup (MS) seconds the motion and the meeting is adjourned.

**2005 SWPBA MEETING ATTENDEES
OLIVE BRANCH, MISSISSIPPI**

NAME	AFFILIATION
Brian Alford	MS State University
Debbie Arnwine	TN Dept. of Environment and Conservation
Michael Barbour	Tetra Tech
Beth Barry	Eureka Engineering (SPONSOR)
Clifton Bell	Malcolm-Pirnie, Inc. (MAJOR SPONSOR)
Mike Beiser	MS Dept. of Environmental Quality
Steve Bigelow	City of Olive Branch, MS
Chip Bray	MS Dept. of Environmental Quality
Michele Brossett	GA Dept. of Natural Resources
Michelle Burns	MS Dept. of Environmental Quality
Susan Cohn	KY Division of Water
Mike Compton	KY Division of Water
Bill Cosgrove	EPA Science and Ecosystem Support Division
Emily Cotton	MS Dept. of Environmental Quality
Bill Crouch	NC Dept. of Environment and Natural Resources
Chip Cutcliff	GA Dept. of Natural Resources
David Daniel	Environmental Enterprises (SPONSOR)
Ann-Marie Denman	MS Dept. of Environmental Quality
Chris Decker	EPA Science and Ecosystem Support Division
Dana Denson	FL Dept. of Environmental Protection
Jerry Diamond	Tetra Tech
Lonnie Dorn	EPA Science and Ecosystem Support Division
Alice Dossett	MS Dept. of Environmental Quality
Richard Dowling	AL Department of Environmental Management
David Eargle	SC Dept. of Health and Environmental Control
Andy Eversull	Malcolm-Pirnie, Inc. (MAJOR SPONSOR)
Morris Flexner	EPA Science and Ecosystem Support Division
Joseph Flotemersch	EPA ORD, Cincinnati, OH
Henry Folmar	MS Dept. of Environmental Quality
Amy Fritz	TN Dept. of Environment and Conservation
Jim Glover	SC Dept. of Health and Environmental Control
Will Green	MS Dept. of Environmental Quality
Jim Harrison	EPA Water Quality Standards, Atlanta
Susan Holdsworth	EPA OWOW Washington, D.C.
Dan Holliman	Malcolm-Pirnie, Inc. (MAJOR SPONSOR)
Lisa Huff	AL Dept. of Environmental Management
Vickie Hulcher	AL Dept. of Environmental Management
Pete Howard	MS Dept. of Environmental Quality
Donald Jackson	MS State University
Cody Jones	GA Dept. of Natural Resources

**2005 SWPBA MEETING ATTENDEES CONTINUED
OLIVE BRANCH, MISSISSIPPI**

NAME	AFFILIATION
Todd Kraft	Malcolm-Pirnie, Inc. (MAJOR SPONSOR)
Sharon Kington	TN Dept. of Environment and Conservation
Gary Lester	Ecoanalysts, Inc. (SPONSOR)
Malcolm Lynch	CC Lynch and Associates (SPONSOR)
Bill McDermott	SC Dept. of Health and Environmental Control
Dave Melgaard	EPA Water Management Division, Atlanta
Tony Miller	Third Rock Consultants, Inc. (SPONSOR)
Jennifer Milner	MS Dept. of Environmental Quality
Chuck Moore	Strategic Diagnostics, Inc. (MAJOR SPONSOR)
Amanda Nelson	KY Division of Water
Rodney Pierce	KY Division of Water
David Procyk	Hach Environmental (MAJOR SPONSOR)
Russell Seguin	Eureka Engineering (SPONSOR)
David Singleton	MS Dept. of Environmental Quality
Kim Smith	MS Dept. of Environmental Quality
Mike Sobczak	Malcolm-Pirnie, Inc. (MAJOR SPONSOR)
Bill Stephens	MS Dept. of Environmental Quality
Sam Stribling	Tetra Tech
Michael Swanger	TN Dept. of Environment and Conservation
Ellen Tarquino	EPA OWOW, Washington D.C.
Gloria Tatum	MS Dept. of Environmental Quality
Chuck Thompson	MS Dept. of Environmental Quality
Deborah Turnage	MS Dept. of Environmental Quality
Mark Vanderborgh	NC Dept. of Environment and Natural Resources
Barb Viskup	MS Dept. of Environmental Quality
Kyle Waits	YSI Environmental (SPONSOR)
Mike Walters	NC Dept. of Environment and Natural Resources

LISA HUFF 2005 AWARDS THANK YOU

At the recent SWPBA awards banquet in Olive Branch, Mississippi, Mike Beiser asked me if I would like to say a few words. I would very much have liked to respond, but considering my 7.5 months of pregnant hormones combined with my natural tendency to weep during happy and sad occasions (weddings, awards, funerals, etc., etc.), I declined. But I would like to thank EPA-Athens and MS DEQ, particularly Bill Cosgrove and Mike Beiser, for creating the *Biologist of the Year* and the *Lifetime Achievement Awards* for SWPBA. They give us all an opportunity to recognize and support the efforts and achievements of our peers, past and present. I am very honored to receive the Biologist of the Year award.

The selection criteria for both awards included “the level of collaboration with other states, tribes, and agencies”. My willingness to work with other Region 4 states and EPA to discuss and hopefully solve our common issues and problems reflects the support and assistance I’ve received through SWPBA throughout my career. Indeed, we are all extremely fortunate in Region 4 to be building on bioassessment programs started by SWPBA members in the ‘70s, ‘80s, and early ‘90s. I am very grateful for the support and mentorship I’ve received from other biologists within Region 4, who have long been recognized as leaders in the development of biological methods to assess the condition of aquatic communities. It was the knowledge, expertise, and dedication of these biologists that showed how bioassessment data can provide a much more meaningful assessment of aquatic life than chemical data alone.

During the 2004 SWPBA meeting in Auburn, Alabama, we reported on the results of a region-wide survey conducted prior to the meeting. The survey compared the number of bioassessments and biologists, as well as biologist experience between the years 1996 and 2004. The results were a little grim. Within Region 4, the number of biologists increased by approximately 39% while the number of bioassessments conducted increased 88%. Additionally, the focus of our bioassessment programs had shifted from longterm ambient monitoring to short term, “fire-stompin” monitoring conducted to provide data needed to make §303(d) listing/delisting decisions and to develop TMDLs. Especially troubling was the mass exodus of our most experienced biologists (i.e., The 1st SWPBA Cohort of Old Farts) through retirement, promotions, and transfers. Which left me and the remaining biologists of my generation as the newly-promoted “Old Farts”—and frankly, it scared the heebie-geebies out of all of us. And all of this has occurred as the complexity of our water quality problems increases annually.

But we also have several reasons to be encouraged. At the 2005 SWPBA meeting, we met young, enthusiastic, dedicated, and well-trained biologists from Alabama, Georgia, Kentucky, and Mississippi. The new “Old Farts” are collaborating on several region-wide efforts to develop tools, indicators, and methods that can be used by each of our states. We have the support and assistance of our partners at EPA-Atlanta, EPA-Athens, and EPA-Headquarters, particularly Ed Decker, Jim Harrison, Dave Melgaard, Bill Cosgrove, Chris Decker, Lonnie Dorn, Morris Flexner, Bob Quinn, Susan Jackson, Laura Gabanski, and Susan Holdsworth, who recognize the complexity and difficulty of the problems we face and have provided us with the financial, technical, and field support needed to conduct the longterm, large scale, and multi-parameter efforts necessary to develop nutrient and sediment criteria. We are also fortunate in Alabama to be working with administrators and engineers who recognize the importance of biological monitoring and bioassessment data.

2006 CALL FOR AWARD NOMINATIONS

“SWPBA Biologist of the Year” Award

Overview of the Award

Sponsored each year by the EPA Region 4 Ecological Assessment Branch in Athens, GA, the “SWPBA Biologist of the Year” award recognizes the innovative work of a front line Region 4 State biologist. The Executive Committee of the Southeastern Water Pollution Biologist Association (SWPBA) will review the nominations and select the recipient. The “Biologist of the Year” award winner will receive a beautiful plaque from the EPA at the annual SWPBA meeting. An additional “rotating” plaque that lists the recipient’s name along with previous winners will be presented to their agency for display during the following year.

The Nomination Process

Each SWPBA member state, tribe or EPA may nominate up to two (2) biologists for consideration by the SWPBA Executive Committee. Names of the nominees for the award will be kept confidential by the Executive Committee. The SWPBA primary contact(s) for each member state or tribe are responsible for coordinating the nominating process in a manner that best suits their organization. The SWPBA President may be consulted at any time concerning the nomination process, and at his/her discretion may ask the Executive Committee for clarifications or rulings on the conduct of the nomination and selection process. The intent of SWPBA is to keep the process as fair and uncomplicated as possible so that the award ceremony will be both enjoyable and a point of pride for SWPBA and its members.

The Nomination Timeline and Narrative

Nominations must be sent by the appropriate primary contact(s) via e-mail or letter to the SWPBA President by September 1st in order to provide enough time for review and selection by the Executive Committee. The nomination narrative is limited to one page and must include the nominee’s name and organization, the name, phone number, and e-mail address of the individual initiating the nomination, and a description of the nominee’s work with a focus on the criteria discussed in the following paragraph.

Award Eligibility and Criteria

The nominee must be a SWPBA Member and a full time employee of a SWPBA member state or tribe to be eligible for the award. Also, it is the intent of this award to recognize state/tribal biologists for work that is currently underway or recently completed. The criteria for selection will include factors such as the innovative nature of the work, the level of complexity, the potential for widespread application of the findings, the level of collaboration with other states/tribes/agencies, and the individual leadership demonstrated by the biologist in their respective program. Questions concerning the award or the nomination process may be directed to the SWPBA President.

“SWPBA Lifetime Achievement” Award

Overview of the Award

Sponsored each year by the EPA Region 4 Ecological Assessment Branch in Athens, GA, the “SWPBA Lifetime Achievement” award recognizes the long-term achievements and contributions of a member biologist (state, tribal or federal) to the science of water pollution biology. The Executive Committee of the Southeastern Water Pollution Biologist Association (SWPBA) will review the nominations and select the recipient. The “SWPBA Lifetime Achievement” award winner will receive a beautiful plaque from the EPA at the annual SWPBA meeting. An additional “rotating” plaque that lists the recipient’s name along with previous winners will be presented to their agency for display during the following year.

The Nomination Process

Each SWPBA member state, tribe or EPA Region IV may nominate one (1) biologist for consideration by the SWPBA Executive Committee. Names of the nominees for this award will be kept confidential by the Executive Committee. The SWPBA primary contact(s) for each member state, tribe or EPA Region IV are responsible for coordinating the nominating process in a manner that best suits their organization. The SWPBA President may be consulted at any time concerning the nomination process, and at his/her discretion may ask the Executive Committee for clarifications or rulings on the conduct of the nomination and selection process. The intent of SWPBA is to keep the process as fair and uncomplicated as possible so that the award ceremony will be both enjoyable and a point of pride for SWPBA and its members.

The Nomination Timeline and Narrative

Nominations must be sent by the appropriate primary contact(s) via e-mail or letter to the SWPBA President by September 1st in order to provide enough time for review and selection by the Executive Committee. The nomination narrative is limited to three pages and must include the nominee’s name and organization, the name, phone number, and e-mail address of the individual initiating the nomination, a biographical sketch of the nominee’s scientific career, a description of the nominee’s work with a focus on the criteria discussed in the following paragraph, and at least two (2) letters of support from other water pollution biologists.

SWPBA

Southeastern Water Pollution Biologists Association

Editor's Update

Thanks to everyone who submitted material for this first newsletter of 2006. Please let us know if there are different contacts for the SWPBA newsletter that we should be contacting than those listed in the states' database record. Below are the projected dates for the 2006 newsletters and deadlines for submittals.

Volume 33 Newsletter Dates

Issue #	Dates States Submit Update By	Date we e-mail out
Number 1	January 31, 2006	Mid-February
Number 2	May 26, 2006	Mid-June
Number 3	August 25, 2006	Mid-September

Please e-mail state updates and other newsletter inserts to michael_basmajian@dnr.state.ga.us by the dates listed above. Also, it would be helpful if submittals were formatted in Times New Roman font and a point size of 12.

Thanks,

Michael Basmajian
SWPBA Newsletter Editor, 2006
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Atlanta, GA 30354
michael_basmajian@dnr.state.ga.us

**Constitution and By-Laws of the
Southeastern Water Pollution Biologists Association**

Constitution

Article 1. Name. This association shall be called the Southeastern Water Pollution Biologists Association (SWPBA).

Article 2. Purpose. The purpose of the Association shall be to promote further understanding of the aquatic biological communities and the impact of pollutants on the aquatic ecosystems and to provide a medium for exchange of appropriate information among the membership.

Article 3. Membership. General membership shall be restricted to State Regulatory and Tribal Water Pollution Biologists whose programs are funded through the Region IV Environmental Protection Agency and Environmental Protection Agency Region IV Water Pollution Biologists.

Article 4. Annual Meeting. An annual meeting of the membership shall be held in one of the eight states in Region IV of EPA. Attendance of the annual meeting is restricted to members, invited guests, and meeting sponsors. The executive committee will be responsible for final approval of the guest list. The manner of choosing the host state of the next years meeting will be to offer the meeting in the following order: Mississippi, Georgia, EPA-Athens, South Carolina, North Carolina, Kentucky, Florida, Tennessee and Alabama. A state will either offer to accept or refuse the meeting. Upon refusal, the next state in order will entertain the offer, until the host state is confirmed. The time of the meeting shall be at the discretion of the host state with the agreement of the members of the Executive Committee.

Article 5. Officers. The officers of the Association shall be a president and a secretary. At the annual meeting consenting nominees shall be voted on by the general membership in attendance with the majority vote recipient being declared winner. The officers shall hold office for a term of one year, and their terms of office shall not be coterminous. The terms of the officers shall begin at the close of the annual meeting at which they are elected.

Article 6. Activities. The Association shall be organized and operated exclusively for scientific and educational purposes, and shall not be organized or operated for profit. No substantial part of the activities of the association shall consist of carrying on propaganda, or otherwise

attempting to influence legislation. The Association shall not participate in, or intervene in, any political campaign on behalf of any candidate for public office.

Article 7. Dissolution. The Association may be dissolved following a poll of the entire membership, conducted at the direction of the Executive Committee, in which two-thirds of the mail ballots received within 30 days of issuance support the dissolution.

Article 8. Ratification and Amendments. The constitution may be amended by a vote of the general membership in attendance at the annual meeting, providing a quorum of the two-thirds of the member agencies is present. Proposed amendments shall be submitted to the Executive Committee at least two (2) months before the annual meeting. The amendments shall become effective upon ratification by a two-thirds vote by the general membership in attendance at the annual meeting. In an emergency, amendments may be ratified by a two-thirds majority of the members responding to a mail ballot within 30 days of issuance.

BY-LAWS

Article 1. Annual Meeting. The annual meeting will normally be held in the fall of each year and will include a business meeting and the exchange of appropriate information. The presence of two-thirds of the member agencies shall constitute a quorum, and the business meeting will be held according to the Robert's Rules of Order.

Article 2. Election of Officers. The President and Secretary shall be elected by a majority of the general membership in attendance at the annual meeting. An unexpired term of President or Secretary shall be filled by majority vote of members responding within 30 days to a special mail ballot. In emergencies, interim appointments can be made by the Executive Committee.

Article 3. Office of President. The President shall be responsible for planning and organizing the annual meeting, and shall appoint a Local Arrangements Program Chairperson. The President shall appoint three (3) members to the Executive Committee, one of whom must be a member from the host state. The President shall make other appointments that he/she deems necessary and shall serve as Chairperson of the Executive Committee. The President shall preside as chair of the annual meeting.

Article 4. Office of Secretary. The Secretary shall be responsible for keeping the minutes of the annual meeting and the normal

correspondence of the association. The Secretary shall disseminate the annual meeting agenda as appointed by the Executive Committee. In the first issue of the Newsletter after the annual meeting, the Secretary shall include the annual meeting minutes and a roster of attendance at the meeting. The Secretary shall also serve as a member of the Executive Committee. The Secretary shall furnish incoming officers with a copy of the Constitution and By-Laws.

Article 5. Executive Committee. The Executive Committee shall consist of the officers of the Association and three(3) committee members appointed by the President, one of whom must be from the host state. No member can be appointed to the Executive Committee more than three consecutive years. The President shall preside as Chairperson of the Executive Committee. The Committee shall meet prior to the annual business meeting and review all amendments to the Constitution or By-Laws and major motions to be presented at the annual meeting, if any. The Committee shall serve as a steering committee to decide the main points of discussion and presentation at the annual meeting. The Executive Committee shall decide the order and length of the papers to be given. It shall make recommendations concerning the policies of the Association. The Committee shall be responsible for notifying the members of the Association of the vacancies in elected offices and to solicit nomination for these offices. After reviewing the nominations, the Committee shall select a maximum of three (3) consenting nominees for each office and place their names on ballots to be distributed by the Secretary. The ballots received within 30 days will be opened and counted by the Secretary, and interim officers will be announced by mail.

Article 6. Program Chairperson. The President shall preside as program Chairperson and shall be responsible for preparing the call for papers, scheduling, appointing moderators for each session, and preparing the program for printing.

Article 7. Local Arrangement Chairperson. The Arrangements Chairperson shall normally be associated with the agency hosting the annual meeting. The Arrangements Chairperson shall be responsible for securing adequate facilities to properly host the annual meeting. Responsibilities will include reserving rooms for formal meetings, social gatherings, and the banquet; securing audiovisual equipment arranging the banquet, coffee breaks and luncheon facilities, providing registration receipts; advising members on lodging, arranging transportation and serve to make the planned activities run smoothly. The Arrangements Chairperson shall work closely with the President to achieve this goal.

Article 8. Ratification and Amendments. The By-Laws may be amended by a vote of the general membership in attendance at the annual meeting, providing a quorum of two-thirds of the member agencies is present. Proposed amendments shall be submitted to the Executive Committee at least two (2) months before the annual meeting. The amendments shall become effective upon ratification by a two-thirds vote by the general membership in attendance at the annual meeting. In an emergency, amendments may be ratified by a two-thirds majority of the members responding to a mail ballot within 30 days of issuance.

SWPBA Database Record

Codes: _____, _____, _____, _____, _____ Contact: Yes / No Newsletter: Yes / No Member: Yes / No

Member: Yes / No

Name: _____

Title:

Phone: () - Fax: () -

Date Joined: / / E-Mail:

Agency:

Division:

Section/ Group	

Address:

Zip Code

Special Interests or Projects:

Interest Codes (Please Choose at least one or up to 5 Codes and enter at top of page.)

- | | | | |
|----|--|----|--|
| 1 | Macroinvertebrate Taxonomy / Rapid Bioassessment | 16 | Standards, Water Quality Criteria |
| 2 | Toxicity Testing | 17 | 305b |
| 3 | Laboratory Certification | 18 | Aquatic Macrophytes |
| 4 | Phytoplankton/Periphyton, Zooplankton | 19 | Ambient Trend Monitoring |
| 5 | Lakes/Reservoir Monitoring | 20 | Sediment Analysis/SOD |
| 6 | Estuarine Ecology | 21 | Culturing Organisms for Toxicity Testing |
| 7 | Marine Ecology | 22 | Computer Modeling/Applications |
| 8 | Wetlands | 23 | Coastal Program |
| 9 | 401 / 404 Certification | 24 | Microbiology |
| 10 | Ecoregion Definitions | 25 | Permit Compliance |
| 11 | Estuarine/Marine Macroinvertebrate Taxonomy | 26 | Program Manager |
| 12 | Stream Surveys | 27 | Groundwater |
| 13 | Fish Taxonomy/Assessment | 28 | Algal Assay |
| 14 | Cercla Superfund | 29 | Chemical Analysis |
| 15 | Nonpoint Sources | 30 | Risk Assessment |



STATE UPDATES



News from Georgia

Watershed Planning & Monitoring Program

Ambient Monitoring Unit (AMU)

The AMU has responsibilities for both chemical and biological (macroinvertebrate) monitoring of rivers and streams in Georgia. Here's an update on what's been happening with our chemical and biological monitoring projects.

Rivers and Streams – Chemical:

During the calendar year 2006, Georgia will once again be contracting with the U.S. Geological Survey for assistance in collecting surface water samples from 49 statewide trend and lake standards tributary stations. Another cooperative agreement has been negotiated with the Columbus Water Works for collections at 5 additional stations on the Chattahoochee River in the Columbus, Georgia area. Other surface water samples being collected during 2006 by AMU staff are: 1) An on-going project of sampling along the Chattahoochee River and major tributaries from Buford Dam above Atlanta to just below the main metropolitan area of Atlanta. 2) An on going project to sample major tributaries to Lake Lanier not already covered by Georgia's Lake Standards criteria for this reservoir. 3) The second year of the Coosa River Modeling Project. This joint effort is a major project between the State's of Georgia and Alabama and the U.S. EPA. Year 2 of the Coosa study is for verification of the Coosa River and Lake Weiss Models. The modules for the River Model verification portion of the study are posted on Georgia EPD's web site at:

http://www.gaepd.org/Documents/coosa_modeling.html

The AMU welcomes Brandon Moody who joined the Unit in January 2006. Brandon will be responsible for Module 2 (Continuous Water Quality Monitoring) for the Coosa River project and will be assisting the biological monitoring team when he's not tied up with chemical stream monitoring.

Streams – Biological:

2005 – 2006 Field Season

The objective of this year's macroinvertebrate field season (2005 – 2006) is to collect additional biological, physical, and chemical data in the Southern Coastal Plains Ecoregion in order to refine the metrics developed during the Georgia Ecoregions project. The new data collected will build upon the original work conducted by Columbus State University during the Georgia Ecoregions project.

During the Ecoregions project (1999-2003), the State of Georgia was experiencing a sustained drought. As a result, many identified candidate reference streams, especially those in the Coastal Plains region and other southeastern Georgia subcoregions were dry for two years or more (Gore *et al.* 2005b). Although it has been demonstrated that macroinvertebrates can recolonize a disturbed stream in a relatively short period of time (as little as 14 to 21 days) (Gore and Milner 1990), it was difficult to ascertain if these streams had attained an equilibrium or stable recovered community after such an extended period of disturbance or less than optimal flow conditions. As a result, the utility of the macroinvertebrate indices described for these ecoregions must be tempered with a certain amount of uncertainty until such time as these candidate reference streams can be resampled after at least one full year of sustained normal hydrographic flows (Gore *et al.* 2005b). Since Georgia has experienced over one year of increased precipitation statewide, this year's project will resample those sites found to be dry or with minimal observed flow during the original drought period.

Several ecoregions and subcoregions contain blackwater streams, dominated by excess tannins, lowered pH, and low dissolved oxygen concentrations (Gore *et al.* 2005b). These streams, dominant in some parts of the Coastal Plains, may have a unique benthic fauna unlike those of their clear water counterparts in the same ecoregion or subcoregion. The sandy substrates tend to be dominated by oligochaetes, dipteran larvae, and molluscs that utilize deposited fine particulate organic matter (Meyer 1990). Snags in the same rivers contain unique and productive assemblages (among the highest of any stream in the country) (Benke and Jacobi 1994). Clearwater streams in the same region tend to be dominated by a different assemblage of macroinvertebrates, containing a greater percentage of Trichoptera and acid-intolerant Chironomids. When catchments were delineated during the Georgia Ecoregions project, blackwater and clear water streams were not differentiated. Thus, at both ecoregional and subcoregional levels, the suggested macroinvertebrate indices are a composite of blackwater and clear water streams in each ecoregion (Gore *et al.* 2005b). Ongoing research suggests that separate reference conditions must be created for blackwater reference streams and for clear water reference streams in the same ecoregion. In order to adequately accomplish this task, a greater number of streams in these ecoregions must be sampled and new indices developed.

We are currently working in the Sea Island Flatwoods subcoregion (75f). We got a late start on sampling, but hope to collect approximately 50 sites this field season, which will be over at the end of February. Previously it was believed that this subcoregion contained both clear water and black water streams. After reconnaissance and sampling, we are finding that the clear water streams are those streams that have been heavily impaired. For example, the riparian vegetation has been removed and the streams channelized. Thus the tannic acid the streams would receive from the vegetation has been eliminated and the stream has more clear water characteristics. If we continue to see this, then there will be no need to have separate indices for clear water and black water in this particular subcoregion.

Special Studies

Georgia plans to participate in the upcoming periphyton bioassessment project and the macroinvertebrate comparability study with other region IV states and EPA region IV.

305(b)/303(d) Report:

Georgia's Final 2004 305(b)/303(d) Integrated List of Waters was provided to the U.S. EPA on April 9, 2004 for review. To date, there has been no approval or disapproval of Georgia's 2004 List. With the upcoming deadline for the 2006 List fast approaching, the State is proceeding with development of the 2006 List based on the April 2004 version of the 2004 List. Since the List status has been up in the air for nearly two years, Georgia will be proceeding with drafting the 2006 List in a similar format to the 2004 List. It is an integrated 305(b)/303(d) List of Waters but does not break the list into the tiered levels of assessment. We will continue to display the rivers and streams assessed as partially supporting or not supporting designated uses.

We welcome Susan Salter as a new staff member to the AMU. Susan Salter has charged right in with working on the 2006 List. She came to us from EPD's Permitting Unit and probably wonders what she got herself into.

Facilities Monitoring Unit (FMU)

With the beginning of calendar year 2006 the Facilities Monitoring Unit's "Basins of Focus" for the River Basin Management Plan (RBMP) sampling initiative shift to the Coosa, Tallapoosa and Tennessee basins. All Major NPDES dischargers in these basins will be inspected and sampled at least once during the year as will the significant Minor dischargers and selected private facilities. Several of these permittees identified as having operational or compliance problems will be resampled later in the year. The Permitting Program of WPB and the District offices have been instrumental in targeting dischargers for sampling for the RBMP.

Sampling of the Metro Atlanta Chattahoochee River Major Dischargers for fiscal year 2006 will be completed the first week of March. A new facility has recently been added to this group, the Fulton County Cauley Creek plant.

Industrial User ("Industrial Pretreatment") inspections are proceeding on schedule for completion of all facilities in this category by the end of the current fiscal year. The trend in the number of pretreaters continues to be a decline as more municipalities receive EPD approval of their own local pretreatment programs.

The Coosa River Modeling Project (CRMP) enters its second year in 2006. FMU point-source sampling for this project will begin in mid-June and continue through mid-October. The slate of facilities to be monitored in this year's study is unchanged from

the 2005 effort. Last year, a total of 39 facility sampling inspections were performed by FMU in support of the CRMP, including one Technical Evaluation.

The Unit continues to assist with training and field orientation of new employees of the Watershed Protection Branch and the District offices. Many recent hires have observed or participated in varying capacities during FMU inspections over the last several months.

Intensive Surveys Unit (ISU)

The Intensive Survey Unit is responsible for major lake monitoring in Georgia as well as special studies and stream flow gaging. In addition, the ISU coordinates the DNR fish tissue contaminant assessment project for the EPD, Wildlife Resources (WRD) and Coastal Resources (CRD) Divisions, and the annual update and publication of the DNR fish consumption guidelines.

Lake Monitoring Activities

We are well into the planning phase of the 2006 fieldwork. Depth profiles data as well as a photic zone composite sample for chemical and chlorophyll *a* analysis will be collected at each lake monitoring site. Lakes to be monitored in 2006 include:

A) Standards Lakes (Monthly, April through October)

- a. Allatoona
- b. Carters
- c. Walter F. George
- d. Lanier
- e. West Point
- f. Jackson

B) Basin Lakes (Quarterly)

- a. Blackshear
- b. Worth / Chehaw
- c. Seminole
- d. Harding (Bartlett's Ferry)
- e. Goat Rock
- f. Oliver
- g. Andrews

Coosa River Modeling Project

ISU personnel will also be heavily involved with the monitoring activities of the Coosa River Project with responsibility for 3 modules of the study. Activities will include the weekly centerline run of the Coosa River from Mayo's Bar to the Georgia /Alabama state line, weekly collections of samples for chemical analysis at numerous sites throughout

the study area, collection of chlorophyll samples every other week at 19 sites in the study area, and, stream flow gaging and collection of phosphorous samples in selected upper watersheds. The sampling season will begin in March and reach a crescendo from July to September then taper down to the end of study period in mid October.

Fish Tissue Assessments and 2006 Update to the Fish Consumption Guidance

The *2006 Update Guidelines for Eating Fish From Georgia Waters* will be web-published in March at http://www.gaepd.org/Documents/fish_guide.html. Printed copies of the booklet will be available in April. Changes include new consumption guidance on striped bass from the Savannah River (below Augusta) due to mercury, and the Coosa River system due to PCBs. On October 1, 2005, a moratorium, in effect since 1988, was lifted on the harvest of striped bass in the lower Savannah River (<http://georgiawildlife.dnr.state.ga.us/content/displaycontent.asp?txtDocument=459&txtPage=1>). Additional collections of striped bass from the Savannah River for contaminants will be accomplished in the Spring and Fall of 2006, along with a new assessment of striped bass from the Ogeechee River system (another blackwater Coastal Plain river).

Consumption recommendations for Savannah River striped bass are to limit consumption to one meal per month for the general population, with a caveat that women of child-bearing age and children may choose to limit consumption further. Recommendations for Coosa River system striped bass are to limit consumption of fish less than 20 inches to one meal per month, and to not eat any 20 or more inches in length. Further work assessing the potential for high contaminants exposure (primarily PCBs), in the Coosa River recreational sport fishery was accomplished with collections of large blue (21; 25-39 inches), and flathead (3; 25-35 inches), catfish from the Coosa River in late 2005 that are currently being analyzed.

TMDL Implementation Group

Newsletter Article Source: Upper Suwannee River Partnership Newsletter
The Georgia Department of Natural Resources Environmental Protection Division (EPD) contracted with the South Georgia Regional Development Center last October to provide staff and support to the Upper Suwannee River Basin Partnership. This two-year, \$188,000 undertaking is designed to import Florida's Suwannee River Partnership into Georgia. The Partnership has a leadership role in helping farmers voluntarily reduce the use of fertilizers and implement best management practices to protect water quality while maintaining agricultural yields from their working lands.

Florida's agricultural community has responded to the Partnership in a highly positive manner. The Florida Farm Bureau operates a program called CARES (County Alliance for Responsible Environmental Stewardship) that formally recognizes farmers in their efforts to implement best management practices for nutrient reduction. Thanks to the Partnership, the majority of farmers in Florida's Suwannee River Basin have been recipients of these awards over the past five years.

The University of Florida Institute of Food and Agricultural Sciences has been actively involved developing and testing fertilizer application rates for various crops that result in less waste of nutrients. This approach protects water quality while helping farmers maximize profits by reducing fertilizer costs. Another example of success is recent work in both Florida and Georgia that has focused on retrofitting existing center pivot irrigation systems with newer technologies to minimize water consumption. Initial efforts tested in Florida appear to reduce water consumption by at least 20 percent, resulting in about \$2,700 in energy savings per center pivot for each crop raised.

At the present time, water leaving Georgia meets all applicable water quality criteria established by Georgia, Florida, and the U.S. Environmental Protection Agency. Georgia EPD, our state's water quality regulatory agency, is concerned that agricultural expansion and other growth-related activities in South Georgia will impact water quality in rivers that flow across the state line. In Florida, the Suwannee River supports extensive recreational use and that state is rightly concerned that this be maintained along with Florida's strict anti-degradation water quality standards for this "Outstanding Florida Water".

We want to keep providing water of acceptable quality and quantity across the state line, while ensuring that entities in Georgia continue to have access to and use of our water resources. We all have a common interest in avoiding potential interstate litigation over water issues that could seriously impact segments of South Georgia's growing economy, and we look forward to working with the members of the Partnership and the agricultural community in helping achieve these goals.

*Respectfully Submitted,
Vince Williams
Georgia EPD*

Total Maximum Daily Loads Implementation: A Results-Based Program Driven By Monitoring and Educational Outreach

The main purpose of the Georgia Environmental Protection Division (EPD) Total Maximum Daily Load (TMDL) Implementation Program is to provide information and technical guidance on how to restore water quality to Georgia waters that have been assessed as not supporting or only partially supporting a beneficial public use due to excessive amounts (loads) of pollutants. Mandated by the Federal Clean Water Act and driven by a Prioritized Performance Agreement with U.S. Environmental Protection Agency (USEPA), the TMDL Implementation Program educates regional and local stakeholders about the following state standards:

- 1) Allowable pollutant loadings, or other quantifiable parameters for a water body; and
- 2) Required load reductions from both point sources and non-point sources that will restore in-stream water quality conditions over time.

Important goals of the TMDL Implementation Program are to assist communities in narrowing down the identification of potential pollution source categories, and in designing appropriate best management practices to achieve water quality restoration. To achieve these objectives, the Program contracts with regional development centers, resource conservation and development councils, universities and other government support agencies to develop TMDL implementation plans. These pollution management plans function as platforms for recommending, evaluating and tracking water quality-based controls to reduce pollution loads and restore and maintain water quality.

Plan components address the general characteristics of the watershed, the sources of pollution, stakeholders and public involvement, and educational outreach activities. In addition, the plan describes regulatory and voluntary practices and controls (*management measures*) to reduce pollutants, milestone schedules to track management progress (*measurable milestones*), and a monitoring plan to determine the efficiency of the management measures.

The Monitoring Plan section calls for descriptions of any planned or current sampling or survey to detect sources or assess effectiveness of management measures recommended in the plan. Preferred monitoring activities involve collecting and analyzing samples following USEPA-approved methods and Georgia EPD guidelines when the data will be used for determining listing status. If data collected as part of a TMDL monitoring plan are intended to be reported for listing decisions or for "delisting" purposes, the Georgia EPD must first accept a Sample Quality and Assurance Plan (SQAP) developed for those particular monitoring activities.

Other acceptable monitoring includes using evaluating or surveying methods that are not either Georgia EPD or USEPA-approved, but are acceptable for general information about parameters or for identifying sources. Organizations performing sampling may include city governments, county governments, their hired consultants, RDC hired consultants, Adopt-a-Stream groups, or watershed coalitions. Purposes for performing the sampling may include obtaining more data, determining sources of the parameter, assessing plan effectiveness, or verifying the values from any previous sampling event. The time frame should be when the sampling began or will begin and when it will end or ended, including the year.

If applicable, any TMDL implementation monitoring efforts should be coordinated with monitoring conducted to satisfy requirements of Phase I storm water permits that regulate discharges to the stream segment; or with monitoring required by Watershed Monitoring, Assessment and Protection Plans associated with expansion and new construction of wastewater treatment facilities.

Another major component of the TMDL implementation plan is promoting education and outreach activities that increase public awareness of the following issues:

- 1) Watershed characteristics and conditions;
- 2) Impact of non-point sources of pollution; and

- 3) How to prevent delivery of pollutants into the watershed. Educational messages explain the relationships between conserving water resources, restoring waters to healthy uses and preventing water pollution.

Messages are tailored to appeal to multiple target audiences for the purpose of accomplishing two major objectives:

- 1) Motivate community leaders, local governments and regional support agencies to develop programs that will restore and maintain water quality to “impaired” water bodies; and
- 2) Change public perception and encourage people to voluntarily follow behavior practices that reduce delivery of pollutant loadings from non-point sources into particular watersheds.

The TMDL Implementation Program takes a watershed approach to managing water resources by assisting multi-jurisdictional communities in making sound administrative decisions based on an understanding of complex, interrelated natural eco-systems. Program staff develops partnerships between regional support agencies, businesses, local governments and their constituents. By integrating water conservation, protection, and restoration solutions into a watershed resources management strategy, the TMDL Implementation Program measures its success in the actual number of stream segment miles removed from the statewide 305 (b)/303(d) List of “impaired” waters and restored to supporting beneficial public use.

References:

EPA 841-B-97-003, *Volunteer Stream Monitoring: A Methods Manual*

Georgia Adopt-A-Stream, DNR, EPD, *Getting to Know Your Watershed*

Ohio EPA, *A Guide to Developing Local Watershed Action Plan in Ohio*

For more information:

www.epa.gov/surf

EPA *Surf Your Watershed* website.

<http://www.cwp.org/>

The Center for Watershed Protection.

<http://ctic.purdue.edu/KYW>

Know Your Watershed website

<http://www.stormwater.net/>

The Storm Water Manager's Resource Center

Georgia Adopt-A-Stream

Since its inception in 1992, Georgia volunteer water quality monitoring program has continued to grow and develop as a resource for the citizens of Georgia. Presently there are over 50 Community/Watershed Programs that organize Adopt-A-Stream groups in their watershed, county or city. In 2005 our active trainers provided QA/QC certification to over 1,200 citizens for biological and chemical monitoring. There were also 114 chemical and biological trainers certified. The new certifications registered 55 new groups and 119 new monitoring sites. Our 100 plus active programs conducted over 750 monitoring events. In 2005 we also launched a format for displaying our volunteer monitoring data on Google Earth. Another significant undertaking included revisions to our benthic monitoring protocol. We have created a new macroinvertebrate identification key and biological index score. More benthic monitoring changes will take place in the coming year, when Adopt-A-Stream will initiate methodologies for the monitoring of nonwadeable streams and begin monitoring for coliforms. For more information please contact Allison Hughes allison_hughes@dnr.state.ga.us or visit our website www.riversalive.com/aas.htm

Rivers Alive

Do you have a local waterway cleanup? How about a statewide effort? The State of Georgia hosts Rivers Alive each fall, the annual waterway cleanup and educational effort that is sponsored by the Georgia Department of Natural Resources' Georgia Adopt-A-Stream Program and the Georgia Department of Community Affairs' Keep Georgia Beautiful Program, in cooperation with "Help the Hooch" in Columbus.

Waterway cleanups are a great way to promote healthy water in a hands on as well as an educational way. Another benefit is that it is a fantastic opportunity to get community partners involved from schools to businesses to civic groups to local governments and others. Last fall over 24,500 volunteers gave 137,700 hours to collect 684,000+ lbs of trash throughout Georgia, which included an ATM and approximately 28,650 pieces of Styrofoam in addition to many other items of trash. The event covered almost 3,000 miles of waterways in 87 of the State's counties. To learn more about Rivers Alive, visit: <http://www.riversalive.org> or contact me: Mitch Russell, mitch_russell@dnr.state.ga.us or 404.675.1636.

Project WET

The Georgia DNR/Environmental Protection Division coordinates a certification training program for formal and nonformal educators using the International Project WET curriculum and supporting curriculums such as Conserve Water, Wonders of Wetlands, Watershed Manager, Healthy Water, Healthy People and the latest, The Urban Watershed, a supplement to the Project WET curriculum and activity guide. The training began in 1997 and we have certified over 5,000 Georgia Project WET educators and have over 400 others who have volunteered to become trainers for our programs. The curriculums cover many water related topics such as wetlands, watersheds, conservation,

water quality and water protection with hundreds of activities for teachers that are real world, inquiry based, exciting and linked to State Standards. For more information please email: Petey_Giroux@dnr.state.ga.us

River of Words

River of Words (ROW) is an international poetry and art project designed to nurture respect and understanding of the natural world. The program is coordinated in Georgia through the Environmental Protection Division Nonpoint Source program and Project WET. K-12th grade students study their local watersheds, learn their “ecological address” and submit art and poetry to National and State competitions.

Teachers in Georgia are doing a great job incorporating ***River of Words*** into their classrooms and teaching watersheds through art, language arts and science. Georgia averages 1500 student entries annually and students have been recognized as Grand Prize winners and received trips to Washington DC and California to be honored by the former Poet Laureate, Robert Hass. Georgia also averages 10 national and 30 State winners yearly. The art and poetry is displayed in 2 traveling exhibits. One exhibit is managed by the Georgia Center for the Book and sent to libraries throughout the state. The second exhibit is available for free checkout to educators, festivals, conferences, nature centers, and other interested parties.

For more information contact: Jo Adang Jo_Adang@dnr.state.ga.us 404-675-1762.
For information on International ROW go to www.riverofwords.org

319 Non-point Source Program

319(h) Soque River Watershed Association Project

Since October 2003, the City of Clarkesville has been working closely with the funded project conducting an initial water quality assessment to support local management of nonpoint source pollution in the Soque River Watershed. This watershed, encompassing approximately 83,983 acres, is found entirely within Habersham County, in northeast Georgia. Water quality monitoring is a fundamental component of this project and the data is contributing to the development of a Comprehensive Baseline Assessment that will guide the development of the broader Watershed Management Strategy.

Macroinvertebrate samples were collected at eleven stations during the 2005 field sample season. Sampling effort was distributed among the seven sub-basins (tributary watersheds) as well as on the main stem of the river. Data were analyzed using a multi-metric index of biotic integrity applicable to the Southern Inner Piedmont (Ecoregion 45a). Results indicate that six of the samples are comparable to the reference condition in 45a (including two sites on the main stem of the river and four sites that drain predominantly forested lands). Two additional sites fell out between the reference and impaired distributions, and three sites were comparable to impaired sites in the Southern

Inner Piedmont (including the lowest scorer, Hazel Creek, which is 303(d) listed for sediment impairment to habitat and biota). Sample effort for the current field sample season (2006) will be targeted to those areas that have not yet been evaluated, and those areas that scored relatively poorly on the index last year.

Bacteriological sampling, using *E. Coli* as an indicator organism, was (and is) conducted at baseflow and stormflow quarterly in each of the sub-basins (at between 7-12 sample sites, depending on the size of the sub-basin). This technique helps limit temporal and spatial variability by sampling each sub-basin very quickly starting at the bottom of the watershed and working up. Attention will be paid to “hot spots” that consistently return high bacterial counts. It may then be possible to work with property owners on projects such as improving marginal or failing onsite sewage disposal systems (and removing straight pipes), excluding cattle from streams and providing alternative water sources, and implementing nutrient management plans for agricultural operations.

Sediment sampling is also conducted routinely at baseflow and stormflow. Three ISCO automated samplers are rotated among the sub-basins to catch storm events (the rising stage of the hydrograph). Handheld DH-81 samplers, using the equal width increment method (EWI), are also used at baseflow and stormflow on smaller, easily wadeable streams. An examination of the relationships among precipitation, discharge, land use, and suspended sediment concentration should help target areas that need help. One anticipated outcome is an effort by the partners (specifically the Environmental Horticulture program at North Georgia Technical College) to provide a low cost, local source of native plants for stream bank stabilization by private landowners. Enforcement or existing erosion and sediment control regulations (as related to land disturbing activities) is also a top priority.

Wildlife Resources / Stream Survey Team

Stream Survey Unit Update:

In 2005, the Stream Survey Team released the fish Index of Biotic Integrity (IBI) for the Southeastern Plains (SEP) ecoregion and the fish IBI for the Ridge and Valley (RGV) ecoregion. An update of the fish IBI for the Piedmont (PDM) ecoregion was also completed and released. These documents have been converted to PDF format and are available on the GADNR Wildlife Resources Division website at <http://www.georgiawildlife.com/content/displaynavigation.asp?TopCategory=190>.

In May of 2005, Joe Slaughter was selected to fill the vacant fisheries biologist position on the Stream Survey Team. Joe is an Auburn alum who came to us from the Arizona Game and Fish Department. The team now consists of three fisheries biologists and one fisheries technician.

Stream Team staff are currently working with fish data that were collected in 2004 and 2005 from the Blue Ridge (BRM) ecoregion and hope to complete development of the fish IBI for that ecoregion later in 2006.

A total of 130 stream segments will be reported to the GADNR Environmental Protection Division in FY 2006. Fifty-three of those stream segments contained impaired fish communities and will enter the TMDL process via the state's 303d list.

During the 2006 field season, the Stream Survey Team will be concentrating its fish-collecting efforts in the Atlantic Slope and Gulf Slope drainages (except the Apalachicola) of the SEP ecoregion. This area includes parts or all of the Altamaha, Ochlockonee, Ocmulgee, Oconee, Ogeechee, Satilla, Savannah, and Suwannee watersheds.

STATE OF SOUTH CAROLINA

Department of Health and Environmental Control

AQUATIC BIOLOGY SECTION

Macroinvertebrate Group

We continue to stay busy with our usual duties of identifying macroinvertebrates and reviewing reports. We are a little behind on our 2005 bug samples but should be finishing in the next few months. By time you read this we will probably be sampling some of our swamp streams in the Edisto Basin and will begin sampling in the Saluda-Edisto Basins this summer. Also, we will be doing some side-by-side sampling with our friends from the Tar Hill State as part of the Joint Bioassessment Project headed by Lisa Huff.

As some of you may be aware the 2007 North American Benthological Annual Meeting will be held here in Columbia South Carolina. I have been asked, and have agreed, to be the chair of the Local Arrangements Committee. As you can imagine this will require much of my free time and may take me away from some of my regular duties. I may be calling on some of my colleagues here in Region IV to help out. If you know you are coming and would like to help in any way please let me know.

Jim Glover

Nonpoint Source Monitoring Team

New Hire:

The nonpoint source monitoring team is pleased to welcome a new face. Ann-Marie Denman joined the DHEC staff in January. Prior to moving to South Carolina and joining DHEC, she worked for three and a half years with the Mississippi Department of Environmental Quality as a regional biologist in the North Regional Office in Oxford. You are all probably familiar with her as she served as secretary for last year's SWPBA meeting.

Projects:

The study on Hollow Creek to investigate bacteria sources was recently completed. Looks like all those cows in the creek were having an impact after all. Who knew! We have conducted a special water quality assessment on Hawe Creek in McCormick County. This study will help determine whether runoff from the abandoned Barite Hill/Nevada Goldfields mine site in McCormick County is impacting the water quality of Hawe Creek. As part of the Middle Savannah River Watershed Project, a

macroinvertebrate assessment of Brier Creek is being conducted, as is a pH study of Fourmile Branch on the Savannah River Site. We are also continuing our monthly sampling for bacteria in Catawba watershed as well as a new study in the upstate region including Coneross creek, Big Generostee creek, and Beaverdam creek. We continue to do work on 303d listed streams as right now we are in the process of ID'ing bugs from this summer's sampling. As always, additional bioassessments are conducted as needed for enforcement cases.

Other studies in the works include a new coastal study to determine the sources of fecal coliform bacteria that is resulting in the closure of shellfish harvesting areas in Charleston County.

NORTH CAROLINA DIVISION OF **WATER QUALITY**

ENVIRONMENTAL SCIENCES SECTION

Biological Assessment Unit

Stream Fish Community Assessment Program

During 2005, the stream fish community assessment program sampled 85 sites, primarily in the Piedmont. Use Attainability Studies, reclassifying streams for more stringent water quality protection, were completed in the Broad, Neuse, and Little Tennessee River basins. Presentations to university students, resource agencies, and the public were given on “*Stream Fish Communities As Indicators of Water and Habitat Quality in North Carolina*”, “*Fish Communities as Indicators of Water Quality in the Roanoke River Basin*”, “*The Fishes of the Roanoke River Basin*” and “*Watauga River Basinwide Monitoring Review*”. As a result of the recently promulgated federal 316 (b) regulations, study design reviews, site visits, and review of entrainment barrier options were conducted for Progress Energy’s and Duke Power’s nuclear and fossil electric generating stations. External Assistance/Outreach programs were conducted with the Pigeon River Native Fish Species Reintroduction Project, Carolina Madtom Recovery Project, USGS's (Raleigh, NC) Urban Intensity and Fish Responses Project, and the North Carolina State Museum of Natural Sciences’ and Roanoke College’s study on the distribution, abundance, and life history characteristics of the undescribed Carolina Redhorse Sucker. Web pages for the fish community program were updated (NCDWQ's Fish Community Database (<http://www.esb.enr.state.nc.us/NCIBI.htm>) and NCIBI Scores and Ratings (<http://www.esb.enr.state.nc.us/IBIrate.htm>)) and a new page was developed (Native and Exotic Freshwater Fish in North Carolina (<http://h2o.enr.state.nc.us/esb/BAU.html>)). The QAPP for the stream fish community assessment program has undergone three versions and will hopefully be sent to Region 4 during the first quarter of 2006.

Fish Tissue

Staff wrapped up the third year of a survey for organic pollutants in fish tissue during 2005. The survey is scheduled from 2003 through 2006 to further assess the character of pesticide contamination throughout the state. The survey is intended as a Tier 1 type study whose primary goal is to identify mainstem inland waterbodies where organic contaminants exceed specified human health screening values for edible fish. Sites where contaminants are identified would require more intensive follow-up sampling. Staff members collected a top predator and bottom feeding species at each of 11 sites

throughout the Chowan, Pasquotank, Catawba, and Broad River basins. Additional pesticide surveys are planned in the western river basins in 2006.

Staff continued the assessment of low-level mercury across the state by sampling fish, sediment, and water. The current study involves monitoring stations in the mountains and piedmont to determine ambient levels of mercury in surface water and to develop site-specific bioaccumulation factors for fish.

During August 2005 the NC Department of Health and Human Services requested staff assistance in the collection of fish samples from Crabtree Creek near Raleigh. Sampling was requested to augment studies performed by EPA and to further delineate current PCB advisories in the watershed. Staff collected largemouth bass and catfish samples at four stations below Crabtree Creek. Results are currently under review but suggest additional PCB contamination within the reaches downstream of the reservoir.

Ecosystems Enhancement Program staff requested assistance in November 2005 sampling fish from the Clear Creek watershed in Henderson County. Sediments collected in 2001 failed sediment toxicity tests (growth and reproduction were significantly reduced at $p < 0.05$), and a number of organochlorine and newer generation pesticides were measured in the sediments. The fish are being analyzed for chlorinated and organophosphate pesticides and results are forthcoming.

Fish Kills

DWQ received 20 reports of fish kills across the state during 2005, on par with the count of 17 reported in 2004. The 2005 season produced a cumulative fish mortality of around 800,000 individuals. The majority of the year's mortality was reported from two events in the lower Neuse River near Flanner's Beach and a large menhaden kill on the coast near Mason Inlet.

Further information on the fish community, fish tissue, and fish kill programs can be found at: <http://www.esb.enr.state.nc.us/> or by contacting Bryn Tracy, Mark Hale, or Jeff DeBerardinis at (firstname.lastname@ncmail.net).

Benthos

Benthos staff completed the third basinwide sampling round (1995, 2000, and 2005) for the Broad and Neuse river basins in early October. Persistent high flows in portions of the lower Neuse and most of the Broad postponed some sampling from the typical July/August window to September/October. There were 32 basinsites sampled from the Broad, and 62 from the Neuse (including 10 swamp samples). In addition, basinwide sampling was completed in the Chowan and Pasquotank river basins. These basins were also sampled for the third time (1995, 2000, 2005) and 26 total sites were sampled. Of these 26 samples, there were 17 swamp samples, 7 boat samples, and two normal summer samples.

Staff are currently finishing basinwide reports and planning this year's sampling of the Lumber and Yadkin river basins. In addition to routine basin wide sampling, numerous Ecosystem Enhancement Program (EEP) and TMDL studies are planned. Starting last spring DWQ initiated sampling of small streams with drainage areas of less than three square miles. Currently, DWQ cannot assign bioclassifications to such streams. Last spring nearly 60 samples were collected and additional, similar sampling efforts will take place again this spring. It is anticipated that another 60 or so samples (n=120 approximately) on small streams should be sufficient to generate draft metrics for bioclassification purposes on these small streams effective this time next year.

In October, Laurie Alexander from the University of Maryland visited the lab to give us an update on her genetic research of *Ephemerella*. For the past year, we (along with other labs) have been supplying Laurie with numerous *Ephemerella* specimens. The primary thrust of this research is to help correlate stable (and distinct) characters that are recognized by workers familiar with the genus to genetic data. The hope is that several of the taxa we, and other workers recognize as distinct species, or distinct species groups (e.g., *E. cawtawba*, *E. dorothea*, *E. rossi*, *E. invaria*, and *E. subvaria*, etc.) can be identified as such based on genetic data and that this genetic distinctness can then be used to identify stable phenotypic characters. This work is headed in an opposite direction from that of Luke Jacobus from Purdue University who has conducted taxonomic work supporting the lumping of many of these species into much larger taxonomic groups.

Finally, the benthos staff is, for the first time in nearly four years, at full staff, with all eight positions currently filled. We welcomed Steve Beaty and Larry Ausley to the unit in December.

Aquatic Toxicology Unit (ATU)

At this past December's Division of Water Quality recognition program, ATU member Sandy Mort was recognized for her work with characterizing watershed impairment as Environmental Sciences Section Employee of the Year and Division of Water Quality Employee of the Year. The following is from an excerpt from one nomination:

Over the past year Sandy has researched and implemented an entire new suite of toxicity tests that, in concert with work by the Ecosystems Enhancement Program and Watershed Assessment Team, will significantly enhance the Division's and Department's understanding of the sources of biological impairment in watersheds. Sandy conducted the initial research for these analyses, talked directly with the developers of the tests, and coordinated with vendors to obtain the test kits (which are not in widespread use in the US as yet). She has overseen the development of protocols for the analyses, developed quality assurance programs, and trained co-workers to conduct the tests. Sandy's work has put DWQ on the leading edge of implementing these new technologies in North America.

This project is just the most recent example of Sandy's superior technical skill, initiative, and follow-through. Sandy recognized a need, conducted extensive research, developed a solution, and implemented it. Her value to the Division, the Department, and the State of North Carolina cannot be overestimated.

Sandy and ATU members Cheng Zheng, Susie Meadows, and Nikki Remington continue work to refine these “Microbiotests” and evaluate new analyses.

On the compliance/enforcement front, NC facilities with WET limits maintained an average 98.2% compliance rate during the calendar year 2005 through the month of October. Currently, 530 facilities are required to conduct some kind of WET monitoring; 416 of these have limits (377 chronic, 39 acute).

Program Development Unit and Watershed Assessment Team

Watershed Assessment Team (WAT)

The WAT has been doing its best to characterize watersheds across NC. Susan Gale is testing the use of optical brighteners, dyes that make your clothes look brighter, as a signature of human sources of fecal coliform in coastal Lockwoods Folly River. She is also coordinating with Bryn Tracy and others to look for glochidia-host fish species in piedmont Fishing Creek to assess the probability of mussel recovery when a badly failing WWTP finally cleans up its act. Larry Eaton will be leading the first round of bug sampling in the headwaters of a watershed in the Hiwassee Basin at the far western end of the State, looking for places that may have impacts (straight pipes, cattle etc) that may not have already been identified. Eric Fleek (BAU) will be leading another trip later in the spring to sample the areas with documented or suspected impacts.

The DWQ Aquatic Toxicity Unit has been evaluating new toxicity screening tests. The Watershed Assessment Team is employing these tests in several of their study areas in conjunction with biological sampling in order to develop a clearer picture of the ecological relevance of the test results in NC surface waters. Sampling sites include a wide variety of impacted sites (urban, rural/agricultural, WWTP impacts, coastal swamp streams) as well as relatively pristine watersheds. It is hoped that these tests will help provide insight into the cause of depressed biological communities where an obvious stressor is not present.

These tests were originally developed in Europe, where they have been used for a number of years for pharmaceutical and environmental studies. They have several advantages over traditional WET testing:

- They are more sensitive than the traditional Ceriodaphnia, fathead minnow, and Daphnia magna tests, as they rely on sub-lethal endpoints, including mutagenicity/carcinogenicity. These sub-lethal effects can have a significant impact on aquatic communities yet are not assessed by traditional WET testing.
- They use pre-packaged kits, including "stabilized" test organisms which can be reconstituted as needed shortly before test initiation, eliminating the need for in-house culturing of organisms.
- Results are available within 24-48 hours.
- A wider range of trophic levels can be tested (bacteria, algae, crustacean).
- Certain tests can differentiate between toxicity due to metals vs. toxicity due to organics.

Project Contacts:

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Susan Gale, (919) 715-3477, susan.gale@ncmail.net

Steve Kroeger, when he is not baby sitting the rest of us, is starting to do some data mining of the huge macroinvertebrate database that BAU has amassed over two decades of sampling. He will be using his database manipulation expertise to try to tease out species or communities that are indicative of different kinds of impacts. He is currently in discussions with SWPBA emeritis Dave Lenat to help him interpret his findings.

For further information about any WAT activities contact:

Steve Kroeger, (919) 733-9726, steve.kroeger@ncmail.net

The Program Development Unit has also poking into the realm of science with an eye toward refining policies to better reflect what nature is really doing.

Intermittent Streams – Protect them or not

Forward motion on requiring mitigation for intermittent streams is currently on hold pending the ruling of the Supreme Court in the Rapanos case (like SWANCC a few years ago, it argues that the Corps of Engineers doesn't have jurisdiction over waters it currently protects). To help in preparation of a Friend of the Court brief, it was calculated that in a worst case scenario (Court deciding that Corps only has jurisdiction in waters navigable by boats large enough to engage in significant interstate commerce), the Corps (and the current State 401 program linked to the Corps 404 program) would lose jurisdiction over 99% of all the streams and 85% of all the wetlands in the State. How are other States reacting to this?

Contact: Larry Eaton, (919) 715-3471, larry.eaton@ncmail.net

Buffer Quality versus Stream Quality

In the meantime, Stratford Kay has gotten some results from his examination of the link between the quality of the buffer and the quality of the stream. A professor at a local university has developed a method to assess buffer quality in the coastal plain. Because many of his metrics can be estimated from aerial photography or GIS data layers, people have begun equating water quality of the stream with the quality of the buffer in an effort to make water quality assessments without leaving the office. Last summer Stratford and Dr. Brinson worked together to identify a network of sample sites that could be sampled for macroinvertebrates to look for a link between buffer and water quality. As he finishes last fall's bug samples, several things are becoming clear. 1) Good buffers can keep the water quality from getting worse, but if the water quality is impaired before flowing into a well-buffered area, it will still be impaired for quite a ways downstream. 2) It doesn't take a large break in a buffer, certainly too small to see in aerial photographs, to allow enough stormwater runoff from parking lots and other impervious surfaces into a stream and cause impairment. Stratford plans to expand this test to the Piedmont and Mountains

in an effort to slow down the adoption of this method that was developed specifically for the Coastal Plain, into areas the method was neither designed for nor tested in.

Project Contacts:

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Development of a Wetland Monitoring Program for Headwater Wetlands in North Carolina

The DWQ Program Development Unit (under the Wetlands and Storm Water Branch) is developing the feasibility of implementing a wetland-monitoring program for the Division of Water Quality with an EPA funded grant. This project will assess the change of wetland quality and function along a disturbance gradient in 12 Piedmont and 11 Coastal Plain headwater wetlands. Headwater wetlands were chosen as the initial type of wetland to monitor as these are a highly important natural resource due to their geographic location in watersheds. Drainage from headwater wetlands provide the primary water source for first-order streams, therefore, maintaining the ecological integrity of these systems is necessary in order to protect the natural resources of the downstream watershed.

The objective of this study is to determine the differences and similarities of the vegetative, amphibian and macro invertebrate communities, soil and water quality and hydrology of these wetlands along the disturbance gradient. This information will also potentially be used to develop indices of biotic integrity (IBIs) for monitoring wetlands in North Carolina. Soil and water quality and hydrology can be directly impacted by changes in the quality and quantity of stormwater run-off in developing watersheds. These changes can in turn adversely affect the aforementioned biotic communities. In addition, to better understand the conditions of the watershed and how they relate to the field study results, GIS spatial analysis and modeling will be used to assess physiographic attributes (such as fragmentation and urbanization) of the surrounding landscape.

Two DWQ biologists and a technician started working on this wetland-monitoring project in 2003. All study sites have been chosen and delineated with GPS and monitoring wells installed. During the 2004 season, amphibian and soil data were gathered at all sites and plant community data was gathered at half the sites. Water quality physical (DO, pH, specific conductivity and temperature) and chemical (metals, nutrients, fecal coliform, TSS, TOC and DOC) parameters have been taken on a quarterly schedule for the last year at upstream and down stream station locations at each site in order to compare the change in water quality within a site and between sites. Monitoring well water levels have been recorded approximately every 2 months and will be recorded at half hour increments with pressure transducers that will be installed in March 2006. Macro invertebrate monitoring methods are currently being developed with the assistance of DWQ macro benthic biologist(s) and will be implemented in March 2006. A GIS database associated with the wetland study sites that will contain information on the wetland boundaries, well location, water quality sample locations, vegetation survey

locations, rare species information, and surrounding land use is currently being developed. Field data will be used to develop a write a final report for the EPA and provide information to DWQ on the feasibility and resources needed to develop a wetlands monitoring program that supports policies that meet the requirements of North Carolina administrative code.

A follow-up EPA grant has been approved that will be used to verify the NC Wetlands Assessment Method (NCWAM) a rapid wetland assessment method currently being developed by the NC Wetland Functional Assessment Team (a committee composed of public and private sector NC biologists). This grant will allow DWQ to investigate and develop wetland monitoring methodologies in 4 other types of wetlands as well as verify the accuracy of NCWAM. DWQ plans to work with the Ecosystem Enhancement Program (EEP) to choose wetland sites in watersheds the EEP is currently developing management plans for.

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Development of Stream Functional Assessment Method

Following the success in developing a Wetlands Functional Assessment method (NCWAM), it was decided to try to do the same with streams. For over six months, a multiagency team, including BAU's Bill Crouch and WATs Larry Eaton have squabbled over what exactly is a stream of high ecological value and how do you make that determination in 15 minutes or less? While the group is coming close to consensus for Piedmont streams, it will be many more months before any agreement will be found on how to measure the ecological value of a stream in the Mountains or Coastal Plain.

Project Contacts:

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Larry Eaton, (919) 715-3471, larry.eaton@ncmail.net

Kentucky SWBPA News

Ecological Support Section

Planning for the 2006 field season is underway. We hope to do biological sites in the Green and Tradewater River basins this year. In addition, we will be doing some water collection and flow at some impaired streams in preparation for future TMDL development. We hope to start getting into the water in April or May.

Everyone is busy working in their labs. Lara Panayotoff and Mark Vogel are busy identifying the 2005 collections. Eric Eisiminger has been busy grinding fish tissue for analysis. Paulette Akers has been sorting bugs and putting the finishing touches on the SOP manual update. Lara has also been busy crunching numbers to move us along in our nutrient criteria development. Mike Compton has been busy doing paperwork and complaining about how long it takes the rest of us to work up samples and extolling the “instant gratification” he gets from fish community work. Gary Beck is writing up the fecal coliform sampling summaries and Morgan Jones is trying to buy more land for the Wild Rivers program.

We have recently acquired a digital camera with mounts for microscope, dissecting scope and a macro lens. Now we can finally send photos of anything we collect to our SWBPA friends for help with identification! Eric has also been enjoying our newly renovated shocking boat. Isn't it amazing how much quicker things go when the equipment work correctly?

Water Quality Certification Section

The Water Quality Certification Section is finally back at full staff and beginning to catch up on the backlog of applications. Of course, that will only last until Danny Peake and Cinda Walling leave us to go to Department of Transportation on February 16th. Additional help in the form of four new staff members is expected to arrive sometime in the next few months. Section Supervisor Jenni Garland is getting a breather from assisting in the Clean Water Act Section 404 assumption process, as the Task Force has completed its work and has forwarded its recommendations to the Kentucky legislature for consideration.

TMDL Section

The Biologists (Danielle Rogers and Jessica Schuster) sampled five streams for *E. coli* from May through October. They analyzed these samples using the IDEXX system. This sampling began an effort to produce pathogen TMDLs for the streams. Additionally, Jessica and Danielle are almost ready to begin sampling for pH (along with

acidity and alkalinity), metals, and total dissolved solids on four stream systems in the Tradewater River Basin, which will provide data for the modelers to produce TMDLs for 10 pollutant/waterbody combinations. During this summer, they plan to sample approximately five additional streams for pathogen TMDL development.

The Modelers (Eric Liebenauer and Joe Ferguson) have developed initial load duration curves for some of the five *E. coli* streams and are writing the background information for the reports. They will also be developing the TMDLs for the above-mentioned streams and plan to develop additional TMDLs for pathogens for some of Kentucky's long-term ambient sites.

Ann has been working with EPA to produce a few EPA developed TMDLs for pathogens. She plans to continue this process for several nutrient impaired watersheds. She has also been working with a local University to establish an MOA for them to develop TMDLs for approximately 25 pollutant/waterbody combinations in the Green River Basin.

Lisa Hicks (Environmental Scientist) is assisting in the production of the 2006 integrated report. She has also been producing coverages of the 2004-303(d) list, of approved TMDLs, and of delisted segments. She will update the coverages to reflect the Category 5 streams on the 2006 integrated report.

During 2005, Jessica and Danielle took the Clemson Course "Biology and Identification of Southeastern Mayflies, Stoneflies, and Caddisflies" at the Highlands Biological Station and Eric and Ann received EFDC training at Region 4 in Atlanta. The entire TMDL Section received LSPC training at the end of January 2006.

Standards and Specifications Section

Standards and Specifications Section is currently working 305(b) assessment and production of the 2006 Integrated Report (IR). This will be the first IR Kentucky has written and the format of having both Sections 305(b) and 303(d) combined should result in a format that is more convenient to the public and other users of the report. We have implemented the new version of ADB designed to facilitate IR statistics and related tables.

Monthly sample collection at our ambient water quality network continues with intensive sampling set to move into the Green-Tradewater management unit in April (as will other monitoring efforts) as part of the rotating watershed monitoring cycle. This year we are involved with the Groundwater Branch in implementing water quality monitoring at large springs in this management unit. Our probabilistic biosurvey program will be collecting macroinvertebrate and water quality samples at 50 sites in these two basins. This weighted random design will target 1st – 5th order Wadeable streams and will provide the division with a second dataset to compare aquatic life use attainment results to those determined five years ago in this unit. Our clean lakes program will monitor

approximately 30 reservoirs to determine aquatic life and secondary contact recreation uses attainment as well as determination of trophic state trend analysis.

Recently USGS was awarded a 319 grant to begin statistical analyses of the ambient water quality monitoring network. The division has 20+ years of monthly monitored data at many of our 71 stations located throughout the commonwealth. Trend analysis will provide results related to flow and seasonal variations and integrate land uses in these watersheds. An analysis of our network stations will provide information on possible redundancies, where gaps may exist, and where the most economical locations are that maximize water quality information per basin

Watershed Management Branch Nonpoint Source Section

The NPS Section in the Watershed Management Branch is pleased to welcome Jessica Bevins to the monitoring team. Jessica comes to the Division from Eastern Kentucky University where she received her Masters of Science Degree in Biology. She will lead the macroinvertebrate collection and identification in the NPS Section. With the new addition to the team, the backlog of invertebrates is slowly starting to disappear. Hopefully within the next few months it will be gone. The NPS Section has also completed two watershed monitoring reports, one from subwatershed monitoring in the Green River Basin and one from the Big Sandy Basin. In the field, the sampling crew has completed pre BMP monitoring in the Strodes Creek Watershed. Field sampling for 2006 is just around the corner with sample planning underway in the Deer Creek and Sinking Creek Watersheds.

Florida's Update

WD DEP, Tampa FL

Report to SEWPBA, 2005/2006

Total Maximum Daily Loads. In 2005, the Southwest District completed monitoring Group 4 and 5 water bodies for the TMDL program.

- Withlacoochee River Basin (19 wbids, 67 sites)
- Springs Coast basin (18 wbids, 92 sites)

Biological assessments were performed in the same basins (8 wbids, 20 sites).

In 2006, we will be monitoring surface waters with direct discharge to Tampa Bay (Group 1) and the major tributaries to Tampa Bay (Group 2)

Point Source Biological Monitoring. Monitoring for Coronet Industries alleged hazardous waste contamination was completed in 2005. The SW District performs biological assessment for point source violations and contaminations as needed.

Ambient Biocriteria Development. Sampling continues at our ambient reference sites to provide continuing data for the development of State Biocriteria in streams, rivers and lakes.

Aquatic vegetative surveys were conducted on 40 lakes in 2005, providing data for the development of the statewide Floristic Quality Index and for the Ambient Status Monitoring Program.

Sampling for FDEP's Nutrient and Periphyton study was begun in 2005 and will continue through 2006

Restoration Program. The SW District performs biological assessments for restoration projects upon request. So far this year, we will do a background survey in 2 coastal ponds scheduled to undergo restoration.

Watershed Surveys

Time permitting, the SW District plans to conduct Biorecon basin studies in 2006.

News from Tennessee

In 1996, Tennessee adopted a watershed approach to organizing monitoring, assessment, and permit issuance on a 5-year cycle. The state's 54 watersheds have been divided into five monitoring groups for assessment purposes (Figure 1). This fiscal year, Tennessee Department of Environment and Conservation (TDEC), Division of Water Pollution Control (WPC) is monitoring Group 5 watersheds.

For the 2006 305(b) and 303(d) reports, Group 3 watersheds have been assessed. Chemical data collected with the Group 4 watersheds have also been included in the 2006 assessment. However, due to the time constraints of biological analyses, Group 4 watershed biological samples were not processed in time to be included in the 2006 report.

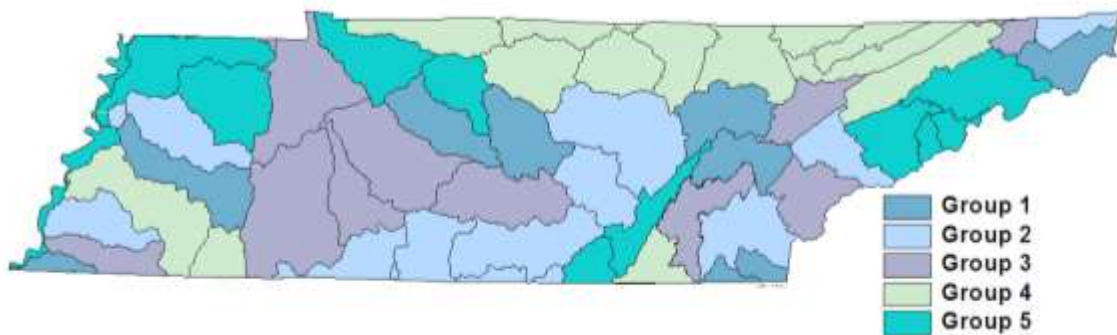


Figure 1: Watershed Cycle Monitoring Groups

WPC is organized into eight regional environmental field offices (Table 2). Each field office monitors waterbodies, answers complaints, and deals with construction, stormwater, NPDES permit, antidegradation and other issues in their areas. Many of these activities are coordinated with the central office in Nashville.



**Figure 2: TDEC Environmental Field Offices Boundaries.
Environmental Field Office Updates**

Jackson Environmental Field Office

Biological assessments in the Obion River Watershed have been ongoing since the spring of 2005. Currently 120 stations have been assessed in the North Fork, Middle Fork, South Fork and Rutherford Fork of the Obion River and the Obion River proper. The biologist team of Amy Fritz and Brad Smith will begin biological monitoring again at the end of January 2006. There are approximately 15 remaining stations to complete on in the Obion River Watershed cycle. The start of sampling has been delayed slightly due to the lack of rain in the area. Upon completion of biological monitoring in the Obion River watershed, Amy and Brad will begin sampling in the South Fork Forked Deer River watershed. This is a much smaller watershed than the Obion River. This watershed should be completed in advance of the actual end of the watershed cycle, July 1, 2007.

In addition to biological sampling, various members of the JEFO have been actively involved in collection of chemical samples at established stations within the Obion River watershed. Chemical sampling should be completed by the end of June 2006. Additional biological sampling conducted on an as needed basis includes tier evaluations for distinguishing high quality waters and exceptional waters from other waters, wet weather conveyance/stream determinations and special studies above and below wastewater discharges.

Nashville Environmental Field Office

The Nashville WPC Field Office has just wrapped up its 2005 sampling efforts, and is gearing up for 2006. As Tennessee now does its business on a rotating, watershed basis, the 2005 monitoring and assessments focused primarily on basins within the Cumberland River valley.

Most of the chemical monitoring program for the target watersheds is set up around monthly sampling of established sites for one year. A smaller number of shorter-term, “special issue” chemical samples are also collected, usually in response to regulatory and enforcement issues. In 2005, over 600 chemical samples were collected from approximately 130 sites, primarily within the Barren and Red River basins, and the Barkley, Cheatham, and Old Hickory Reservoir segments of the Cumberland River.

Biological surveys remain a main component of monitoring and assessment efforts, and 2005 was no exception. The Nashville Field Office conducted over 150 benthic samples in the last year, the vast majority to determine streams’ support status of their designated uses. These data are used in many TDEC functions, including permitting, enforcement, and of course, the State’s 305b and 303d reports. In 2005 NEFO’s biological surveys were focused on the Barren and Obey River basins, and the Cordell Hull, Cheatham, and Barkley Reservoir segments of the Cumberland River.

In 2006 these efforts will be continued (with the eternal hope of additional personnel), targeting the Harpeth and Stones River watersheds.

Special Studies Updates

1. Regional Characterization of Streams in Tennessee with Emphasis on Diurnal Dissolved Oxygen, Nutrients, Habitat, Geomorphology and Macroinvertebrates

The study, which began in 2004, has been completed. This report describes a 2004 statewide study, which is a continuation of a 2002 study of regional differences in diurnal dissolved oxygen patterns in wadeable streams. Other goals of this study were to characterize streams based on geomorphology, periphyton, and nutrients as well as describe streams that cross ecoregions in west Tennessee. This report has been published and is available on TDEC's website at <http://www.state.tn.us/environment/wpc/publications/>.

2. Probabilistic Impounded Streams Study

Fieldwork and analyses for the 2003/2004 study of randomly selected streams located down stream of impoundments has been completed. The final step in this process is to analyze the data and write the report. The report will describe macroinvertebrate chemical, geomorphology, periphyton abundance and habitat on streams below 75 small impoundments across the state. The goal publication date for this report is September 2006.

3. Nashville Field Office Dissolved Oxygen Studies

Several multi-week, diurnal studies were performed in 2005. Continuous-recording multi-parameter instruments were deployed simultaneously at several points along a study reach. These studies are primarily centered around larger rivers running through urban areas with point source discharges. One of the main concerns is daily oxygen fluctuations. Probes are usually deployed during the hottest and driest time of the year. Studies last year centered around the cities of Murfreesboro, Cookeville, Shelbyville, and Columbia.

4. Jackson Field Office Cooperative Study with Union University

The Jackson Environmental Field Office is conducting a cooperative study with college seniors majoring in biology, from Union University. The cooperative study involves teaching students the State of Tennessee Macroinvertebrate Biorecon SOP, QCing these students in the field and lab and giving them a list of unassessed streams in a particular watershed cycle to conduct biological monitoring and habitat assessments. Currently the Jackson office has trained four groups of students. This cooperative study has worked well and provides the state with valid information as well as giving the students opportunity to participate in a meaningful biological study that is counted as credit toward completion of their BS degree.

ALABAMA HIGHLIGHTS

As usual, efforts are ongoing to complete last year's workload and begin preparation for the coming year. Our new facility (office and lab space) is projected for completion summer/fall 2006, but at this time the move date and plans for managing sampling efforts during the move are undecided. Recently, we lost two good biologists (who needs a PhD or a promotion) but hopefully those positions can be filled before the sampling season kicks into full gear.

Water Quality Monitoring Strategy

Recent changes in EPA program specifications required modifications to the water quality monitoring strategy for the state of Alabama. In 2003, EPA published *Elements of a State Water Monitoring and Assessment Program* as a basic framework that states must use to monitor and assess their aquatic resources. The purpose of this document was to outline basic recommended components for monitoring programs performed by States receiving Clean Water Act (CWA) §106 funds. The elements include the development of a strategy that outlines quality assurance plans, data management, data analysis, reporting, program review, and overall resource needs. Each state's monitoring strategy document is required to describe how each State is currently incorporating the Ten Elements recommendations in their monitoring programs, identify elements not sufficiently addressed, and outline a ten-year timeline for full implementation of these missing elements. The desired effect was the development and implementation of more comprehensive monitoring strategies by each state and enhanced comparability of data and assessments on a national scale.

In 2003, the EPA linked CWA §319 funding to the §303(d)/TMDL process. Previously, the ADEM had conducted monitoring for the §319 and §303(d)/TMDL programs separately. However, combining these programs was needed to begin to implement nonpoint source control activities more effectively.

In 2004, the EPA released the Integrated Water Quality Monitoring and Assessment Report Guidance which requires that all waters in the state be placed into one of five categories. These categories indicate whether or not a waterbody is meeting all of its designated uses. In 2005, the ADEM revised its Water Quality Assessment and Listing Methodology to establish minimum data quantity and quality requirements necessary to categorize all waterbodies as meeting or not meeting their designated uses.

In recent years, the EPA has also placed an increased emphasis on assessments of overall water quality. Recent analysis of data reported in ADEM's 2002 305(b) Report to Congress indicated a bias toward impaired sites, suggesting that ADEM's probabilistic monitoring program (ALAMAP) did not provide an adequate assessment of overall water quality in Alabama.

To address these issues, the State of Alabama Water Quality Monitoring Strategy was developed in July 2005. The Strategy documented the need for comprehensive monitoring data provided only by fully assessed waters, and developed methods to meet

these data needs through ADEM monitoring programs. Together, ADEM water quality monitoring programs will be used to more effectively:

1. determine attainment of existing water quality standards;
2. develop and adopt new, or revise existing, water quality standards;
3. develop TMDLs for impaired waterbodies;
4. monitor trends in water quality after the implementation of TMDLs and Watershed Management Plans;
5. categorize waters of the State for integrated reporting purposes (i.e., Category 1-5); and,
6. develop tiered aquatic life uses and biological condition gradients

EPA approval notification of the State of Alabama Water Quality Monitoring Strategy was received by letter September 8, 2005.

Fish Tissue Monitoring Program (FTMP)

FTMP Objectives:

- *sampling locations throughout the focus basin (Tier I basin screening);*
- *repetitive sampling of sites where the ADPH has determined that FDA limits have been exceeded (Tier II known impact);*
- *sampling of sites in south Alabama that have not been sampled in several years (Tier I screening); and,*
- *sampling remaining areas in south Alabama where fish have not been collected for the FTMP (Tier I screening).*

FTMP FY2006: Fish tissue sampling was completed during the first quarter of FY2006 with 567 fish collected from 51 locations from October-December. Twenty four stations were FTMP stations and three stations were requested by the ADPH. Dioxin monitoring was conducted at three stations downstream of paper mills and two stations were sampled as part of mercury monitoring in Bilbo Creek. Two stations were sampled by TVA and analyzed by the ADEM as part of a cooperative agreement between the agencies and a project was initiated in which seventeen stations were sampled to monitor any effects caused by Hurricane Katrina.

Data Requests: Requests for FTMP data and information were processed for: ADEM staff, Auburn University, Gradient Corporation, and TVA.

River and Streams Monitoring Program (RSMP)

RSMP Objectives:

- *To estimate overall water quality;*
- *To categorize waters in Alabama's Integrated Assessment Report; and,*
- *To develop nutrient criteria, sediment criteria, biological condition gradients, and assessment criteria that can be used to assess Wadeable Rivers and Streams statewide.*

2003 303(d) Report: A final revision of the 2003 303(d) Report was completed, with the report currently undergoing a final internal review.

2004 303(d) Impaired Waters List: Since mid-2005, ADEM and USEPA Region 4 have been negotiating the acceptance of Alabama's 2004 303(d) list of impaired waters. The water bodies under discussion received a screening-level macroinvertebrate assessment of *poor* during ADEM's Basinwide Screening Level Assessment Program, 1998-2004. The Environmental Indicators Section (EIS) of Field Operations and the Water Quality Section (WQS) of the Water Division met in December to discuss the issues. The EIS of Field Operations and the WQS of the Water Division also discussed the issue with USEPA Region 4 Atlanta and USEPA Region 4 Athens via conference call. The EIS also provided USEPA Region 4 Atlanta with copies of the data in question for their review.

2004 303(d) Monitoring: Results of macroinvertebrate sampling conducted at eight waterbodies in support of ADEM's 303(d) Monitoring Program were reported to ADEM's Water Quality Section during this quarter.

2004 Basinwide NPS Assessments: Macroinvertebrate ID QA has been completed for all NPS stations. Macroinvertebrate data and Habitat data have been compiled and NPS stations have been scored. Appendix Tables are 75% completed and Map work is ongoing.

2004 Reference Reach Monitoring: Assessment guidelines for each of ADEM's intensive- and screening-level assessment methods are developed from data collected from a network of least-impaired ecoregional reference reaches. Screening- and intensive-level macroinvertebrate assessments and periphyton bioassessments were conducted at 20 ecoregional reference reaches. Identification of macroinvertebrate samples continued.

Periphyton Bioassessment Program: ADEM's Periphyton Bioassessment Program was initiated following a 2002 104(b)3 grant from USEPA Region IV Atlanta. The purpose of the project was to test the ability of three bioassessment methods to document impairment from nutrient enrichment. As part of the project, protocols and sampling equipment were developed or made, staff were trained to conduct assessments using these protocols, and data were analyzed. All data collected during 2002 have been analyzed and reported to USEPA Region IV. A final report was sent to USEPA Region IV. Based on analysis of periphyton data collected during 2002 and 2004 and comments and feedback from Dr. Jan Stevenson, a periphyton bioassessment specialist, ADEM revised its periphyton bioassessment protocols. ADEM received an extension on the grant in 2005 to use remaining funds towards revising its periphyton bioassessment protocols and training personnel to use these protocols during the 2005 ACT Basin Assessment and at CWA §303(d) streams and rivers and requested by the Water Quality Unit of ADEM's Water Division.

Intensive periphyton sampling was conducted during October at thirteen stations in conjunction with ADEM's Cahaba River Intensive Survey Project. With funding from USEPA Region 4, all diatom samples associated with the project have been sent to Dr. Jan Stevenson at Michigan State University for identification to assist with development of effects-based nutrient criteria for the Cahaba River TMDL. Flow and periphyton bioassessment data were analyzed to help determine the sampling frequency necessary to obtain representative samples of nuisance algal growths in the flashy, highly urbanized Cahaba River basin.

EIS staff met with EPA Region 4 Atlanta, EPA Region 4 Athens, and Dr. Jan Stevenson, a periphyton bioassessment specialist, to discuss the long-term periphyton bioassessment sampling plan associated with the Cahaba River Intensive Survey Project. The main points of the discussion were summarized and sent to Dr. Jan Stevenson, USEPA Region 4 Atlanta, USEPA Region 4 Athens, and ADEM's WQS for review prior to a follow up discussion to determine the 2006 sampling design. Flow and

EIS staff attended the USEPA Region 4 Periphyton Bioassessment Training Workshop in Athens, Georgia. As one of the few states in the region with an established Periphyton Bioassessment Program, EIS staff were asked to present an overview of their revised 2005 Periphyton Bioassessment Methods and the periphyton bioassessment sampling conducted during 2005 to develop statewide nutrient criteria for rivers and streams.

2005 Rivers and Streams Monitoring: In response to several EPA initiatives and monitoring requirements ADEM revised its 1997 monitoring strategy. The revised strategy was approved by the USEPA in September of 2005. The revision is designed to meet emerging data needs and address weaknesses identified during the last 5-year monitoring cycle. In cooperation with the Water Quality Branch of the Water Division, staff developed new methods to assess overall water quality. These methods are being evaluated during a pilot study to be conducted in the Alabama, Coosa, and Tallapoosa (ACT) River basins during 2005.

Macroinvertebrate sampling was completed at 9 stations, located primarily within the ACT and Cahaba River basins. To date, forty-four percent of the 2005 macroinvertebrate samples have been processed and identifications are underway.

Forty fish community surveys were completed during FY 05. New methodology was implemented to be more quantitative in nature. All fish were identified. Data is currently being entered into the database including taxa, field parameters, and new taxa biological characteristics and habitat preferences.

Rivers and Reservoirs Monitoring Program (RRMP)

RRMP Objectives:

- *develop and maintain a water quality database for all rivers and publicly-accessible lakes in the state sufficient to conduct comprehensive assessments of*

water quality, categorize waters for the Integrated Assessment Report, develop criteria, and determine criteria compliance;

- *establish trends in river and lake trophic status that are only established through long-term, consistent monitoring efforts; and,*
- *conduct biennial assessments of water quality for all publicly-accessible lakes as required by Section 314 of the Clean Water Act.*

RRMP 2005: Monthly water quality sampling, April-October was completed during 1st quarter for the Surface Water Quality Screening Assessment of the reservoirs and tributary embayments of the ACT Basins. In addition to the 89 intensive survey stations, four ambient trends and two 303(d) stations were also sampled according to the RRMP protocol. Data compilation for these projects continued in the 1st quarter. Completion of data entry and transfer to the master departmental database is anticipated during the 2nd quarter.

Water quality sampling was completed during the 4th quarter for the critical period monitoring (August) of Smith, Bankhead, Tuscaloosa, Oliver, Holt, Warrior, and Big Creek reservoirs in accordance with the two-year monitoring rotation of all lakes in the state. Data entry and transfer into the departmental database was completed during 1st quarter.

RRMP 2006: Work has begun on planning the FY06 RRMP station list. Currently, there are approximately 35 stations tentatively scheduled for sampling, including the reservoirs, tributaries and river sections of the Tombigbee and Escatawpa River Basins, along with 35 stations monitored for the critical period and nutrient criteria monitoring programs.

Reporting: The report *Surface Water Quality Screening Assessment of the Tennessee River Basin-2003 Vol. II: Reservoir Tributary Embayments* was completed during the 4th Quarter. Publication of this report will be completed soon. Work continued on the draft report of the *Water Quality Assessment of the Southeast Rivers and Reservoirs 2004*.

Data Requests: ADEM Water Division, ADEM Public Affairs, ADCNR, Auburn University, Alabama Power, University of Alabama, Georgia Dept. Of Natural Resources, Geological Survey of Alabama, USFWS, USGS, Middle Tallapoosa Clean Water Partnership, TVA, and private citizens.

Ambient Monitoring

Staff in Birmingham, Mobile and Montgomery conducted 129 sampling visits at Ambient Monitoring Stations during the 4th Quarter of FY05. Water samples for both chemical analyses and field parameter measurements were collected. All QA'd and received chemical and field data was entered into the '05 Master database. QA/QC of data continues. Efforts continue to merge all Ambient Monitoring data into the Master database on the file server. The Ambient Monitoring Program station and parameter list was re-evaluated by the Water Quality Branch and updated to better reflect current

ambient monitoring needs. The revised sampling effort began in March and continued throughout the year.

QA/QC and Data Mgt

The ADEM Freshwater Macroinvertebrate Biological Assessment SOP is currently being updated. As part of this effort, ADEM's macroinvertebrate data, including quality control records, were analyzed to develop data quality requirements that will be used to assess and report data quality results for each member of the macroinvertebrate laboratory staff. Additionally, ecoregional reference reach data were analyzed to define bioregions, stream classes where the macroinvertebrate communities are relatively homogeneous. Bioregions were primarily defined by Level III ecoregion and stream size. Data from each bioregion was then used to develop assessment guidelines or criteria. A draft of the SOP was completed and reviewed during the 2nd quarter. The draft will be revised based on results of the 2005 Rivers and Streams Pilot study testing ADEM's new Monitoring Strategy and bioassessment methods..

ADEM created a Station Parameter Request Form and Table to allow individuals to enter the locations that they would like monitoring, as well as the parameters that they would like collected at each location. The Water Quality Section of the Water Division entered all sampling requested for FY 06. A query will be developed to combine the table into one complete list of stations and parameters to be collected annually.

ADEM created procedures to download LIMS for direct data entry into ADEM's 2005 ACCESS database, minimizing duplication of effort and the possibility of transcription errors. ADEM downloaded all data collected by EIS through mid-December. These data are currently being transformed for uploading into ADEM's centralized ACCESS database. A small ACCESS database was also created to ensure that data uploaded from LIMS into ACCESS had been QAed for completion and correctness.

ADEM created a Macroinvertebrate Laboratory database to track sample collection, processing, and identifications. It was modified during the quarter to make data entry and reporting easier. It has enabled ADEM to calculate results of quality control measures associated with sample processing and organism identification. The results of these measures were reported to management monthly or upon request.

Algal Growth Potential Testing (2005)

Algal Growth Potential Tests (AGPT) were conducted on 38 samples collected from 13 reservoirs in the ACT basins during August 2005. Additionally, AGPTs were conducted on 2 Elk River stations collected three times during the year.

WET Testing

NPDES commitments for FY06 were completed during December. WET laboratory functions will be minimal until after the laboratory moves this year. The ADEM Whole Effluent Toxicity Testing SOP is currently being updated. As part of this effort, EPA guidelines are being reviewed to determine how results/endpoints should be reported.

Microbiology

Efforts are ongoing to improve QC with the addition of several procedures which include PT testing, known positive/negative testing and HPC. Since documenting the bacteriological quality of reagent water is a very intensive test we are hoping to coordinate with the state's health department laboratory that already does the test. Currently the laboratory evaluates only fecal coliforms, but *E. coli* testing will be initiated soon.

Other Items of Interest

- ADEM staff attended a Periphyton Bioassessment Workshop sponsored by USEPA Region IV. This workshop was a follow up to refine and improve current periphyton sampling techniques.
- Staff attended the Rapid Geomorphic Assessment Training on 11/3/05 on two different creeks near Montgomery AL.
- Staff attended the Region 4 TAG meeting in Atlanta, Georgia.
- Staff attended a two-day training course on EPA's waterbody tracking database.
- Staff attended a meeting with the Water Division to discuss ADEM's Periphyton Bioassessment Program with interested parties from the MS Department of Environmental Quality working towards developing similar methods in Mississippi.
- Staff sent CWA Section 319 grant updates to the Office of Education and Outreach for their annual report to USEPA.
- Staff attended the Alabama Water Resources Association meeting in Orange Beach.
- Staff attended a meeting with the Alabama Power Co. regarding 316b regulations and a fish kill downstream of Neely Henry Reservoir dam.
- Staff attended multiple interagency conference calls conducted for development of a National Water Quality Monitoring Network.
- Staff provided review/comment to ADEM Public Affairs on a departmental newsletter article written regarding development, and EPA approval of, the State of Alabama Water Quality Monitoring Strategy.
- Staff conducted a meeting with FOD/Mobile staff regarding development of a Coastal Water Quality Monitoring Plan.
- Staff attended a meeting with the GSA and ADCNR regarding development of statewide fish IBI metrics development.
- Staff attended a meeting of the National Water Quality Monitoring Council in Pensacola, FL.
- Staff attended the 8-Hour Hazardous Waste Training Course at the ADEM Main Building.
- Staff conducted an intradepartmental Water Quality Monitoring Coordination Meeting for 2005-2006.
- Staff provided information and review/comment to ADEM Public Affairs for a press article regarding the SWPBA Biologist of the Year Award for Lisa Huff.
- Staff prepared a map for the EMC displaying potential ADPH fish consumption advisory listings at a fish tissue limit of 0.3 ppm Hg.
- Staff attended a meeting with the ADCNR/MRD regarding coastal gillnet deployment by the ADEM for the FTMP.

- In 2005, ADEM personnel organized a Biological Data Comparability Workgroup for USEPA Region 4 states. As part of this effort, ADEM personnel are currently working on Method Performance Documentation Forms to be used to report results of the Region 4 Data Comparability Workshop conducted during the 2004 SWPBA meeting.
- At the request of the Program Committee, ADEM personnel have organized a Special Session for the 2006 North American Benthological Society Meeting. The Session is entitled “Development of indicators that Link Nutrient Enrichment to Biological Community Response”.
- Staff reviewed and made comments on the amphibian survey conducted by AMEC Earth & Environmental Inc., involving a CSX railcar spill.

MISSISSIPPI PROGRAM

HIGHLIGHTS

Since the SWPBA Meeting, most of our efforts centered on the aftermath of Katrina and Rita, and the assessment of damages and the monitoring of water bodies in south Mississippi and the Delta (see sections below). Needless to say, things have been extremely busy for us at the Mississippi DEQ. Speaking of the recent SWPBA meeting, Mike Beiser and Ann-Marie Denman wish to express their thanks to the membership for allowing us to serve as officers of the association during the past year. I was definitely a privilege. Those of us in Mississippi who worked to put the annual meeting together in 2005 wish to say one last “thank you” to all members and guests who attended. Special thanks to all who presented papers. Thanks also to Jim Harrison for the TALUS workshop; to Dr. Joe Flotemersch for the large river workshop; to Susan Holdsworth and Ellen Tarquino for the WSA session; and to Lisa Huff for the method performance/data comparability session. We also would be remiss if we failed to acknowledge and thank our meeting sponsors: CC Lynch and Associates, Ecoanalysts, Inc., Environmental Enterprises, Eureka Engineering, Third Rock Consultants, YSI, and our three major sponsors, Hach Environmental, Malcolm-Pirnie, Inc, and Strategic Diagnostics, Inc. It was a great time!!!

We have been able to continue our usual efforts to conduct biological assessments on those Wadeable streams currently on the state’s 303(d) list. We continued monitoring of Wadeable streams, estuaries, lakes and reservoirs, and initiated monitoring of non-Wadeable rivers and streams, for nutrient criteria development. We completed our efforts for 2005 with the NCA program, the Wadeable Streams Assessment, our fish tissue monitoring program, and Natural Resource Damage and Response work. We are set to begin several new studies that include development of a fish community IBI for assessing water quality in the Mississippi Alluvial Plain Ecoregion (the Delta). We are in the process of completing development of a monitoring strategy and an invertebrate IBI for non-Wadeable rivers and streams with Dr. Joe Flotemersch, EPA ORD Cincinnati, which will also hopefully include an IBI-type tool using phytoplankton in large rivers.

Farewells

To Dr. Bill Stephens, Head of the Assessment Section, who has left the MDEQ to take a job in the private sector in the Houston, TX area. We wish him much success his new endeavor.

and

After nearly 4 years as our Regional Biologist for the northern region of Mississippi, Ann-Marie Denman has left and taken a job as an aquatic ecologist with the South Carolina DHEC. All of us at MDEQ will miss her, and wish her all of the best.

and

Phil Bass, Director of the Office of Pollution Control has announced his retirement effective March 31, 2006. He will take a position with EPA's Gulf of Mexico Program at the Stennis Space Center in south Mississippi. In Phil's words, he "began his career with MDEQ at age 22 with a full head of hair". During his tenure at MDEQ, Phil has served as Laboratory Director, Chief of the Field Services Division, and ultimately Director of the Office of Pollution Control. Those of you who know Phil know how dedicated he is to the use of biological monitoring. Give Phil a call or drop him an e-mail and wish him well in his new career. Those of us who were fortunate enough to work closely with him are privileged to have had that opportunity. Of course, we wish him much success and all of the best. His are shoes that can never be filled.

HURRICANE KATRINA

Following the landfall of Hurricane Katrina, the Pascagoula and Pearl River basins experienced massive fish kills involving hundreds of thousands of fish of all kinds, as well as crayfish, freshwater mussels and blue crabs. As these mortalities were reported, MDEQ and The Mississippi Department of Wildlife, Fisheries and Parks (MDWF&P), conducted investigations to determine the cause. In all cases, the water color had turned a dark black, and measurements of dissolved oxygen concentrations showed that extremely low levels of oxygen were present. In many cases the levels of dissolved oxygen were less than 1.0 ppm. A limited amount of chemical sampling and analysis was conducted, and no toxins were noted in the water samples.

After review of the data collected by MDEQ and MDWF&P, and in consultation with other states, (specifically South Carolina, Florida and Louisiana) it was learned that similar incidents of severe and widespread mortality of aquatic life occurred after other hurricanes had made landfall. It was concluded that the wind and rainfall from Hurricane Katrina had introduced a large amount of organic matter into the water into the water, and the decomposition of this material, as well as re-suspended material from in-stream sediments, caused the oxygen depletion, which in turn killed the fish and other aquatic life.

Working with the MDWF&P, MDEQ Field Services Division biologists have estimated the monetary value of the fish and other aquatic life affected by Hurricane Katrina to be in the 10's of millions of dollars. The MDWF&P has conducted population surveys of fishes in some of the rivers affected by Hurricane Katrina, comparing this information with past population surveys. Results indicate a slight to substantial reduction in the resident fish populations.

EPA Region IV in particular, along with many other state and federal agencies, rushed to our aid, as we have continued to monitor the air, water, sediment and resident biota in the

affected areas of the state. Biologists from MDEQ, the Gulf Coast Research Lab, the MS Department of Marine Resources, NOAA, FDA, EPA SEDS, EPOA ORD, USGS, and others assisted in collection of water, bacteriological, tissue, and sediment samples in order to assess damages and to monitor recovery in the aftermath of the storm. As results of these investigations were interpreted, reports and press releases were made available to keep everyone informed. These results indicate that the seafood from MS, AL, and LA was safe to consume. No toxins were noted in water and sediment samples, and bacterial levels lowered quickly as waste water treatment plants were repaired. Despite the tremendous devastation to the area, study after study continues to show very limited chemical contamination. The primary damage to aquatic systems appears to be physical damage to habitat such as oyster reefs and grass beds.

Katrina Related Monitoring Links

- The EPA Bay/Estuary report is available at www.epa.gov/region4/sesd/reports/2005-0926.html.
- EPA Report on Five NPL facilities is available at: www.epa.gov/region4/sesd/reports/2005-0928/Katrina.Final.Report.12-23w.pdf
- Testing results by state, county or testing site can be viewed by using EnviroMapper at: www.epa.gov/enviro/katrina/emkatrina.html.
- NOAA Monitoring Results are available at: http://www.st.nmfs.noaa.gov/hurricane_katrina/water_sediment_survey.html.
- This link that is basically an Index to US EPA's Hurricane Katrina website: <http://www.epa.gov/katrina/index.html>
- This link will drill down to some of the interpreted results. <http://www.epa.gov/katrina/testresults/index.html>
- The next link is specifically for data collected through various survey conducted Post Katrina in STORET format http://oaspub.epa.gov/storetkp/dw_home

Future Attractions

- EPA Region 4 Report on the soil and sediment samples at eight coastal facilities is in final review.
- EPA/ORD is analyzing their data and a report should be available in 30-60 days.
- USGS is planning a series of publications including the bacteria and water quality monitoring in MS.
- EPA, NOAA, and USGS are collaborating on a pre and post Katrina Assessment Report.

HURRICANE RITA:

Similar to the events that unfolded after the landfall of Hurricane Katrina, Hurricane Rita caused extensive fish kills in the Mississippi Delta. Among the water bodies affected were the Sunflower River, Steele Bayou, Deer Creek and Black Bayou. All kinds of fish were affected. As these mortalities were reported, MDEQ and The Mississippi Department of Wildlife, Fisheries and Parks (MDWF&P), conducted investigations to determine the cause. In all cases, the water color had turned a dark black, and measurements of dissolved oxygen concentrations showed that extremely low levels of oxygen were present. A limited amount of chemical sampling and analysis was conducted, and no toxins were noted in the water samples.

Similar to the response and follow-up investigations conducted for Hurricane Katrina, the MDEQ and the MDWF&P investigated these incidents as they were reported, and the MDWF&P has conducted additional population surveys of fishes in the affected streams and rivers. These results indicate that in this area also, significant reductions in the fish population have occurred.

Field Activities

National Coastal Assessment

Hurricane Katrina also affected our 2005 National Coastal Assessment sampling, which involved David Barnes, Emily Cotton, and Barb Viskup, even though by the time it made landfall, all samples had been collected. Hurricane Katrina severely damaged the Gulf Coast Research Laboratory, where many of the samples from this study were being processed. All paper and electronic records survived, as did all of the chemical analysis of water samples. Benthic samples from 2004 and 2005 were destroyed before they could be analyzed. Also lost were the 2005 samples of sediments, chlorophyll, and fish.

Biological Sampling of Wadeable Streams

We continue our efforts to sample the 303(d) listed waters of the state, those waters requiring WLA studies, and those wadeable streams where potential water quality problems are suspected. The 2006 sampling effort consists of approximately 50 sites (including replicated and duplicated sites). Sampling is ongoing at this time, although it has been hampered by rainfall typical for this time of year.

Taxonomy, verification, etc. has been completed for phases III and IV of this initiative, and the assessment of the data for reporting purposes is underway.

Non-wadeable Rivers and Streams IBI Development Study

The field sampling portion of this study was scheduled for completion in September 2005, but Hurricane Katrina caused major fish kills in the Pascagoula and Leaf rivers, which resulted in a suspension of the field efforts. Sampling for the Big Black River Basin and the Tombigbee Basin were completed as scheduled. Chuck Thompson, will again lead the field sampling effort in August 2006 to sample approximately 20 sites within the Pascagoula Basin, and possibly sites in an additional basin. The USGS will again partner with us in this study.

All of the benthic samples collected during 2005 have been processed. Taxonomy of the benthics and phytoplankton is underway. All chemical analyses of water column samples have been completed. It is our intention to develop a macroinvertebrate-based IBI as well as a phytoplankton-based IBI for assessment of the data.

Mississippi Alluvial Plain IBI Development Study

In order to address the condition of streams and rivers in the highly impacted Mississippi Alluvial Plain Ecoregion, we partnered with the Corps of Engineers Engineering Research and Development Center (ERDC) in Vicksburg to develop a fish-based IBI for assessment of these waters. Scientists from the Experiment Station have a great deal of background data from many of these streams and rivers. Additional sampling, to be combined with the historical database available at the experiment station, was to occur in late summer of 2005. This is another of our studies that was delayed due to the influence of Hurricane Rita. The sampling is now re-scheduled to begin in April or May.

Nutrient Criteria Development Projects

We have been heavily involved in data collection from wadeable and non-wadeable streams, lakes and reservoirs, and estuaries with the intent of using these data to develop nutrient criteria for our state's water quality standards for several years. In 2005, an effort was begun to assess the data.

Lakes and Reservoirs Nutrient Criteria Development Study

The large reservoir portion of this study was conducted from November of 2002 until November 2004, and included the 50 largest lakes or reservoirs in the state. A total of 98 sampling locations were situated on these lentic systems. Sample collection for nutrients, chlorophyll, dissolved oxygen, pH, specific conductance, transparency, and profiling are conducted during mid-March through mid-April, then again during June-September. During the spring of 2004, we sampled the major tributaries to a few selected lakes and reservoirs, and the outflows. Data is being reviewed and trophic status and ALUS will be determined and included in the 305(b) Report.

Our second phase of the project began in November 2004, involved approximately 50 lakes between 100 and 500 acres. The original plan was to sample for a two-year period according to a scheme similar to that used for the larger lakes and reservoirs. However,

after a year of data collection sampling was suspended. We are also looking at the data from these sites.

Wadeable Streams Nutrient Criteria Development Study

This study was initiated in March 2004 as we began to collect data to ultimately use for the development of nutrient criteria for wadeable streams. Sample size for this study was 102 sites, most of which had been previously bioassessed. Two samplings were conducted in the spring (March and April) and another two were conducted during the late summer (September and October). Water samples were collected for chlorophyll, nutrient analysis, and in-situ parameters, and at a subset of the sites a periphyton survey will be conducted this year.

In 2005 we began the second year of data collection. Again, Hurricane Katrina intruded and caused some of the sites to require re-sampling. We are now examining the results of our sampling.

Estuarine Nutrient Criteria Development Study

Like the other nutrient criteria development studies, with the exception of large rivers, the data collection phase of this study was concluded in late 2005 with the final diurnal study being completed, and is now in the analysis phase.

National Wadeable Streams Assessment Project

MDEQ participated in the Wadeable Streams Assessment (WSA) Project, having contracted the field and laboratory work to the Department of Wildlife and Fisheries at Mississippi State University. Our portion of the project was 13 sites. We are now awaiting the final report from EPA.

Natural Resource Damage Assessments

Staff Biologists continue to be involved in several projects of this nature:

Leaf River Oil Spill near Collins.

The restoration phase is now nearly complete. The stream has been restored, and seems to be settling nicely. Even the 11 plus inches of rainfall that accompanied Hurricane Katrina did little to damage the new channel and its features. Tree planting should begin soon to re-establish the riparian zone. Wood Duck nesting boxes have been in place for nearly a season, and monitoring of these boxes to determine use will occur in the near future.

Bayou Casotte/Bang's Lake Spill

On April 14, 2005 a waste phospho-gypsum stack ruptured, spilling 17.5 million gallons of untreated process water into Tillman Creek, Bayou Casotte and Bang's Lake. The spilled water had a pH of 2.4, and contained high concentrations of phosphate (5,000 ppm), ammonia (~350 ppm) and fluoride (1500 ppm). While this spill killed fish and other aquatic life in all three water bodies, Bang's Lake (a part of the National Estuarine Research Reserve) was impacted the most severely. Tens of thousands of fish (spot, eels, redfish, speckled trout, alligator gar, etc.) as well as shrimp, crabs, and oysters were all killed as a result of this spill. Oysters showed nearly 100% mortality. Approximately 15 acres of the marsh grass was "burned" as a result of this incident.

Fish Tissue Monitoring Program

A figure illustrating all advisories currently in effect in Mississippi waters is given below:

Mississippi Fish Advisories

July 2001

