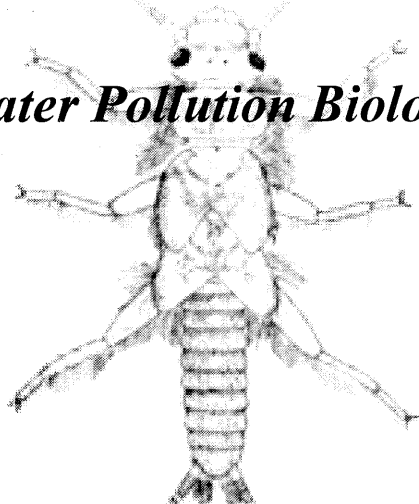


SWPBA

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Southeastern Water Pollution Biologist Association



Newsletter

Volume 23, Number 2

June 1999

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ENVIRONMENTAL SCIENCES
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Table of Contents

President's Letter	1
SWPBA Database Record	3
SWPBA EPA Region IV Membership	4
Springmaid Beach Reservation Form and Maps	25
Ron Raschke Retires	29
EPA Region IV	34
Alabama	35
Florida	37
Georgia	40
Mississippi	43
North Carolina	45
South Carolina	48
Tennessee	52

SWPBA

Southeastern Water Pollution Biologists Association

Greetings:

I trust everyone is full tilt into their summer sampling by now. We are busily trying to get arrangements lined up for this year's annual meeting, October 26-28, 1999 at Springmaid Beach in Myrtle Beach, South Carolina. More details on the meeting site, hotel reservations, etc. are contained in this issue of the SWPBA Newsletter.

Since the last Newsletter, Dr. Ron Raschke has retired. Included in this issue of the Newsletter are a few photos from Ron's retirement luncheon and excerpts from his farewell address. I made him promise to show up for the annual meeting in October so everyone can wish him well in person.

CALL FOR PAPERS

This is the official first call for papers. If you think you will be presenting a paper or poster session at this year's annual meeting please send a working title. This will allow us to prepare a draft agenda that many people need to submit along with their travel request. If you have the information available, please include the following:

Title

Author(s) and their affiliations (First author should be the presenter)

Abstract

I realize it may be a little early to provide an abstract and final title, but send something we can use to start fleshing out a draft agenda.

HOTEL ACCOMMODATIONS

Take a look at the hotel reservation information located elsewhere in this Newsletter. The hotel cafeteria will be closed during our meeting, so all meals will have to be taken offsite, but there are lots of restaurants nearby. Each room has a refrigerator and microwave (and coffeepot!) so you may want to do a little grocery shopping when you get there.

NOTE THAT THE RESERVATION DEADLINE DATE IS AUGUST 26, 1999!
THAT'S RIGHT, 8/26/99!

I know that this date is so far in advance of the meeting date that you probably will not know for sure who is attending from your agency, but please get a rough idea and reserve some rooms for your agency. The motel will accept a Purchase Order Number (PO#) as a means of securing the reservation and as a means of payment for the stay, so it may be worthwhile to explore that possibility with your finance office. That way you may not need to know exactly who will be in each room. Any reservations made with a PO# need to include the business billing address. Also, read and be aware of the cancellation policy.

If there are any updates to phone numbers, E-Mail, and snail mail addresses since the February Newsletter please send them and all Newsletter submissions and related information/inquiries to:

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I look forward to seeing you all in October. Have a good summer,

A handwritten signature in black ink, appearing to read "David", with a stylized flourish extending from the end.

David Chestnut, SWPBA President

SWPBA Database Record

Codes: ' ' ' ' ' ' Contact: Yes / No Newsletter: Yes / No Member: Yes / No

Name: _____

Title: _____

Phone: () - Fax: () -

Date Joined: / / E-Mail: _____

Agency: _____

Division: _____

Section/ _____

Group _____

Address: _____

City

State

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 |

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Office of Pollution Control
Biological Services Section
3002-C Bienville Blvd.
Ocean Springs, MS 39564

Fax: (228)875-1583
Phone E-mail address Interest Codes

Barbara J.	Viskup	Environmental Scientist III	(228)875-2893		19 1 11 12 6
------------	--------	-----------------------------	---------------	--	--------------

Mississippi Department of Environmental Quality
Office of Pollution Control
Biological Services Section
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Oxford, MS 38655

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Phone E-mail address Interest Codes

Matthew B. "Matt" Hicks	Environmental Scientist III	(601)234-3733		1 12 19 13
-------------------------	-----------------------------	---------------	--	------------

*SWPBA Contact/Newsletter

North Carolina

North Carolina Department of Environment and Natural Resources

Division of Water Quality

Water Quality Section

P.O. Box 27687

Raleigh, NC 27611

Fax: (919) 733-9919

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Phone User-ID Interest Codes

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---------	---------	-----------------------------	----------------	-----------------	----

North Carolina Department of Environment and Natural Resources

Division of Water Quality

Environmental Sciences Branch

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Raleigh, NC 27607

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Phone User-ID Interest Codes

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North Carolina Department of Environment and Natural Resources

Division of Water Quality

Aquatic Survey Unit

4401 Reedy Creek Road

Raleigh, NC 27607

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E-mail Address Format: User-ID@h2o.enr.state.nc.us

Phone User-ID Interest Codes

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-------	--------	-------------------------------------	----------------	--------------	---

(Unit is over the Aquatic Toxicology and Intensive Survey Group)

North Carolina Department of Environment and Natural Resources

Division of Water Quality

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Lance	Ferrell	Environmental Biologist II	(919) 733-2136	Lance_Ferrell	2 3 6
John	Giorgino	Environmental Biologist	(919) 733-2136	John_Giorgino	2 5 16 21
David 'Matt'	Matthews	Group Leader	(919) 733-2136	Matt_Matthews	2 3 22 25
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Kristie	Robeson	Environmental Biologist I	(919) 733-2136	Kristie_Robeson	2 22 25
M. Melissa	Rosebrock	Environmental Biologist	(919) 733-2136	Melissa_Rosebrock	3 22

*SWPBA Contact/Newsletter

North Carolina

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Division of Water Quality

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Parks	(919) 733-6510	Parks_Low	19
Debra	(919) 733-6510	Debra_Owen	5 16 6 7 8
Harold	(919) 733-6510	Harold_Quidley	12 20 13
Jay	(919) 733-6510	Jay_Sauber	12 3 5 6 7
Cathy	(919) 733-6510	Cathy_Tyndall	5 10 12 17 19
Ed	(919) 733-6510	Ed_Williams	12 20

North Carolina Department of Environment and Natural Resources

Division of Water Quality

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Jimmie Overton
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 Environmental Biologist
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North Carolina Department of Environment and Natural Resources

Division of Water Quality

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(919) 733-6946	Nancy_Guthrie	1 10
(919) 733-6946	Mark_Hale	12 13
(919) 733-6946	Kathy_Herring	1 15 12 19
(919) 733-6946	Dave_Lenat	1 12 15 10 19
(919) 733-6946	Trish_MacPherson	1 12 13
(919) 733-6946	Neil_Medin	1 6 12 7
(919) 733-6946	Dave_Penrose	1 10 12 15 19
(919) 733-6946	Bryn_Tracy	

Lawrence E. "Larry" Eaton
 Environmental Biologist
Nancy Guthrie
 Environmental Biologist
Mark Hale
 Environmental Biologist
Kathy Herring
 Environmental Biologist
David Lenat
 Environmental Biologist III
Trish MacPherson
 Environmental Biology Supervisor
Neil Medlin
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David Penrose
 Environmental Biologist
Bryn H. Tracy
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North Carolina

North Carolina Department of Environment and Natural Resources
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Eric	Galamb	Environmental Biologist	(919) 733-6946
Steven	Kroger	Environmental Biologist	(919) 733-6946
Karen	Lynch	Environmental Biologist	(919) 733-6946
Gregory	Price	Environmental Biologist I	(919) 733-6946

North Carolina Department of Environment and Natural Resources
Division of Water Resources
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Mail Box MGO3A3
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*Dave Braatz Aquatic Ecologist (704) 875-5430 dabraatz@duke-energy.com 5 12 15 19

South Carolina

**South Carolina Department of
Health & Environmental Control**
Bureau of Water
Water Monitoring, Assessment, & Protection Div.
Aquatic Biology Section
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Scott	Castleberry	Aquatic Ecologist	(803) 898-4205
Harry	Gaymon	Aquatic Ecologist	(803) 898-4050
Dr. James B. Glover		Aquatic Ecologist	(803) 898-4081
Rick	Renfrow	Aquatic Ecologist	(803) 898-4104
Peyton Bruner	Sasnett	Aquatic Ecologist	(803) 898-4397
Edward M. 'Butch'	Younginer	Section Manager	(803) 898-4399
Joe	Napolitano	Aquatic Ecologist	(803) 898-4400
Chad	Altman	Aquatic Ecologist	(803) 898-4035

**South Carolina Department of
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Barrett	Stone	Aquatic Ecologist	(803) 898-4402
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South Carolina

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Katty Stecker

Section Manager

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Kimberly Gandler

Volunteer Monitoring

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gundlekm

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Jeanie Eidson

GIS Manager

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eidsonjp

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*SWPBA Contact Newsletter

TENNESSEE

The Nonpoint Source Program
Division of Agricultural Resources
Tennessee Department of Agriculture
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Jennifer Thompson	Environmental Specialist
Tim Thompson	Environmental Specialist
Greg Upton	Manager

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(615) 360-0695
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(615) 360-0695

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		15 19
		15 19 27
		26

Tennessee Department of Environment and Conservation
Water Pollution Control - Chattanooga Field Office
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Greg Russell	Biologist

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	chatto2@mail.state.tn.us	1 12 25 19 9

Tennessee Department of Environment and Conservation
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Greg Overstreet	Biologist

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Water Pollution Control - Johnson City Field Office
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Tina Robinson	Environmental Specialist

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Amy	Mullikin	Environmental Specialist	(423) 594-6035	knoxvfo2@mail.state.tn.us	12	25			
Paul	Stodola	Biologist	(423) 594-6035	knoxvfo2@mail.state.tn.us	12	13	1	8	15

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E-mail address

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David	Turner	Environmental Specialist	(423) 594-6035	knoxvfo2@mail.state.tn.us	12	15	19	25	

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E-mail address

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Roy B. "Burke"	Martin	Environmental Specialist	(901) 386-7939	memphfo2@mail.state.tn.us	12	19	25		
Larry	Everett, Jr.		(901)368-7961						

Phone

E-mail address

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Nashville, TN 37243

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Jimmy	Smith	Environmental Specialist	(615) 650-7240	jsmith19@mail.state.tn.us	1	12	10	17	15
Tim	Wilder	Environmental Specialist	(615) 650-7240	nashvfo2@mail.state.tn.us	8	12	25		

Phone

E-mail address

Interest Codes

TENNESSEE

Tennessee Department of Environment and Conservation
Water Pollution Control - Natural Resources Section
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Mike	Lee	Environmental Specialist
Donna K.	Wingfield	Environmental Specialist
Daniel	Eager	Program Manager
Robert	Baker	Assistant Manager
Mike	Lee	Environmental Specialist
Lori	Munkeboe	Environmental Specialist
Eric	Sinclair	Environmental Specialist

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(615) 532-0625	mlee@mail.state.tn.us	9	8		
(615) 532-0684	dwingfield@mail.state.tn.us	9	8	12	13
(615)532-0708	deager@mail.state.tn.us	8	9	26	25
(615)532-0710	rbaker2@mail.state.tn.us	1	8	9	12
(615)532-0712	mlee@mail.state.tn.us	8	9	25	
(615)532-0705	lmunkeboe@mail.state.tn.us	8	9	12	15
(615)532-0715	esinclair@mail.state.tn.us	9	12	16	25

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Greg	Denton	Environmental Manager
Carol	Freeman	Biologist

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(615)532-0625	gdenton@mail.state.tn.us	26	17	16	10
(615)532-0625	cfreeman@mail.state.tn.us	17	16	22	30

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Sherry	Wang	Environmental Manager

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(615) 532-0625	bhamilton@mail.state.tn.us	15	19		
(615) 532-0625	lturrini@mail.state.tn.us	15	19		
(615) 532-0625	swang@mail.state.tn.us	26	22	25	16

TENNESSEE

Tennessee Department of Environment and Conservation
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John	Peryman	Environmental Specialist
Roger	Petrie	Environmental Specialist
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(423) 481-0995
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rpetrie@mail.state.tn.us
director@mail.state.tn.us
msmith7@mail.state.tn.us

12	1
26	30
12	1
12	1
30	19
26	12
26	30

Tennessee Department of Health
Central Laboratory Facility
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Robert Worthington

Director, Environmental Laboratory

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Phone

E-mail address

Interest Codes

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Environmental Laboratory
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Chad	Augustin	Biologist
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Kim	Sparks	Biologist
David	Stucki	Biologist

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(615)262-6332
(615)262-6331
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(615) 262-6329
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darmwine@mail.state.tn.us

13	1	10	15	26
1	2	12	15	
1	2	12	15	
1	12	2	8	21

Phone

E-mail address

Interest Codes

*SWPBA Contact Newsletter

LEROY SPRINGS & COMPANY, INC.
SPRINGMAID BEACH RESERVATION FORM

S W P B A

10/25/99 - 10/28/99

Name _____
Address _____
City _____ State _____ Zip Code _____
Home Phone _____ Work Phone _____
Arrival Date _____ Departure Date _____

Room Types	Requested	Availability	Price	Description
Live Oaks 4-Room Efficiency	_____	_____	\$0.00	3 Bedrooms-1 King, 4 Queens, 2 Baths, Balcony, Sleeps 10
Live Oaks 2-Room Efficiency	_____	_____	\$0.00	2 Bedrooms- 3 Queens, Balcony, Sleeps 6
Live Oaks Suite	_____	_____	\$0.00	2 Queens, Sitting Area with Couch, Balcony, Sleeps 4
Live Oaks Regular Room	_____	60	\$74.46	2 Queens, Private Oceanview Balcony, Sleeps 4
Ocean Tower	_____	_____	\$0.00	2 Queens, Private Oceanview Balcony, Sleeps 4
Ocean Double	_____	_____	\$0.00	2 Queens, Private Oceanview Balcony, Sleeps 4
Ocean Window	_____	_____	\$0.00	2 Queens, Window View of Ocean, Sleeps 4
Ocean Balcony	_____	_____	\$0.00	1 Double, 1 Twin, Private Oceanview Balcony, Sleeps 3
Ocean Suite	_____	_____	\$0.00	Queen Bedroom, Living Room with Sofa Bed, Sleeps 4
Courtyard 2-Room Efficiency	_____	_____	\$0.00	2 Double Bedrooms (1 in Kitchen Area), Shower Only
Boulevard	_____	_____	\$0.00	1 Double, 1 Twin, Overlooks Courtyard, Sleeps 3
Hallman House	_____	_____	\$0.00	5 Bedrooms-2 Twins, 1 Double, 1 Queen, 1 King, 2 Baths, Sleeper Sofa, Dining & Living Rooms, Kitchen, Sleeps 12

RESERVATION DEADLINE

The deadline for making reservations is 08/26/99 . All requests for additional nights will be confirmed by written confirmation. Reservation forms may be returned to Springmaid Beach with one night's deposit (as indicated above) either by mail or fax. For accuracy and verification purposes, Springmaid Beach does not accept telephone reservations for group events.

CANCELLATION POLICY

Guests cancelling reservations at least 15 days prior to the arrival date will be refunded their entire deposit less a \$10.00 processing fee. Cancellations made within 15 days of arrival will result in complete forfeiture of deposit. Changes in length of stay made within 15 days or upon arrival will result in complete forfeiture of deposit.

VISA OR MASTERCARD ACCEPTANCE

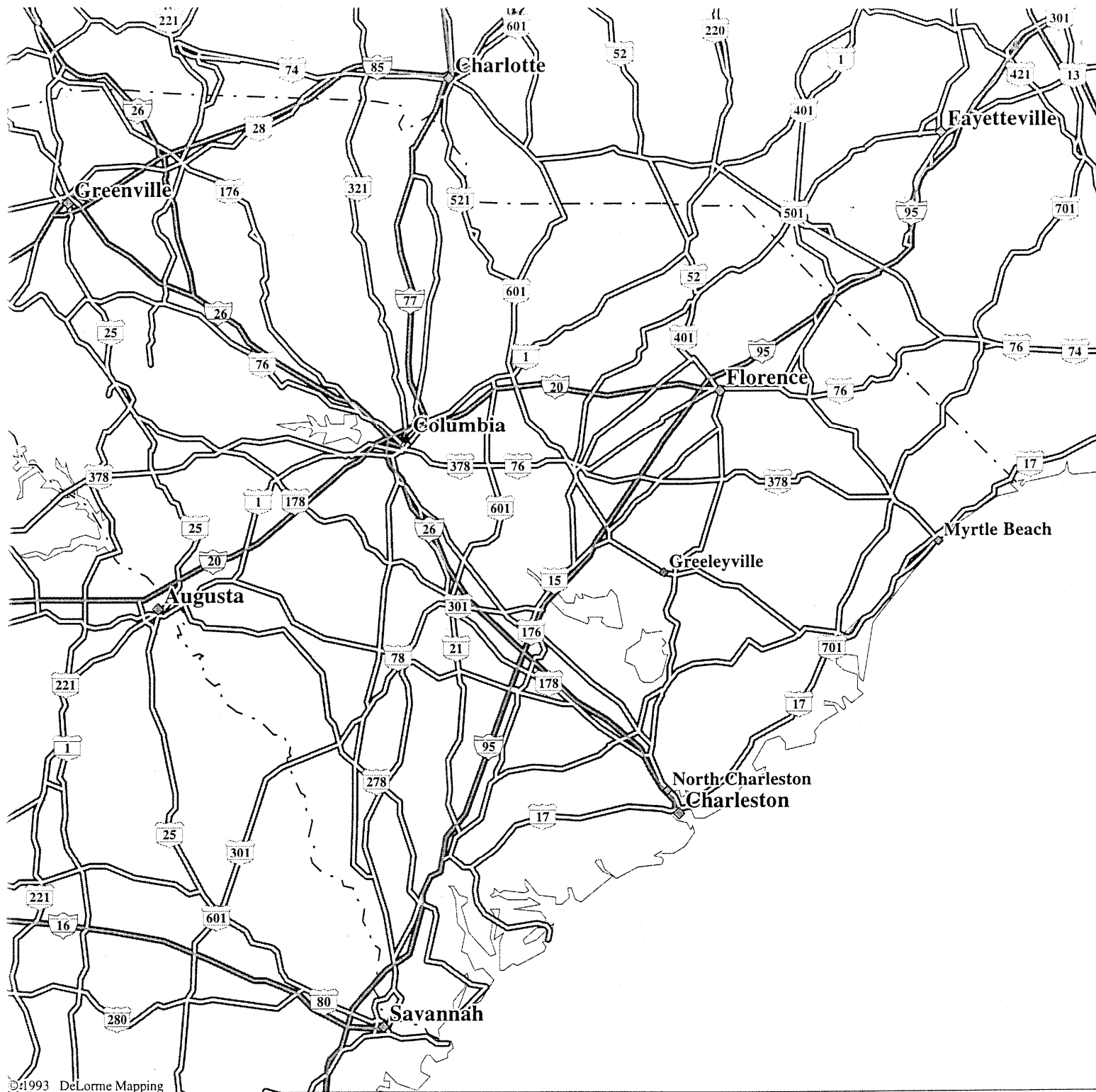
Credit Card Number _____ Expiration Date _____

I hereby agree to let Springmaid Beach charge the above credit card in the amount of \$ _____. Furthermore, I fully understand and accept the terms of Springmaid Beach's cancellation policy and agree that unpaid incidental charges remaining at check-out will be charged to my card.

LOCATION

Springmaid Beach is located at 3200 South Ocean Boulevard in Myrtle Beach, South Carolina, a quarter mile across from the old Myrtle Beach Air Force Base.

Signature (unsigned forms are considered invalid)



LEGEND

- ★ State Capitol
- ◆ Town, Small City
- ◆ Large City
- Interstate, Turnpike
- US Highway
- State/Prov Boundary
- Population Center
- Interstate Highway
- US Highway

Open Water

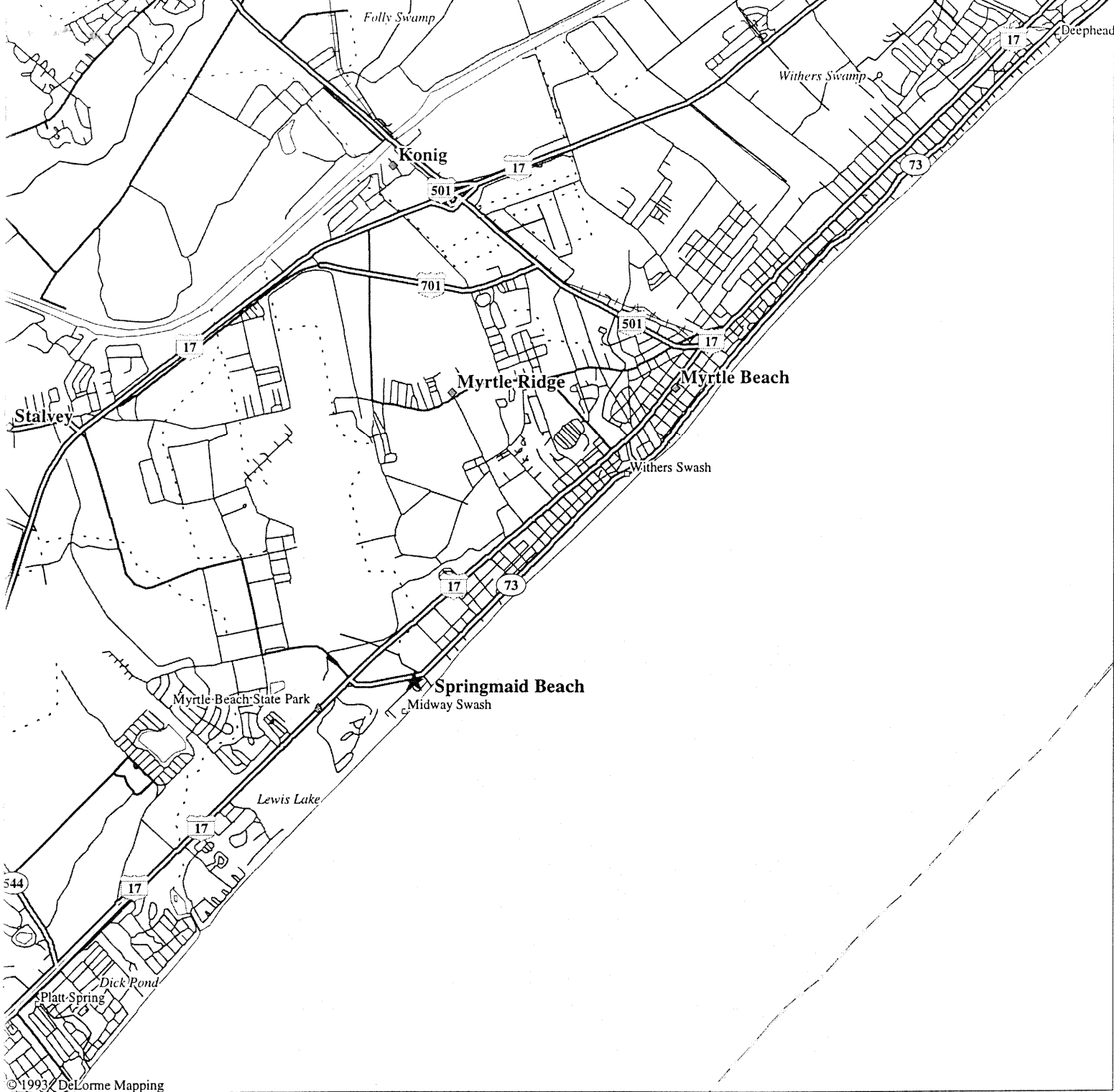
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20 Miles
















50 KM

Mag 8.00

Tue Jun 01 14:15:21 1999



LEGEND

- | | | | |
|---|-------------------|---|--------------------|
|  | State Route |  | State Route |
|  | Geo Feature |  | US Highway |
|  | Town, Small City |  | Railroad |
|  | Park |  | River |
|  | US Highway |  | Intermittent River |
|  | County Boundary |  | Open Water |
|  | Population Center | | |
|  | Street, Road | | |
|  | Major Street/Road | | |

Scale 1:62,500 (at center)

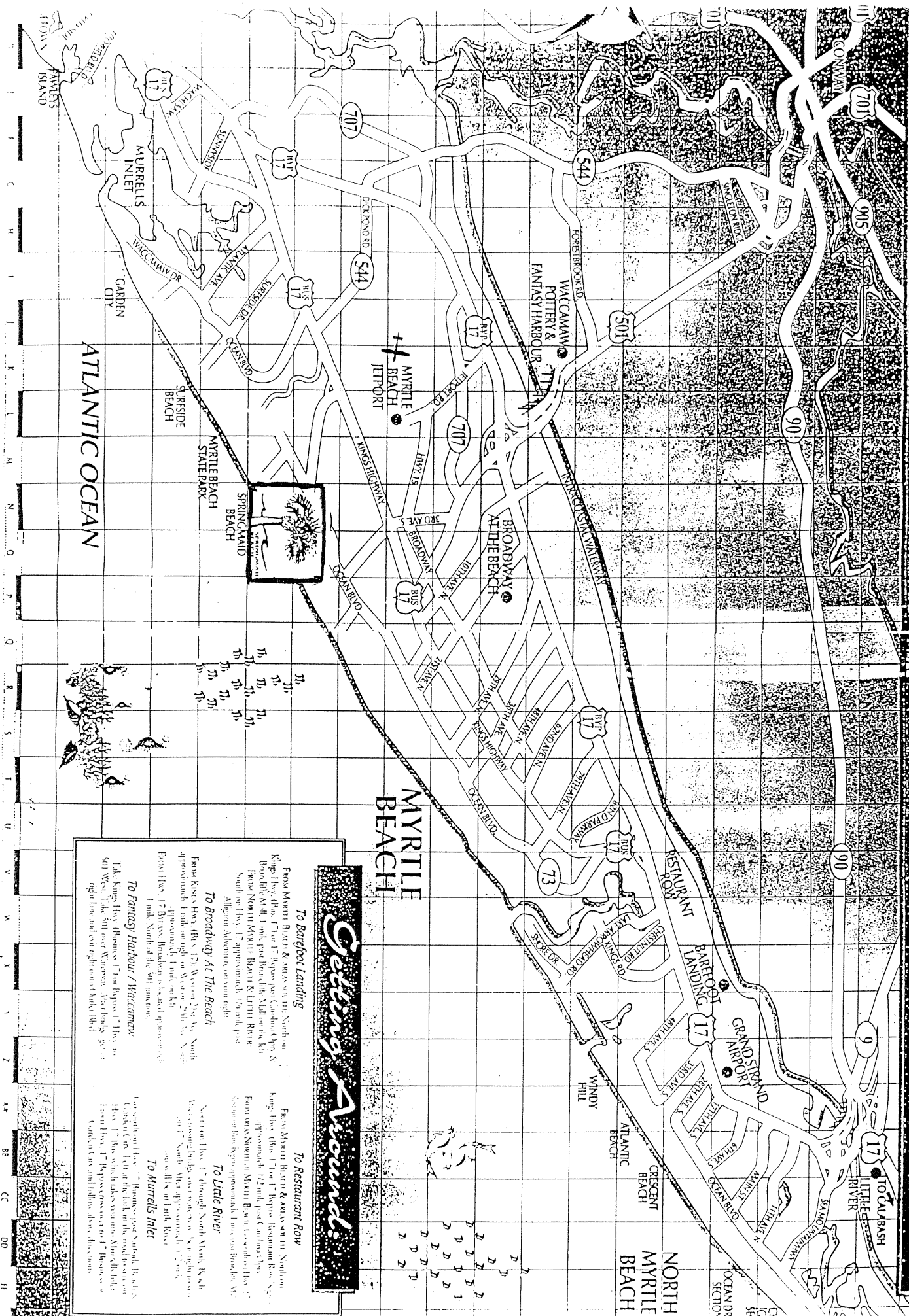
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Mag 13.00

Tue Jun 01 14:22:42 1999

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Getting Around:

To Barefoot Landing

FROM MEXICO BLAZEN & ARLIN on the Southern Kings Hwy. (Hwy. 17) on 17th pass past Carolina Open & Braethill Mall. 1 mile past Braethill Mall on the left. FROM NORTH MEXICO BLAZEN & LUTIN RIVER. Southern Hwy. 17 approximately 1/6 mile past

To Broadway At The Beach

FROM KISSA, HWY. (B.R. 17) WEST ON 2ND AV. NORTH
APPROXIMATELY 1 MILE ON RIGHT ON WEST ON 2ND AV. NORTH
APPROXIMATELY 1 MILE ON LEFT

To Fantasy Harbour / Waccamaw

Take Kings Hwy. Business 1 to Bayport 1 to 500 West Take 501 over W. across Ave. bridge, go on right lane and exit right onto (Duke Blvd

To Restaurant Row

FROM MORRIS BLUM & ARNOLD, the Northern Kings, this 100- to 175-gram Restaurant Roast is approximately 1/2 inch past (cooked) point.

FROM JOHN NICHOLSON, Morris Blum Co., another fine Restaurant Roast is approximately 1 inch past (cooked) point. At

To Little River

North on Hwy 1 through North York Road
crossing bridge over water. Is in right
of way North. After approximately 1/2 mile
you will be in Park River

To Murrells Inter

to switch on Hwy. 17 Business just inside Berkeley, California, left at the fork in the road to sit on Hwy. 17. This switch takes you into Marin's hills from Hwy. 17 bypasses over to 17 Business or Cardero Canyon and follows above classrooms.

RON RASCHKE RETIRES

Ron Raschke, one of the founding members of SWPBA, retires after almost 40 years in the pollution control business and 30 years of federal service. Ron's career in pollution control began in high school and college when he dug ditches and put in sewers to pay for college expenses. His masters and Ph.D. work were on the taxonomy and ecology of algae in sewage ponds. Stints also included work at the U.S. Public Health Service's National Water Quality Monitoring Network, a Fulbright at Adelaide University in Australia studying diatoms of the Murray River, and teaching at Rutgers University before coming to Athens and spending 28 years with EPA Region 4 as an aquatic biologist.

Ron's close association with state biologists began in the 1970's when Lee Tebo and Ron began to meet with Region 4 biologists to address quality assurance and other issues. Out of those first meetings, SWPBA was spawned. The need was great because state of the art pollution biology was undergoing radical changes in methods, approaches and interpretation of data. With the Clean Water Act, biologists were being called upon more and more to become part of the decision making process. The situation for state biologists was pathetic. Georgia and Tennessee were the only states with any "strong" capability, but thanks to the leadership of Bob Logan, Phil Bass, Bob Cooner, Russ Sherer, Steve Tedder, and Landon Ross, the other state programs have developed into first class operations. Most states only had one or two biologists doing it all. Ron still remembers visiting with Bob Logan, Ron Haupt and he thought Mike Mills in Frankfort for a QA evaluation. He said, "I sat in a basement with a stream flowing down the middle of the office as we conducted the evaluation." Ron always looked on the QA evaluation as a positive visit that would help the states get equipment and personnel. He hopes he did some good over the years and still has fond memories of visits at the Harold Mullican farm in Tennessee. He said he was sorry that he didn't get to stay very long at the SWPBA meetings in Helen, but he had to bury his granddaughter. He said he would try to make the South Carolina meeting.

Ron will live out his "retirement" in Athens. Plans include church service, more fishing, taking care of the "honey do" list, and some vacations in the U.S. and abroad. Ron and his wife, Jo, will celebrate 40 years of marriage next March. Plans are to celebrate in Hawaii. He said he would not completely retire from the profession. In the autumn, he plans to form RLR & Associates, an environmental consulting business. Ron wants to thank all of the members who participated in his retirement luncheon and sent cards and notes. He was asked how he got into the environmental protection business? He summed up his love of clean water with the following:

"One of my fondest memories as a young boy was Saturday hikes with Dad and my brothers around Carter Lake on the outskirts of Omaha, Nebraska. The lake was an oxbow formed from the meandering of the Missouri River. As lakes go, it wasn't much of a lake, but for a young boy it offered adventure, discovery and plain old fun. It was a place where I caught my first fish, found my first pet turtle, learned to skip stones, and received my first "swimming" lesson.

One day, Dad threw me into deep water to observe my aptitude toward swimming. That was my first exposure to the underwater world from a fish's perspective. I still remember the aquatic plants licking at my arms and legs like a dog short on salt. After my short lesson in aquatic biology and survival, Dad immediately recognized my inaptitude (in swimming circles, I'm known as a sinker) and pulled me up. Upon receiving a tongue lashing from my mother on his qualifications as a swimming teacher, he enrolled me in JCC and YMCA courses. My experience left me undaunted. I loved the water and eventually became a professional diver and aquatic biologist.

All good things sometimes come to an end. Swimming at Carter Lake stopped. Someone developed a hog lot along part of the lake's shore. Somehow a lake loses its appeal when you have to swim with the hogs. Nothing was done or could be done to stop the establishment of the hog farm. It remained there for many years. There weren't many laws in those days to protect the integrity of a lake nor was there an environmental consciousness like today.

As I grow older and reflect on the important things of life, those pleasant experiences with family and good friends are the things that warm my heart. I don't know what the status of Carter Lake is today; maybe a city has grown over it. But I remember the Carter Lake of yesteryear through the eyes of a young boy bent on adventure and discovery with his father." LAKELINE 8:2 (March, 1988)

Footnote: Ron found out later that the hog farm was gone and Carter Lake had been rehabilitated through the Clean Lake's Program.

Ron's Retirement Luncheon

On April 28, 1999, a retirement luncheon was held for Dr. Ron Raschke. The following are a few photos taken on the auspicious occasion.

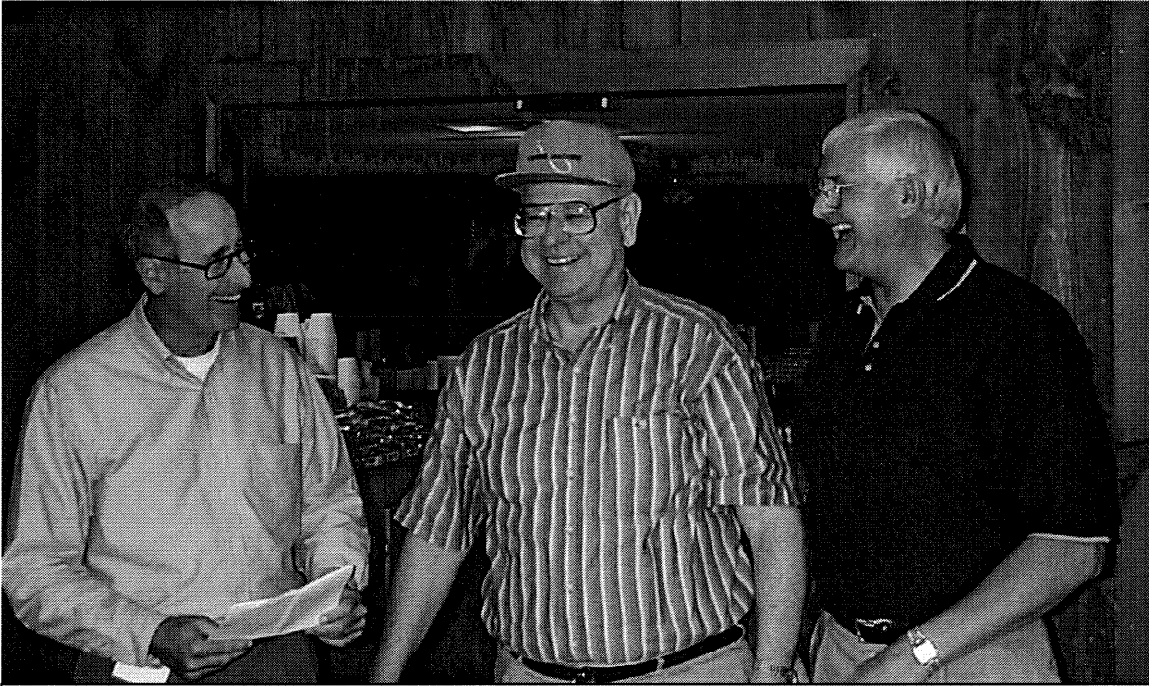


Photo 1. Ron, in his "Fishing Machine" hat, shares a laugh with Hoke Howard and Ron Weldon.

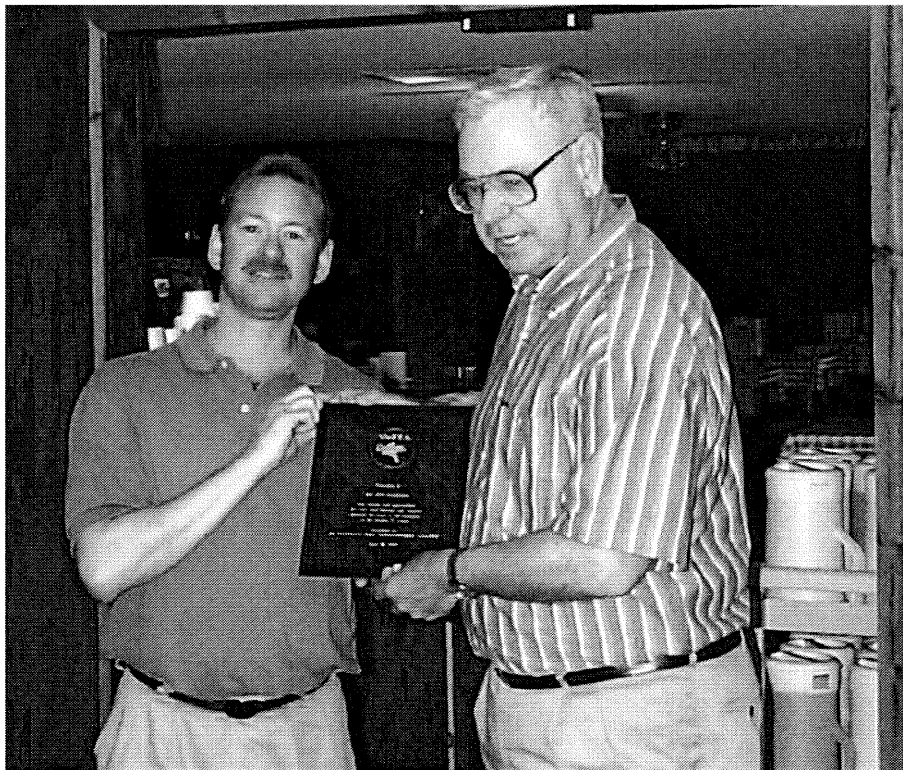


Photo 2. SWPBA presented Ron with a plaque in appreciation for his support over the years. SWPBA President Dave Chestnut, shown here, presented the award.

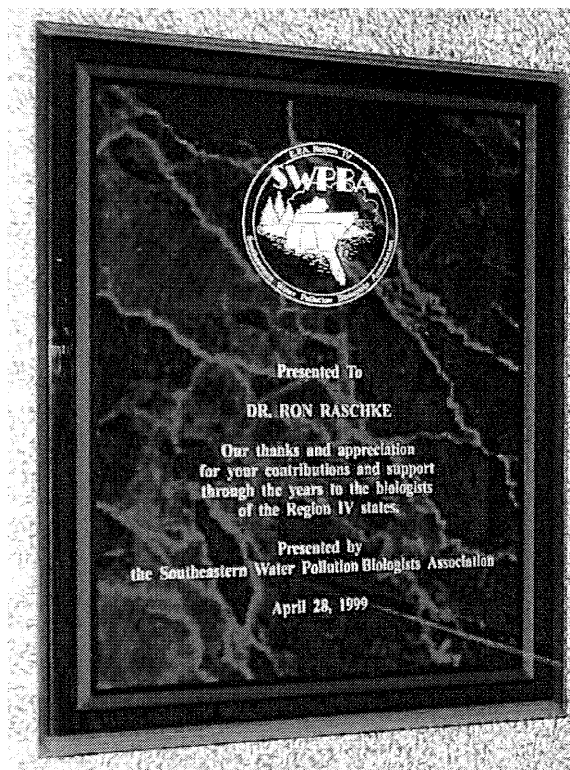


Photo 3. The plaque presented to Ron on behalf of SWPBA.



Photo 4. Some other familiar faces were in attendance. Here is Delbert Hicks, one of the "Old Originals" as Ron is indicating.

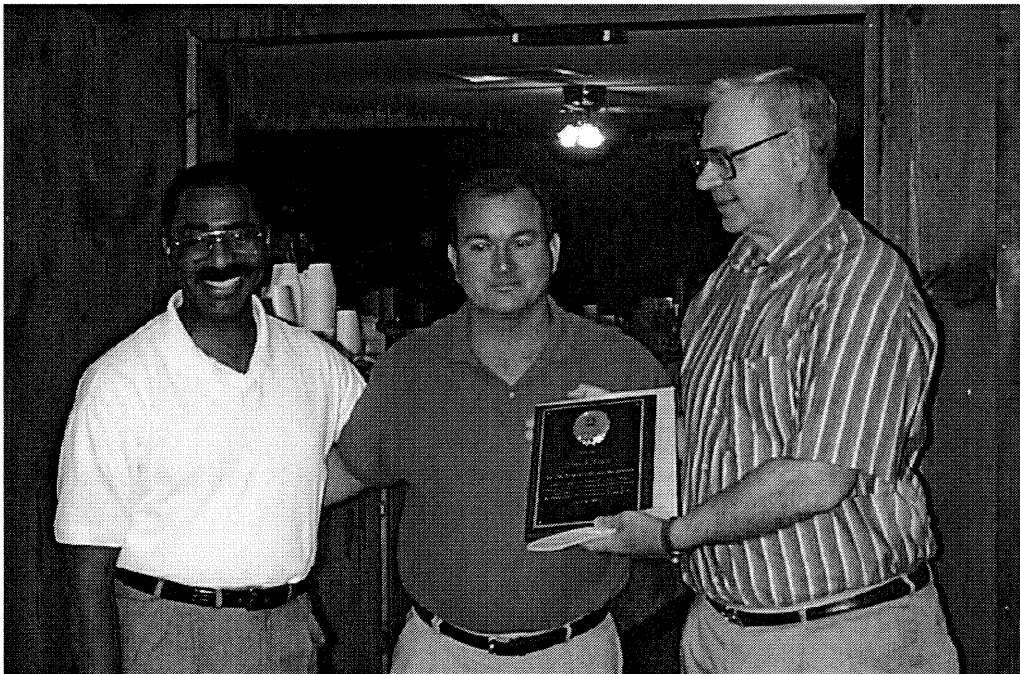


Photo 5. EPA awarded Ron a plaque for his years of service. Antonio Quinones and Phil Murphy, shown here, presented it.

EPA, Region 4

SESD, Ecological Support Branch

Staff of SESD and EPA, as well as many other individuals gathered in late April to roast and toast Dr. Ron Raschke at his retirement luncheon held in Athens GA. The program was very entertaining and inspirational as many stories of Ron's professional career and private fishing exploits were discussed. Ron was presented with numerous awards and some were even serious. Dave Chestnut presented a plaque from SWPBA recognizing his contributions to the advancement of science in our field as well as acknowledging his contributions to the states. His presence and professionalism will be missed by all but we know he will enjoy his retirement.

Due to the combination of the ever increasing requirements of TMDL lawsuits and the Anormal@ workload of projects requested by the programs and other special requests, this has been one of the busiest years ever for the ESB. Studies have been conducted in many areas and staff of the Water Management Division have been utilized with most of the studies.

Work continues on the assessment of biological condition, habitat, geomorphology, sediment loading, and water quality conditions for TMDL development for both the Chattooga River Watershed and the Broad River Watershed within the Savannah River Basin. Additionally, an effort is underway to assist Mississippi DEQ monitor the condition of Aevaluated watersheds on Mississippi's 303(d) list. The study plan is being developed, in cooperation with DEQ, to monitor biological, habitat, and water quality conditions in approximately 60 of these drainage areas in July of this year.

Waste Load Allocations and water quality modeling studies have been conducted on the Bay St. Louis and Escatawpa systems. These studies were conducted with the assistance and cooperation of Mississippi DEQ. The studies included extensive water quality sampling and analyses of the bay areas and tributary streams to provide information to allow modeling of the hydrodynamics of the systems. The results will be used to develop TMDLs and calculate wasteload allocations for the systems. Other activities include work on the Use Attainability Analyses for Birmingham Alabama area streams, and Savannah Harbor D.O. modeling efforts.

The Branch has also begun work on Phase 2 of the Everglades study. Two sampling events have occurred in an attempt to sample the wet and dry seasons within the Everglades. A third sampling event is planned for the late summer-early fall time frame. The sampling concentrates on the distribution of mercury and nutrients in the systems as well as response of wetland species to nutrient concentrations.

Additionally, ESB is participating in the Georgia Ecoregion Delineation Project. A drive through of the entire state was completed in mid May. During the drive-through geology, soils, plant species, stream and valley morphology, and aquatic conditions were observed and discussed in order to refine ecoregion boundaries. Candidate reference streams were visited during the recon. Photographs of representative areas were taken for use in the poster that will be produced for the project. In addition to Glenn Griffith the team consisted of aquatic biologists, soil scientists, geologists, a geomorphologist, and experience plant ecologists. Additional field work to identify candidate reference streams and further refine ecoregion boundaries in south Georgia is planned later this summer.

ALABAMA

Well here it is the middle of the sampling frenzy in Alabama. The info included in this newsletter is just a quick sketch of some of what we have been doing.

Reservoir Water Quality Monitoring (RWQM) Program

Intensive water quality monitoring of reservoirs in the Chattahoochee and Conecuh River basins was initiated April 1999. These reservoirs will be monitored monthly April-October, at multiple locations. Collected data will allow ADEM to estimate the current water quality and trophic state of impounded waters of the Chattahoochee River, Conecuh River, and Yellow River Basins. West Point and Walter F. George Reservoirs will be monitored for water quality effects of point and nonpoint sources as directed in the Feasibility portions of the Clean Lakes Program Phase I Diagnostic / Feasibility Studies of these two reservoirs. Current chlordane contamination levels of fish in these two reservoirs, originating from nonpoint sources, will be investigated by collection of fish tissue samples. The water quality of Harding Reservoir, located immediately downstream of West Point Reservoir, will also be monitored in this project to determine water quality and current chlordane contamination levels of fish. The water quality of reservoirs in the Conecuh River and Yellow River Basins, affected primarily by nonpoint sources, will be investigated as will bioaccumulative contaminants in fish of these reservoirs. Data collected by this project will be used to update the 305(b) Water Quality Report to Congress, ADEM Reservoir Water Quality Monitoring (RWQM) Program database, ADEM Fish Tissue Monitoring Program database and will be added to the ADEM GIS database. In addition, data collected by this study will be presented at the annual meetings of the Alabama Fisheries Association and Alabama Water Watch Program.

Reservoirs of the Coosa, Tombigbee, and Escatawpa basins will be monitored once during August in accordance with the two-year monitoring rotation of all lakes in the state.

For further information on the RWQM Program contact Fred Leslie at (334) 260-2752 or fal@adem.state.al.us.

Fish Tissue Monitoring Program

The results of the analyses conducted on fish collected in the fall of 1998 have been forwarded to the Alabama Department of Public Health and are available upon request.

Point / Nonpoint Source Assessment Programs

Environmental Indicators (EI) Section staff continued monitoring quarterly for water quality indicators at 12 stations within the Paint Rock River watershed. Chemical and biological assessments were conducted at 10 stations. Sampling will be continued in 1999 in association with the Paint Rock River Nonpoint Source Watershed Project.

Water quality and bioassessment data were collected from eight locations in southeast Alabama watersheds. This study conducted by EI and Auburn University will establish historical data for watersheds that have the potential to be impacted by the expanding poultry industry. Samples were collected in August and October 1998. Data collection will continue in January and April-September 1999.

State Parks Project

The study of watersheds associated with Alabama State Parks in accordance with the 104(b)(3) Study Proposal entitled: "Monitoring of Watersheds Associated with Alabama State Parks Utilizing Chemical, Physical, and Biological Assessments" has been completed. The report includes results of macroinvertebrate, chemical and physical assessments in the watersheds of 9 State Parks and ecoregional reference sites.

NEWS FROM THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

BIOASSESSMENT PROGRAM

Bio-Recon and Habitat Assessment Training

In conjunction with the ambient surface water “Tier 1” monitoring strategy, the training of water management district biologists to conduct DEP’s Biological Reconnaissance and Habitat Assessment (Bio-Recon) began in April in Tallahassee. Bio-Recons are a screening tool used to identify which sites are biologically healthy or which are suspected of being impaired for future Stream Condition Index (SCI) sampling. The training sequence includes introductory training, an apprenticeship, a calibration of trainees’ analyses, and testing/certification of the biologists. It will involve eight trips with DEP biologists and take approximately one year to complete.

Bioassessment Meetings

All DEP Bioassessment/Biocriteria meetings and agendas and the Bio-Recon training sessions are now announced on DEP’s WEB site at
www2.dep.state.fl.us/water/Slerp/bio/default.htm

Ecosummaries, biology SOPs, taxonomic keys, and biology reports can be accessed at
www.dep.state.fl.us/biology/library.html

Papers

The following papers by DEP employees have been published:

Polhemus, J.T. and R.P. Rutter. 1997. *Synaptonecta issa* (Heteroptera: Corixidae), first new world record of an Asian water bug in Florida. *Entomological News* 108(4): 300-304.

Graves, G.A., D.G. Strom and B.E. Robson. 1998. Stormwater impacts to the freshwater savannas preserve marsh, Florida, USA. *Hydrobiologia* 379: 111-122.

BOOK REVIEW

by Jim Hulbert, DEP

Restoring Life in Running Waters: Better Biological Monitoring

by James R. Karr and Ellen W. Chu

The new book by Karr and Chu is a “must buy” for biologists with regulatory and water management agencies. The book is a well-written account of all aspects of bioassessment and biocriteria development and multimetric evaluation of macroinvertebrates and fish. It should prove invaluable in support of the scientific creditability and cost-effectiveness of multimetric bioassessment techniques, both for management and rule development challenges.

The opening paragraph sets the direction of the book: “Running waters are the lifeblood of a continent. No wonder. Life, all life—from viruses to human society—depends on water. No water, no life; altered waters, altered life. The study of life in running waters reveals the history of an entire continent’s landscape and foretells its ability to sustain life in the future. In North America, the story of life in running waters is sobering: the health and integrity of living systems in the continent’s rivers have declined steadily for more than a century. *Restoring Life in Running Waters* is about reversing this trend.”

The premise of the book is "... that the biology of water must be taken seriously to restore or maintain the integrity of the nation's waters." In fact, the book is formatted by chapters that are actually titled as 37 Premises and 7 Myths. The following examples should whet your appetite:

Premises: "Biological monitoring is essential to protect biological resources"; "**Health and Integrity** are meaningful for environmental management"; "Putting probability-based sampling before defining metrics is a mistake"; "Multivariate statistical analyses often overlook biological knowledge"; and "We can and must translate biological condition into regulatory standards."

Myths: "Indexes combine and thus lose information" and "The sensitivity of multimetric indexes is unknown."

In the context of these premises and myths the authors show why biological standards are a must for protecting surface waters and point out that, compared with using chemical analyses alone, the use of bioassessments would usually double the stream miles not meeting their designated use. They emphasize that the most direct measurement of whether surface waters are meeting the mandates of the Clean Water Act is through the use of metrics of species richness, feeding guilds, species composition, and relative species abundance. In essence they compare Indices of Biological Integrity, which integrate measurements of biological attributes such as species diversity and environmental indicator species, with the way economic indices such as the Dow Jones combine financial measures to assess the national economy. Maybe we can look forward to the evening news announcing the leading Indices of Biological Integrity on a daily basis.

Jim Karr is a professor of fisheries and zoology at the University of Washington and has also taught at the University of Illinois, Purdue University, and Virginia Polytechnic Institute. He developed the Index of Biotic Integrity (IBI) for fish in 1981 and later for macroinvertebrates to measure the effects of human activities. **Ellen Chu** has a Ph.D. in biology and is a scientific writer and editor with Northwest Environment Watch in Seattle.

NORTHWEST FLORIDA

Donald Ray reports that his bioassessment activities over the past winter included the following:

- *Supported a District 319 stormwater grant on paving dirt roads with a post-paving impact bioassessment.*
- *Supported a district agricultural BMP grant with bioassessments of twenty-six sites over a four-county area of the Pensacola Bay Basin.*
- *Used GIS (ArcView land-use maps) to determine areas with predominately agricultural lands. Preliminary data indicated biological impairment at twenty-five sites.*
- *Supported district Submerged Lands and Environmental Resource Program with bioassessment reports of deadhead logs sampled in the Choctawhatchee and Chipola rivers. Total taxa, Florida*

Index, and EPT biometric values for these old-growth pine and cypress logs were much higher than SCI and Bio-Recon scores from multihabitat sampling in these two rivers.

- *Supported enforcement staff with a bioassessment of a stream impaired by a commercial sand mine operation.*
- *Assisted Tallahassee TMDL staff with three bioassessments of 303(d)-listed sites in the Blackwater River State Forest. Spent an additional two days with state foresters in BRSF identifying sediment load sources to the Blackwater River system.*
- *Prepared and wrote nine ecosummaries of Panhandle streams for publication on DEP's website.*
- *Prepared and wrote twelve TMDL summary reports of 303(d)-listed Panhandle streams for Tallahassee TMDL staff.*
- *Assisted in coordinating stream biological inventory/ecological assessment work on Eglin Air Force Base with the US Geological Survey and FAMU.*

Watershed Planning and Monitoring Program (WPMP)
Water Protection Branch
Environmental Protection Division
Georgia Department of Natural Resources

It's time for the second Georgia installment to the 1999 SWPBA newsletter. First order of business is to inform everyone that the Water Protection Branch has moved off of Capitol Hill in downtown Atlanta to a new facility at Tradeport, located 9 miles south of Atlanta near the airport. Our new address is:

Georgia Department of Natural Resources
Environmental Protection Division
Water Protection Branch
4220 International Parkway
Suite 101
Atlanta, GA 30354

Program phone numbers are:

Branch Chief (Alan Hallum)	404/675-6232
Engineering and Technical Support Program (Bob Scott)	404/675-6233
NonPoint Source Program (Larry Hedges)	404/675-6240
Permitting, Compliance and Enforcement (Jeff Larson)	404/675-2680
Watershed Planning and Monitoring (Mork Winn)	404-675-6236

The facility is new and was designed specifically for our program. No more parking problems or office space shortages. Please feel free to stop by just to visit and see where we are. HOV interstate lane placement makes it necessary to use access roads to reach us if you're in a single occupancy vehicle (SOV), so call for detailed directions.

We haven't opened every box here at the new facility yet, but we are making progress. If you've had any difficulty finding us or contacting us since the first week of April, you now know why. Sorry for any inconvenience. The move places the whole Branch under the same roof for the first time, and moves us out of the Atlanta City Limits (into Clayton County) as part of our effort to decentralize governmental offices in the downtown area.

SIGNIFICANT ACTIVITIES:

In accordance with the "zero tolerance" policy adopted by the Board of Natural Resources, 7 Consent Orders were executed during the months of February and March, 1999. These Orders were issued to address permit violations and sanitary sewer overflows that occurred in the Coosa and Chattahoochee River (headwaters to Troup County) basins as well as 14 counties in the metro Atlanta area. A total of \$18,500 in monetary settlements was collected as the result of the three orders.

The Water Protection Branch issued a public notice on February 8, 1999 for the proposed General NPDES Permit No. GAR 100000. This General Permit will regulate the discharge of storm water from construction activities. The public notice also announced that EPD would hold a public meeting at Tradeport on March 10, 1999, to be immediately followed by a public hearing to receive oral comments on the propose for the General Permit. Written comments were accepted through the close of business on Friday, March 12, 1999. As expected, the permit's requirements that developers monitor

the turbidity of the receiving stream and that projects over 250 acres must apply for an individual NPDES permit are generating a significant amount of negative feedback from the regulated community.

The EPA/State Water Managers' Meeting was held on February 18, 1999 in Atlanta. Several representatives of the NonPoint Source Program attended a subgroup meeting on storm water issues. EPA announced that their promulgation of the Phase II storm water regulations would be delayed from March 1, 1999 until October 29, 1999. EPA plans to modify their General NPDES Permit for Storm Water Discharges from Construction Activities, applicable only in non-delegated states, in order to address the issue of potential impacts to 303(d) listed waters. EPA also announced a modified NPDES Storm Water Enforcement Strategy which would focus primarily on non-notifiers for industrial and construction general permits, secondarily on permittees which are not following permit requirements.

On February 25, there was a meeting of the Atlanta Region Storm Water Management Task Force to discuss proposed modifications to the Atlanta Area NPDES Municipal Separate Storm Sewer System (MS4) permits. These permits will be reissued in June 1999 and EPD is proposing various changes to the storm water management programs required by the permits, including increased management activities in areas impacting 303(d) listed waters. Twenty-two people presented oral comments during the hearing. In addition, some seventy-nine written comments were received before the end of the public comment period on March 12, 1999. WPB staff are continuing to review the comment letters. Where appropriate, the proposed general permit may be revised to address the comments. The WPB anticipates that the final permit, which will regulate tens of thousands of construction sites across the State, will be issued by the EPD Director in May.

On February 26, 1999, the EPD issued the NPDES Permits to the City of Atlanta for its Combined Sewer Overflow treatment facilities

As a result of citizen interest in the proposed general NPDES permit for the construction permit, the NonPoint Source Program prepared a background paper and issue summary for the Board of Natural Resources. A number of Board members have been approached by various individuals and organizations relative to the proposed permit. This issue was briefly discussed during the Board's monthly meeting held on March 24, 1999.

The *1999 Update, Guidelines for Eating Fish From Georgia Waters* was completed, printed and distributed in March. The document was posted to the DNR WebSite on March 26 in both a pdf (readable with Acrobat) and a direct click and read html format. Over 3,000 of the booklets were distributed or mailed to DNR EPD, Wildlife Resources, Coastal Resources, Pollution Prevention Assistance, and Parks, Recreation and Historic Sites Divisions' offices, and the U. S. Fish and Wildlife Service, U.S. Army Corps of Engineers, Georgia Power and Tennessee Valley Authority lake resource managers or contacts for their use and distribution to the public.

Major Lakes Monitoring

In April, the Intensive Surveys unit again initiated Compliance Monitoring for the three major lakes in Georgia that have chlorophyll *a* standards set. Jackson, West Point and Walter F. George will be monitored once a month from April through October. Alan

Fizer is working on Lake Jackson while Chip Cutcliff and co-ops are working on Lake Walter F George (Lake Eufaula) and West Point Lake.

Chlorophyll Processing and Analysis

Our Chlorophyll a processing and analysis equipment has been transferred from our Program biological labs to our Divisional lab facilities on 14th Street in Atlanta. Mike Basmajian will be the lab scientist in charge of processing. Chlorophyll samples will continue to be collected by field personnel, filtered, and then transported on dry ice. They will now go to the lab along with the rest of the site samples, rather than to our offices, as had been done in the past. Field personnel will no longer have to store, grind, process and calculate chlorophyll. The processing will be handled in a certified laboratory setting by specially trained individuals.

Ambient Monitoring Unit

The Georgia EPD's Ambient Monitoring Unit has been keeping busy. Georgia continues their Level Four Ecoregion delineation process. This May, a team consisting of Glen Griffith, Hoke Howard, Dave Melgaard and Bruce Pruitt with the EPA, along with Patty Lanford, Bill Kennedy and Becky Blasius with the GA EPD, and Steve Lawrence from NRCS, visited potential reference sites within each region. This team traveled throughout most of the state stopping at various stream sites in order to establish reference locations and to evaluate Ecoregion boundaries.

In June, Becky Blasius, Kristen Sanford and Shannon Winsness will be sampling macroinvertebrates for the TMDL project. So far we have conducted chemical sampling within the Oconee and Ocmulgee river basins and our goal is to obtain supplement macroinvertebrate data in order to determine the water quality at these sampling sites.

During July, the Ambient Monitoring Unit plans to stay in the field as much as possible. Plans are to continue collecting macro invertebrates at these sites and visit potential reference sites within these two basins. We will continue working to establish biocriteria using the ecoregion reference site data. Also, plans are being discussed to have our film developed to digital format. With the use of scanners, the Internet and e-mail, it should be possible to develop a digital library of photos that can be sent to anyone, anywhere instantaneously via the Web.

ISU Dive Team

The Dive Team hasn't had much opportunity to get wet lately. Most lake work has been done from above the water line. SOD and Diel studies are hopefully forthcoming, providing us the opportunity to get some down time. Meanwhile, the team is planning a dive training exercise for later this summer. We hope to make this a two day, weekend affair, allowing us the time to thoroughly train and practice with all of our equipment. Shannon Winsness and Tim Shirah have moved on to other Units, but are still valuable members of the Team. Any EPA Certified Working Divers here in the southeast interested in our program can give us a call for additional information

MISSISSIPPI HAPPENINGS

June is upon us, and we are beginning our basin studies for this year. As mentioned in the last issue of the Newsletter, we are working on the Big Black River and Tombigbee Basins this year. Analysis of last years basins, the Tennessee River Basin, the Northern Independent Streams Basin, and the Southern Coastal Streams Basin, is substantially complete in all but the Tennessee River Basin.

Several of our staff continue to serve on the states Basin Management Team for both of these studies, and thus far have assisted in the preparation of the basin status reports, and have done some intensive work as members of subcommittees reviewing various citizen concerns as well as concerns expressed by the other stakeholders.

Using the technology we learned during the AL/MS Pilot Ecoregion Project, David Loch, David Felder, Matt Hicks, and Kevin Pigott spent a week in northern Mississippi looking for additional candidate reference sites in some of the subcoregions where our sites have been altered beyond use. Doug Upton has agreed to begin the process of developing a Fish IBI for use in our monitoring programs, so he may be calling upon some of the membership from other states for help.

Ambient Biological Monitoring

We are set to begin our ambient biological monitoring during the month of June.

TMDL Study on Indian Creek, near Iuka, MS

Indian Creek is a small stream located in the extreme northeastern corner of the state. This stream receives effluent from the City of Iuka lagoon. This city has experienced a large amount of population growth. Five sites were selected for biological assessment. All information has been compiled into a draft report, and we anticipate a Final Report in the near future.

TMDL Study on Bay St. Louis

Personnel from the Mississippi DEQ and EPA Region IV met at Bay St. Louis in late April for sampling activities for the second year of a TMDL study on these recreational waters. This was an intensive, week-long study, with samples being collected from both the Bay and tributaries. Plans were to sample during a storm event, but the weather did not cooperate. Data are being analyzed and compiled. Last years data indicated very high levels of fecal coliforms following rain events.

Study on the Escatawpa River

A few weeks after sampling was completed for the Bay St. Louis TMDL, EPA Region IV was back in Mississippi to help with a study on the Escatawpa River near its confluence with the West Pascagoula River on the Gulf Coast. This study was designed by EPA and deals primarily with dissolved oxygen concentrations in these two waterbodies. Concerns were expressed that there was a dead zone in this waterway due to discharges from concentrated industries.

Tombigbee River Basin Study.

This basin is one of the most biologically diverse in Mississippi. Several threatened/endangered mussels, fishes and turtles are present in portions of this basin. The Tennessee-Tombigbee Waterway is also located in this basin. The work plan has been finalized, with 50 biological assessments, 11 TMDL studies, and several fish tissue sites scheduled. There are also plans to address the community structure of the fish population, which includes the only walleye populations within the state, and to do some work with nutrient levels and nuisance macrophytes in the Tennessee-Tombigbee Waterway. In addition, several other smaller investigations are planned to address some citizen concerns.

Big Black River Basin Study.

The Big Black River is one of the few remaining unregulated rivers in the southeast. It is experiencing accelerated erosion, possibly as the result of head-cutting, along the main stem and in some of the tributaries. Loss of aquatic habitat was the number one concern within this basin. The final work plan calls for 35 biological assessments and seven fish tissue sites to be done. Fish community work is also planned as a joint study between our staff and members of the Dept. of Wildlife, Fisheries and Parks.

Fish Tissue Monitoring

This years fish tissue sampling is already well underway, in our ambient and mercury networks. Basin sampling will begin in early June. Approximately 10 sites having been completed thus far.

Non-Point Source Studies

The Biological Services Section is in the process of implementing long-term monitoring plans aimed at evaluating Best Management Practices (BMP s) within six watersheds throughout the state. Watersheds to be monitored include Moon Lake, Cane/Mussacunna creeks, West Fork of Pushepatapa Creek, Twentymile/Donovon creeks, Upper Bogue Phalia Creek and Souinlovey Creek. Among the BMP s to be evaluated are drop structures, risers, no-till practices, conservation tillage, and animal waste BMP s. Farming practices within these watersheds include cotton, corn, rice and dairy farming. Frequency of sampling will vary depending upon land use and type of farming practices within each watershed.

NORTH CAROLINA

We're trucking along and actually accomplishing a few things, even though regional nutrient criteria, 303-D, TMDL, the Neuse River, and the Legislature lurk in the background. As you will see below we are putting concerted efforts into improving the quality, usefulness, and availability of our data. I do invite all of you to visit the Environmental Sciences Website at <http://esb.ehnr.state.nc.us> Thanks to a tremendous amount of work by Larry Ausley and others, it's become a very useful product and remains a work in progress.

ECOSYSTEMS UNIT

The Ecosystems Unit is on the brink of having its Surface Water Information Management System (SWIMS) up and running. This system will provide the WQ section the ability to track samples through the laboratory and query and evaluate surface water data in a variety of ways. The download of this information from legacy STORET (~5,000,000 records) will yield a robust dataset for management decision making (oxymoron?). We anticipate that shortly after deployment within the section, we will be able to hand database clients over to other researchers interested in contributing to, and retrieving from this data. The system has been designed with multiple "agencies" in mind. Biological data should slip seamlessly into the model shortly after initial deployment. Norm Bedwell and Phil Bethea will have produced a data management system second to none when this hits the pavement. We hope to have a fully functional model available for presentation at the SWPBA meeting this year. On similar lines, Phil Bethea and Larry Ausley attended the STORET training workshop in Atlanta at the end of April. While thoroughly impressed with the potential of the system, a serious current drawback with implementation is the lack of "batch" upload of metadata necessary for supported upload of data. Translated, this means that station and trip information must be entered in the new system by hand prior to entering sample results. While EPA has plans to incorporate this feature in the future, current priority is to develop public access to STORET via the web. We would question whether this is "cart-before-the horse" if the public will have access to a system to which states won't be able to enter data. All of the states present at the meeting voiced a similar concern. We'd suggest contacting Jeff Grubbs in EPA HQ to voice preferences on current priorities for STORET.

The phycologists of the Unit have been busy along a couple of fronts. Elizabeth Fensin has acquired fluorescence microscopy equipment to evaluate the presence of autotrophic vs. heterotrophic dinoflagellates in order to better discern possible Pfiesteria-like dinos. Mark Vander Borgh has been assessing the feasibility of implementing periphyton analyses to incorporate plant components into stream biomonitoring assessments. WE hope to utilize Lythia Metzmeier's techniques to build this capability. Somewhere on a shipping dock, there is also a digital photomicrographic system with our name on it that we will be able to utilize for electronic taxonomic collaboration. (Can anyone say "web keys"?) Steve Kroeger is completing work on a national survey of states' use of algal populations in water quality management.

Cathy Tyndall has completed rewrites of several memoranda of agreement with discharger monitoring coalitions including a second round five-year MOA with the lower Neuse River Basin Assoc. For those unfamiliar with this program, we are essentially doubling our ambient monitoring system in 3 major basins for the cost of (read-em-and-weep!) staff member.

Niki Flint has done an excellent job whipping our ambient monitoring system logistics into shape; information that will be direly needed prior to eventually uploading all this info back into STORET. In the near future we plan to begin a major review/revamp of the ambient monitoring system for costs/benefits relative to use support assessment.

Interest piqued on anything above? Inquiring minds want to know more? No problem. Check it out on the Unit's other major project, the rewrite of the Branch's web site <http://esb.ehnr.state.nc.us>. We hope to make it one stop shopping for WQ info.

BENTHOS

Basin Assessment

Planning continues for the basins to be sampled in 1999, including the Roanoke, White Oak, Savannah, Little Tennessee, Hiawassee, and Watauga. Swamp streams in the lower Roanoke and White Oak basins were sampled in February and early March, and rated using draft swamp criteria. Swamp streams in the lower Roanoke appear to be (naturally?) low in species, especially EPT taxa, and this required some adjustment to the draft criteria. The areas of low taxa richness are most easily mapped by looking for the absence of Stenonema modestum. We also took advantage of a low-water event in the Roanoke River to collect samples from five main-stem river sites. A preliminary report of the Roanoke basin sites was sent to the Nature Conservancy, indicating areas of highest water quality and listing all rare taxa (Lenat). A large number of unusual taxa were collected from both the river and some tributary swamp streams.

Special Studies

*Test of draft swamp-stream criteria. A number of reference sites were resampled to test the variability of draft criteria to rate swamp stream in North Carolina. No problems were uncovered, although it is apparent that hurricanes can have a substantial impact on coastal plain streams in North Carolina. Portions of the outer coastal plain have lower taxa richness and may require slightly different criteria values (Lenat).

*Effect of Ditching on streams near St James Plantation. A golf and residential area near Southport (coastal plain) was "ditched" to promote additional development. Attempts to evaluate the effects of the resulting were complicated by the lack of prior data, but we documented a shift in community structure towards more sediment tolerant species (Eaton).

*Effect of hog farms on coastal plain streams. Hog farming is rapidly increasing in the coastal plain streams, but there is little data on the effects on adjacent streams. We looked at the known distribution of hog farms and looked at changes in bioclassification between 1993 and 1998. This study was complicated by a lack of reference sites and an aggressive de-snagging program the followed Hurricane Fran. The effects of de-snagging often may have been greater than any hog farm impacts. Declines in water quality/habitat quality were found at 40% of the sites, but it was difficult to definitely attribute these changes solely to the increase in the number of hog farms (Herring).

FROM THE FISH POND

IBI

The IBI program is pulling back from basinwide sampling this year to address more specific questions. After organizing our thoughts we went into the field searching for a little fun, adventure, and yes a little data too. Sampling began in earnest in April and was focussed toward four areas:

- The spring round of a seasonality study
- Repeating sights from prior studies where the stream was shown to be impacted

- Two three bridge studies to address spatial variability
- Reference site sampling

As you would expect, the seasonality and reference sampling will continue throughout the sampling season.

Fish Tissue

The main push right now is the new shocker boat. Neil and Mark H. almost have the boat ready for a field test. Now let's be honest, would you want to be a guinea pig on shocker boat that these two rigged? The fish tissue program is conducting less screening work and will instead concentrate on sampling areas of known or suspected contamination.

Fish Kill Tracking

A few fish kills have already been reported this year. You can read about these and no doubt others on the now up and running 1999 fish kill page at:
<http://esb.ehnr.state.nc.us/Fishkill/fishkill99.htm>

AQUATIC TOXICOLOGY UNIT

The Division of Water Quality Director approved a new enforcement response strategy in March that is scheduled to become effective in July. The primary new feature of the new policy will be to evaluate chronic whole effluent toxicity over a three-month period. As in the past, facilities will have the option of performing a pass/fail test during specified quarterly monitoring months. Previously, failing tests required follow-up testing on a monthly basis until passing results were obtained. Civil penalties would be assessed on a case-by-case basis. As of July 1, failing pass/fail tests or multi-concentration tests producing a ChV below the limit will require follow-up testing with multi-concentration tests, at least one during each of the two following months. Compliance will be evaluated based on the follow-up tests. Non-compliant facilities will receive a civil penalty for the three-month period. Facilities with acute limits will be evaluated on a monthly basis as in the past but will now receive a civil penalty for any two consecutive non-compliances. The objectives of the policy changes are to standardize enforcement responses to WET among the Division's seven regional offices and to outline a more aggressive response to repeat violations.

The Unit is planning a workshop to be held in August for the Division's regional office personnel who deal with whole effluent toxicity issues. Critical topics will include sampling/split sampling, self-monitoring reporting requirements, the Division's enforcement strategy, and quality assurance/quality control issues.

For the first quarter of the 98-99 federal year, the Unit performed 8 acute and 18 chronic effluent toxicity tests, 15 quality assurance tests, 9 contract laboratory related tests, and 1 ambient chronic test. During the same period, the Unit reviewed 602 NPDES WET toxicity reports, generated 60 NOV's for WET noncompliance, 4 NOV's for failure to report or report late WET results, reviewed issuance or re-issuance of 13 permits with WET, reviewed and responded to 5 TIE/TRE plans and/or activity reports, reviewed 2 biocide use applications, and completed 1 biological laboratory inspection, among other activities.

The Division of Water Quality's whole effluent toxicity (WET) procedures, WET report forms, and guidance documents are available at <http://esb.ehnr.state.nc.us/ATU>

South Carolina

Department of Health and Environmental Control

AQUATIC BIOLOGY SECTION

Macroinvertebrate Group

We completed our data analysis for the 1998-monitoring year. There were many streams that received a bioclassification of Fair and Good-Fair. This is of concern because we feel the low scores may have been a result of drought conditions. We may have to investigate some of these streams further before the next round of sampling. We will be sampling in the Broad River Basin this year and plan on starting in mid-June.

Two unusual species of caddisflies were discovered recently from South Carolina. One was a *Ceraclea* species, the larvae of which resembled *C. resurgens*. However, several pharate male pupae were also recovered and the genitalia appeared slightly different from *C. transversa*. However, John Morse thought that this could be geographic variability. A more interesting species was a *Rhyacophila* collected from several low country swamps. This larva keys to *R. lobifera*, which is not supposed to be in the southeast. We collected and reared 5 specimens to adult with 4 emerging as females and 1 as a male. The females resembled *R. lobifera* while the male resembled *R. torva*. Brian Armitage has the specimens and should give us a definitive answer to the identity of this strange swamp dwelling *Rhyacophila*.

I sent note to Jim Hower about our records
As a representative of SCDHEC's Safety Committee, Harry Gaymon was asked to write an article for the Agency Newsletter concerning safety of field employees in snake infested areas. We thought the article might also be useful to SWPBA members.

How to avoid poisonous snakes

While we welcome warm weather because of the variety of fun things to do outdoors, it is also a time to be aware of outdoor hazards associated with the time of year. Snakebites, for instance, often cause concern. Since a poisonous snakebite can cause serious bodily injury and sometimes death, we should treat snakes with respect, which includes not bothering them, or avoiding them altogether. This does not mean, however, that we should develop an unwarranted fear of snakes such that it ruins our outdoor activities. By applying a few safety tips, we can significantly reduce the risk of receiving a snakebite.

Poisonous snakebites in the United States are rare, considering the time the human population spends outdoors. It has been estimated that there are about 8,000 poisonous snake bites per year in the United States, accounting for between 9 and 15 deaths. In South Carolina, the risk of being bitten by a poisonous snake is very small. Under most circumstances, snakes will avoid human contact. If surprised, a poisonous snake will usually assume a defensive position and stand its ground. When this happens, the smart thing to do is back away and leave the snake alone. A snake's strike range is about 1/2 its body length.

There are six poisonous snake species in South Carolina: cottonmouth, copperhead, eastern coral snake, timber/canebrake rattlesnake, eastern diamondback rattlesnake, and Carolina pigmy rattlesnake. Since it is difficult to differentiate poisonous

from non-poisonous snakes, all snakes should be considered potentially harmful and left alone. The copperhead, pigmy rattlesnake, and timber/canebrake rattlesnake occur in most regions of South Carolina, while the cottonmouth, eastern diamondback and coral snake are largely restricted to the coastal plain region. Cottonmouths generally prefer aquatic habitats, while rattlesnakes prefer dry, forested areas and are also common around farms. The coral snake can be found in both forested and swampy areas. Since copperheads occur statewide and are more commonly encountered, they represent the highest percentage of snakebites in South Carolina, however, copperheads have a less toxic venom than other snake species and snakebite victims may not require antivenin treatment.

Common sense is the best way to protect ourselves from snakebites. The following are good practices to help reduce the risks of snakebite in areas where snakes are likely to occur:

- Be watchful where you put your feet and hands (e.g. don't blindly reach into or step beside woodpiles, rocks, stumps and logs, because snakes take shelter in them).
- Invest in snakebite-proof boots and/or leg chaps if your job or recreation (e.g. forestry, hunting, etc.) requires you to travel through swampy/forested areas.
- Don't go barefooted or wear sandals.
- Don't go outside at night without a flashlight.
- Be careful around barns, outbuildings, and scrap metal piles. These areas often shelter mice that attract rattlesnakes.
- Never handle recently killed poisonous snakes because they can strike due to muscle reflex action.

In the unlikely event that you are bitten by a snake, the American Red Cross recommends the following steps:

- Wash the bite with soap and water.
- Immobilize the bitten area and keep it lower than the heart.
- Get medical help as soon as possible.

It is also important to stay calm to help prevent shock. It is reassuring to know that approximately 30 percent of poisonous snake bites are unsuccessful (e.g. an errant strike or weak venom supply). The most important thing to remember is to get to a hospital as quickly as possible so that antivenin can be administered if necessary. If there is going to be a greater than 30 minute delay reaching medical care, the American Red Cross recommends these additional first aid measures:

- Wrap a bandage two to four inches above the bite. This may help slow the spread of venom. The bandage should not cut off blood-flow from a vein or artery. A good rule of thumb is to make the bandage loose enough so that a finger can slip under it.
- A suction devise may be placed over the bite to help draw venom out of the wound without making cuts. Suction instruments are often included in commercial snakebite kits.

Information for this article was obtained from: the United States Food and Drug Administration Consumer Magazine, November, 1995; the American Red Cross First Aid Book, 1993; the Peterson Field Guide (Reptiles and Amphibians, Eastern/Central North America), 1975; and, the pamphlet "Common Snakes of South Carolina", South Carolina Museum Commission, 1977. For more information, contact Harry Gaymon (803) 898-4050.

Fisheries

We have been busy collecting fish and preparing for the release of the upcoming Fish Consumption Advisory. We are currently involved in several cooperative efforts with South Carolina Department of Natural Resources (Marine Resources Institute) and the new South Carolina Aquarium. We are sampling and tagging mullet for the Marine Resources Institute and collecting specimens for the new Aquarium. SCDNR has agreed to obtain some King Mackerel and Spanish Mackerel from the SC coast to be analyzed for organics and inorganics. SCDNR currently collects saltwater species for SCDHEC from Cape Romain to Port Royal Sound. We hope to add more coastal sites and include more saltwater species in the future.

Phycology Program

Our surveillance/monitoring program for *Pfiesteria* will be expanded this 1999 season from the standpoint of looking at a wider spectrum of parameters from areas where a high incidence of lesioned fish have been observed. The expanded set of parameters will include pesticide/herbicide scans, testing for selected general organics, and analyses for heavy metals. This type of sampling has become quite important, of course, since continued findings on the national level suggest environmental factors in addition to toxic *Pfiesteria* play a key role in the development of lesions in fish. We will also be sampling more frequently in advance in areas where we believe there is a high potential to find lesioned fish. The strategy with more frequent sampling is to determine if there is greater *Pfiesteria* or PLO activity leading up to our fish lesion events. In 1998, we sampled after the onset of lesioned fish events and observed only background levels (≤ 20 cells/ml) of PLOs.

An interesting dinoflagellate bloom has occurred in estuaries along the South Carolina coast for the past two Spring seasons (1998-1999). The alga is evidently a non-toxic *Peridinium* sp. and reportedly blooms in sufficiently high numbers to discolor the water. The blooms have been observed in individual estuaries as far as 100 miles apart on the coast. Commercial fishermen and S. C. Department of Natural Resources personnel first reported the blooms. Currently, we are trying to determine if these blooms are a recent phenomenon or if they have "always" occurred and are just now being reported due to increased public awareness regarding the estuarine environment. Dr. Alan Lewitus with the University of South Carolina Baruch Marine Laboratory has been conducting research on these blooms.

We will be continuing our trend monitoring program for chlorophyll in lakes for the 1999 season. Fifty-four stations will be sampled once per month May-October. We also anticipate receiving as usual a number of phytoplankton samples because of algal bloom complaints and fish kills.

Concerning conferences and workshops, Jake Bickley attended the Southeast Lakes Management Conference in Clemson, S. C. On March 25-26.

Nonpoint Source

A three year '319 BMP effectiveness study in the Stevens Creek Watershed concluded in January, a detailed final report should be in print within a year. We still have four '319 BMP monitoring studies underway, and are working on a new one in conjunction with Clemson University to hopefully begin this summer.

We have also begun assisting our watershed managers in addressing individual watersheds listed on the 303(d) list, in an attempt to develop TMDL=s for these watersheds to remove them from the list. A short-term (bacteria concentration vs. flow) assessment in the Cane Creek Watershed in Lancaster County was conducted December 1998 - May 1999, and a similar assessment of Mountain Creek in Greenville County has just begun this month.

We have investigated several NPS complaints and conducted biological assessments for enforcement purposes. We continue to assist SCDHEC District personnel Statewide in assessing NPS impacts and enforcement referrals. We continue to address the need for restoration after severe impacts, where applicable, and a standard protocol for such procedures within SCDHEC has been approved and established. Furthermore, we are still experimenting with a before/after impact regime, as opposed to an after impact upstream/downstream/control regime in areas where NPS impacts may require enforcement action. We anticipate this approach to be more beneficial in areas of high urbanization where an upstream or control site is noncomparable or nonexistent. We will keep everyone updated on the progress of this experimental research, and whether or not it is working for us.

We continue to address NPS impacts defined in our Watershed Water Quality Management Strategies for each basin, and a continued effort towards monitoring BMP effectiveness on small scale watersheds remains a priority for us as well. For questions or more information on NPS projects, please contact Peyton Bruner Sasnett at 803-898-4397, or e-mail: sasnetpb@columb32.dhec.state.sc.us, or Joe Napolitano at 803-898-4400, or e-mail napolijf@columb32.dhec.state.sc.us

WATER QUALITY MONITORING SECTION

DHEC has entered into a joint study of the effectiveness of constructed wetlands as an alternative treatment for failing septic tank systems. This joint venture includes the Water Quality Monitoring Section of DHEC, the South Carolina RC&D Council and the S.C. Department of Natural Resources. A total of 8 septic tanks across the State will have existing tile fields replaced with constructed wetlands and a drain field for the treatment of tank effluent. Effluent will flow from the septic tank via gravity line to the wetland for treatment and then to the drain field where it will percolate through the substrate. Water quality data from the influent to, and effluent from, the constructed wetland will be evaluated to determine the effectiveness of the wetland for waste water treatment. Analyses to be conducted once a month will be Nitrate, Ammonia, Total Phosphorous, Total Suspended Solids, Fecal Coliform and BOD₅. After one year of monthly monitoring, data will be assessed to determine the effectiveness of the constructed wetlands and ascertain if continued water quality monitoring is warranted.

TENNESSEE

Departments of Agriculture (TDA), Environment and Conservation (TDEC), and Health (TDH)

News from the BEST*

** Biologist and Environmental Specialist Teams*

TDA - The Nonpoint Source Program

The Nonpoint Source Program is requesting proposals for FY- 2000 projects on their web site: (<http://www.state.tn.us/agriculture/administ/nesrfp.html>). This site provides great templates of required paperwork for grant proposal submission. To ensure data access and sharing, data from the completed projects will be included in EPA's "Surf Your Watershed" web page, a database of URLs to world wide web pages associated with the watershed approach of environmental management, and data sets of relevant environmental information. With this type of coverage, data can be easily queried by citizens and decision makers across the country.

TDEC - Water Pollution Control - Central Office Strategic Planning

The TDEC Four-Year Strategic Plan had been finalized. The Plan contains 6 broad departmental goals with supporting objectives and 123 performance measures covering TDEC's state parks, environment, and conservation programs. To view the Plan visit the TDEC web site at: www.state.tn.us/environment/tdecplan.htm or contact Paul Evan Davis (615) 532-0072.

The Plan has performance measures that are particular to WPC. Most of the performance measures will be easy to achieve, however, there are two that will require a significant amount of attention. One performance measure requires WPC to "Reduce by 25 percent the number of stream listings on the 1998 303(d) list [pursuant to the federal Clean Water Act, Section 303(d)] by January 1, 2003." WPC will be working with the Department of Agriculture's Nonpoint Source Program to acquire 319 funding for monitoring activities to aid in the removal of stream segments from the 303(d) list. WPC will also be working with TDOT to determine if stream segments that were included on the list due to road work can be removed. There are 352 stream segments on the 1998 303(d) list. This means that we must remove 88 stream segments by January 1, 2003. Currently, all 303(d) listed streams are being reassessed by EAC field staff to determine if any of the segments can be easily removed from the list. TMDLs will be developed for the remaining streams.

The second performance measure states "By January 1, 2003, develop control strategies on 100 streams that are listed on the 303(d) list of streams that are not achieving compliance with at least one use classification in conjunction with state and federal partners." One strategy may involve development of enforcement policies for 303(d) streams. Another strategy may involve lower tolerance for activities that impact impaired waters (NPDES permitted facilities, ARAP, stormwater, mining, etc.). BMPs (Best Management Practices) may be a strategy for long term corrections.

Water Quality in Gatlinburg

Local concern continues over the quality of the West Prong of the Pigeon River, which flows through Great Smoky Mountains National Park and Gatlinburg. Vegetation destruction, development runoff and failing septic systems have caused five stream reaches in this area to be listed on the State's 303D list of streams not meeting their designated uses, such as recreation and wildlife support. By law, such streams cannot receive expanded or new discharges. As a result, growth in the area could be severely limited until water quality improves. State and Park officials have created a joint monitoring system to track water quality as it leaves the Park, enters Gatlinburg and re-enters the Park toward Sevierville. State strategies for pollution reduction or Total Maximum Daily Loads (TMDLs) will eventually require specific reductions of individual pollutants on a set schedule. The Mountain Press has highlighted other area concerns such as sewer issues, private septic systems, and other urban water quality issues. Contact Roger LeMasters (615) 532-0649 Melanie Catania (615) 532-0739

Total Maximum Daily Load (TMDL)

TDEC is currently carrying out projects to implement a memorandum of agreement between the State and EPA for the development of TMDLs for all impaired TN streams over the next 13 years. TMDLs are studies of impaired waters that determine both point and non-point pollution sources and establish correction plans. The federal Clean Water Act requires states to develop TMDLs. Failing that, responsibility falls to EPA. The State of Tennessee has a plan for conducting TMDL evaluations through its Watershed Initiative.

Environmental groups in five of the eight Region 4 states have sued EPA to require the agency to work with states to accomplish this effort. Environmental groups have filed a notice of intent to sue to require EPA to work with TN to enhance the TN program. For more information on TMDL's, visit the TDEC web site: www.state.tn.us/environment/wpc/tmdl.htm. Contact Sherry Wang (615) 532-0656 or Melanie Catania (615) 532-0739

West TN River Management

State and federal agencies and private interests have battled over river management policy for decades. Some prefer man-managed and man-made canals for better flood control and drainage, while others seek protection and restoration of natural streams. In recent years, Tennessee interests have joined to support restoration and protection of natural streams, largely due to the enormous cost of maintenance to taxpayers of man-made systems. Toward that end, a plan was developed with federal mediation to test the feasibility of restoration principles.

TDEC and the West TN River Basin Authority have been moving forward on a project to restore Stokes Creek, a tributary of the North Fork of the Forked Deer River in West TN. A portion of the channelized stream will be returned to natural meanders, which will provide more natural drainage and habitat for native plants and animals. Experts on river restoration gathered data and information in the fall and are now developing the design for the river's path. Pre-construction preparation work should be completed early in 1999 and construction of the restored channel is slated to begin in the summer of 1999. TDEC received an EPA grant to complete the project in 1998. Contact Ellen Williams (615) 532-4968 or David Salyers (901) 423-5755.

Restoration Data

Pre-construction environmental monitoring on the Stokes Creek restoration demonstration project is being completed with a grant from EPA. University of Memphis biologists have been collecting information on environmental conditions both in and near

the stream. The biologists are measuring stream chemistry, aquatic habitat and the extent and quality of bottomland hardwood forests and wetlands. The stream monitoring data will describe current conditions and help establish target conditions. The results will be compared with measures taken after the project is completed and used to evaluate the success of the restoration for application to future projects. Look for a web site on the monitoring project in the spring. Contact Ellen Williams (615) 532-4968

TDEC - Water Pollution Control - Environmental Assistance Centers (EAC)

On Saturday April 24, 1999, there were eight simultaneous stream cleanups. Each EAC sponsored a 2-3 hrs. clean up targeting 1-2 miles of stream. The cleanups were done primarily by TDEC staff (all Divisions). The public could participate, however, no effort was made to actively recruit volunteers. This was a TDEC initiative. Water Pollution Control was responsible for stream selections and each EAC adopted the stream for long term maintenance and clean up.

TDH – Aquatic Biology Section

As of this Spring, Water Pollution Control and the Aquatic Biology Section have completed 6 macroinvertebrate collection events for ecoregion reference streams. To date, we have completed three years of macroinvertebrate sampling consisting of Spring and late Summer (High flow and Low flow) collection periods. It is anticipated that by this Fall, all 6 collections will have been identified, entered into EDAS (Ecological Data Application System) and reported in taxa lists. During the “slack” time, ecoregion reference collections were compiled for 6 of TDEC’s Environmental Assistance Centers. All but a few have been sent to EACs. The remainder are waiting for a few specimens that were sent to experts for validation.

That's All Folks!

6/1/99

