

Florida Geology Forum

A Newsletter from the Florida Geological Survey Vol. 21 No. 2 December 2007

DEPARTMENT OF ENVIRONMENTAL PROTECTION

The Florida Geological Survey Hosts the Annual Meeting of the Association of American State Geologists

Walt Schmidt, State Geologist

In June 2007, as part of its 100th anniversary, the Florida Geological Survey (FGS) hosted the Association of American State Geologists (AASG) for their 99th annual meeting in Florida; Florida last hosted the AASG annual meeting in Tallahassee in 1952. The Association is made up of 51 state geologists from the United States and Puerto Rico. Held at the Key Largo Grande Hotel in Key Largo, the six-day meeting was attended by state geologists, their associates and deputies, federal officials involved in geoscience issues, directors of a number of national geoscience professional organizations, congressional committee staff, industry representatives and other invited professionals.

Each year the meeting is held in a location that showcases the state's geologic attributes. Field trips and poster sessions provide additional informal opportunities for attendees to discuss scientific and issue-related topics.

This year's meeting location enabled FGS staff to introduce meeting participants to the recent carbonate environments of Florida Bay and the Florida Reef Tract. Area fieldtrips included: the Everglades (acknowledged as an International Biosphere Reserve, a World Heritage Site and a Wetland of International Importance, it is also an internationally recognized geological model for ancient coal forming environments), Windley Key Fossil Reef Geological State Park, John Pennekamp Coral Reef State Park, Key West and Fairchild Tropical Botanical Gardens.

In This Issue

AASG Annual Meeting (1-2)

Leon Sinks--Wakulla Springs
Linked (3-4)

STATEMAP Update (4)

Limerock Industry (5)

New GSA Fellow (5)

Education and Outreach (6)

Coastal Program (7)

Celebrating Jessie Hawkins (7)

Personnel Changes (8)

Awards Luncheon (9)

Walt Schmidt, Longest Sitting
State Geologist (10)

Centennial Proclamation (11)



Highlights of the conference included:

- A "Welcome to Florida" letter from Governor Crist recognizing the significant accomplishments of the FGS throughout its first 100 years.
- A status report on the Clean Coal Power Initiative, a proposal by the United States Department of Energy (DOE), which provides funding for technologies that will cut pollutants emitted by power plants and boost their efficiency.
- A report on the DOE's FutureGen initiative, a project designed to create the world's first zero-emissions fossil fuel plant.
- A poster session showcasing products from state geological surveys across the nation and highlighting the federal-state cooperative STATEMAP program.
- Discussions on the reauthorization of the National Geologic Mapping Act, as well as national legislation impacting the preservation of geologic data.
- National water programs and common concerns.
- Photographic essay by naturalist John Moran documenting the best of a vanishing natural Florida.

A number FGS staff worked tirelessly in organizing and preparing for the annual meeting, specifically: **Jon Arthur, Traci Billingsley, Paulette Bond, Jeff Erb, Rick Green, Leslie Knight, Jackie Lloyd, Harley Means, Tony Miller, Frank Rupert, Cheryl Schmidt, Tom Scott, and Carolyn Stringer.**

Walt Schmidt welcomes AASG members and guests to the annual banquet at the Key Largo Grande Hotel.



**AASG Fieldtrip to
Windley Key Fossil Reef
Geological State Park**



Big Dismal Sink, Leon Sinks Geological Area, Leon County

Link Established Between Leon Sinks and Wakulla Springs

An event of historic, scientific and environmental significance was reported in the Tallahassee Democrat on July 31, 2007 when it was announced that divers of the Woodville Karst Plain Project (WKPP) had found a cave passage connecting Leon Sinks Geological Area (LSGA) and Wakulla Springs. During a 14 hour dive on Saturday, July 28, the link was found establishing a labyrinth of 28 miles of explored caves. Project divers believe it is the longest underwater cave system in the United States. The challenges posed by the environment are extraordinary and the technical ingenuity, courage and hard labor which allowed this project to reach fruition are described extensively at <http://gue.com/index.html>.

Explorations of the caves began informally in the 1950's. In the mid 1980's avocational cave divers came together and began mapping caves in and south of the LSGA. In 1990, through the efforts of Parker Turner, the National Speleological Society, granted official project status to the Woodville Karst Plain Project. This status was especially significant opening up previously unavailable funding opportunities.

The scientific significance of the project is far-reaching. Individual projects explore biological, archaeological, hydrogeologic and chemical aspects of the cave system and its waters. Online descriptions of the research can be found at: <http://gue.com/Expeditions/WKPP/Research/index.html>. Additionally, the efforts of the dive team have contributed to the physical characterization of a portion of the Floridan aquifer system in a detailed way that has never been accomplished before and that would have been impossible without their efforts. The data gathered from these dives will be incorporated into mathematical models that will allow an improved understanding of water flow in karst aquifer systems.

The DEP/FGS have supported and collaborated in studies using both dye and natural tracers (radon and methane); geophysical surveys and measurements of flow, temperature, pressure and specific conductance to allow further characterization of the Woodville Karst Plain watershed. Characterization of this nature is unique in treating the watershed as a three dimensional karstic system governed by extensive interaction between surface, ground water and atmospheric deposition. Some results of those studies may be seen at: <http://www.hazlett-kincaid.com/FGS/Tracing/index.htm>. Description and results of some of the cave-metering studies mentioned above may be viewed at: <http://www.hazlett-kincaid.com/FGS/Meters/index.htm>.

The environmental significance of the WKPP is enormous. Although it was long suspected that Leon Sinks and

Wakulla Springs were part of an integrated karst system, proof of the connection was lacking. Now decisions that impact the Woodville Karst Plain, its environment and its ground-water resources can be based on the knowledge that the karst features of Leon County are connected to Wakulla Springs and other major karst features of Wakulla County.

This knowledge can be utilized in applying regulatory approaches to environmental protection by the DEP, the Northwest Florida Water Management District (NFWFMD), Department of Health (DOH) and the Department of Community Affairs (DCA). Such approaches may include Total Maximum Daily Loads (TMDL), Minimum Flows and Levels (MFLs) and Source Water / Wellhead Protection programs. The move by the City of Tallahassee to upgrade its domestic wastewater treatment based on these dye tracing studies, which confirmed a connection between the City's spray field and the Wakulla Spring system, exemplifies the application of scientific data to decisions of local government. Ongoing exploration and scientific studies in the Woodville Karst Plain will provide data of scientific significance that also support a wide range of land-use and planning decisions.



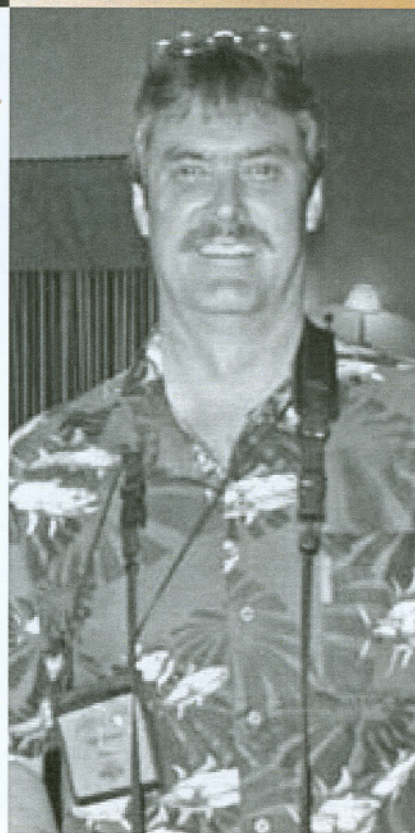
Wakulla Springs, Wakulla County, looking toward the recreation area and the spring boil.

STATEMAP Update

The STATEMAP Program is a cooperative project funded jointly by FDEP/FGS and the National Cooperative Geologic Mapping Program under the State Geologic Mapping Component (STATEMAP). To date, they have mapped the following USGS 1:100,000 scale quadrangles: Homestead, Sarasota, Arcadia, Crestview, Marianna and Gainesville. Geologic maps of the western portion of the Lake City and eastern portions of the Perry USGS 1:100,000 scale quadrangles have also been completed.

In 2006-2007, FDEP/FGS staff geologists **Richard Green, Dave Paul, Steven Petrushak, Clinton Kromhout, and Tom Scott**, produced a geologic map for the eastern portion of the 1:100,000 scale Perry Quadrangle. The project included a bedrock geologic map, several geologic cross sections and explanatory text in the form of FGS Open File Report 91. These maps and cross sections are also available through the FGS Open File Map Series (OFMS-98).

In September of 2007, the FGS began working on production of a bedrock geologic map and several geologic cross sections for the western portion of the 1:100,000 scale Perry Quadrangle utilizing \$107,689 in STATEMAP funding. Field mapping will begin in October, with a completion date of August 31, 2008. The maps and cross sections for this area will be available through the FDEP/FGS Open File Map Series beginning in September of 2008.



Rick Green, Principal Investigator, FGS STATEMAP Program.

Florida's Limerock Industry – The Lake Belt

Crushed limerock aggregate is used in the construction industry, agriculture, power production, and food production and is mined in 22 of Florida's 67 counties. In 2006, Florida ranked 2nd in production of crushed limerock aggregate in the United States. Construction consumes the majority of the aggregate used for roads and buildings. Approximately 43% of Florida's limerock aggregate is mined from a region known as the "Lake Belt" in Dade County west of Miami. Limerock is trucked and transported by rail throughout the state including the Orlando and Jacksonville area markets. Lake Belt quarries retain nearly 930 employees.

On March 22, 2006, the U.S. District Court issued an opinion challenging the permitting process of quarries in the Lake Belt. The case filed challenges the Environmental Impact Statement (EIS) formulated during the permitting process by the Army Corp of Engineers and U.S. Fish and Wildlife Service following the detection of benzene in a Dade County well field near the Lake Belt quarries. As a result, a court order was issued on July 17, 2007 ordering nine quarry operators closest to the well field to halt production. By court order a Supplemental Environmental Impact Statement (SEIS) was drafted and released, August 17th, 2007, to reassess environmental potential impacts identified by the court as not having been sufficiently investigated in the original EIS. Although benzene was not the only reason for the court's decision, if the benzene is proven not to originate from the nearby quarries, the quarries may re-apply for a permit to resume production.

On March 12, 2007 the Florida Department of Transportation (FDOT) released a report prepared by Lampl-Herbert Consultants, titled "Strategic Aggregates Study: Sources, Constraints, and Economic Value of Limestone and Sand in Florida." The study researches and assesses the importance of limerock aggregate and sand to the State of Florida and further addresses the importance of the Lake Belt region to the limerock aggregate industry to Florida's economy and development.



Lake Belt Region quarry,
Dade County, Florida.



Congratulations to Jon Arthur!

Jon Arthur, Assistant State Geologist for Hydrogeology, was elected a fellow of the Geological Society of America (GSA) in 2007. He joins FGS Fellows, **Dr. Walt Schmidt** and **Dr. Tom Scott**. He completed his Ph.D. at Florida State University in 1994. Jon obtained funding, directed the creation of necessary databases and produced the Florida Aquifer Vulnerability Assessment (FAVA). His research into water-rock interactions resulting from the introduction of oxygenated, treated surface waters into the reduced water of the FAS has provided information vital to the use of aquifer storage and recovery (ASR) in Florida. He has directed the growth of the Florida Association of Professional Geologists (FAPG) into a lobbying group supporting the efforts of the geological community and the Board of Professional Geologists and serves on the Committee on the Sustainable Underground Storage of Recoverable Water, Water Science and Technology Board, National Academy of Sciences.



Assistant State Geologist Jackie Lloyd interacts with student guests at Earth Day at the Capitol.

Education and Outreach

The Florida Geological Survey's centennial year has been busy for staff members involved with outreach. In January, **Paulette Bond** assisted with DEP's LIFE (Learning in Florida's Environment) field labs held at Leon Sinks Geological Area. In February **Frank Rupert** presented a classroom lecture on the geology of the Leon Sinks Geological Area followed by a fieldtrip to Leon Sinks for Tallahassee Community College's Green Guide Certification Program, part of the Wakulla Ecotourism Institute. Also in February, geologist **Tom Greenhalgh** spoke to students at Fairview Middle School on local geology and hydrogeology.

Earth Day and Oceans Day were celebrated together at the Capitol on April 18th. With its mobile GEOLAB, the FGS joined other groups within DEP who designed presentations for local students around the theme, "Science, Education and the Environment". FGS staff members **Paulette Bond**, **Eric Harrington**, **Jackie Lloyd**, **Frank Rupert**, **Jim Sparr** and **Dave Taylor** participated in this annual event. The 2007 Wakulla Wildlife Festival was held April 20-21 on the grounds of the Wakulla Springs State Park. Educational posters and calcite samples for interested individuals were available at the FGS booth. A microscope was set up and guests examined fragments of the Ocala Limestone, a major component of the Floridan aquifer system, the main water source in this area. **Jeff Erb**, **Sarah Ramdeen**, **Tom** and **Nada Scott** staffed the FGS exhibit. Also in April, geologist **Tom Greenhalgh** participated in Ichetucknee Appreciation Day.

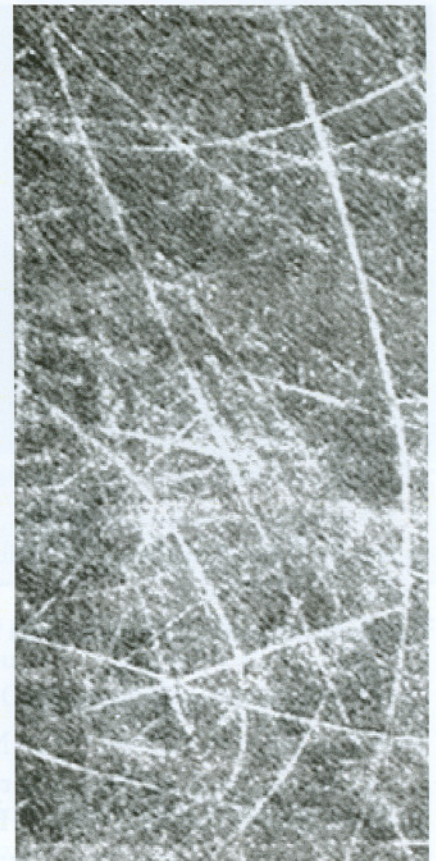
In August, FGS geologists **Paulette Bond**, **Tom Greenhalgh**, **Clint Kromhout** and **Frank Rupert** staffed exhibits for "Nature and Wildlife Days" at four locations across Leon County as part their Senior Outreach program. Displays allowed seniors to gain a hands-on familiarity with rocks and minerals from throughout Florida.

On September 21st FGS geologists **Harley Means** and **Tom Scott** participated as panelists at the 6th annual Marion County Springs Festival and on September 22nd **Harley Means** presented a public lecture entitled: The Geology of Florida's Springs.

Coastal Program Update

In May of 2007, the Florida Fish and Wildlife Conservation Commission (FWC) requested that the FGS Coastal Research Program conduct granulometric analyses of sediment samples from the seabed. This work was part of a project to repair damage to sea grass beds due to scarring by boat propellers. If the seabed is to be successfully restored then sediment used should match sediment native to the area as closely as possible. The intent of this study was to characterize the seabed sediments in the affected area to facilitate restoration. Staff from the DEP's Division of Recreation and Parks, at the request of the FWC, collected a total of 13 seabed samples from two locations in the state waters off Bay County. Six samples were collected from the first site and seven from the second. Grain Size Distribution curves were prepared both for individual samples and for the group of samples collected from each location.

The six samples collected from the first site, Tyndall, ranged in weight from 37.406 to 79.944 grams. Their mean grain size minimum of those samples was 1.899 phi (0.2681 mm). The mean grain size maximum of those samples was 2.055 phi (0.2407 mm). The average grain size of those samples was 1.969 phi (0.2554 mm). The samples were described as various shades of yellowish gray. At the second site, Spanish Shanty, the seven samples collected ranged in weight from 30.556 to 93.320 grams. The mean grain size minimum of those samples was 1.912 phi (0.2658 mm). Their mean grain size maximum was 1.939 phi (0.2607 mm). The average grain size of those samples was 1.926 phi (0.2631 mm). These samples were also various shades of yellowish gray in color. Results of this study were published in August 2007 as FGS Report of Investigation 107.



Areal view of damaged seagrass beds offshore of Bay County.



Jessie Hawkins

Jessie Hawkins Celebrates 30 Years and He's Still Going Strong

On September 14th the Florida Geological Survey honored **Jessie Lee Hawkins** for 30 years of dedicated service in his position as custodian. Jessie has worked with the FGS in a career service position since September 15, 1977. To celebrate the occasion a special luncheon was held in the Gunter Building in Jessie's honor where he was presented with a gift from his coworkers in appreciation of his hard work and service. In addition to the FGS staff, former FGS Chief and State Geologist **Bud Hendry** (retired), Deputy Secretary **Bob Ballard** and his staff, Jessie's wife **Penny Hawkins**, and other invited friends attended the celebration.

Jessie has quietly and cheerfully gone about his job at the Gunter Building for more than 30 years. In 1994 Jessie was named the Florida Geological Survey's Employee of the Year. The nominating letter noted that Jessie is dependable, trustworthy and always ready and able to lend a helping hand.

When not working at the FGS Jessie is the pastor of two churches that meet on alternate Sundays; one in Tallahassee and one in Port Saint Joe. He has no plans to retire and said he has never had a day when he got up and dreaded going to work! He still enjoys his job and loves where he works and the FGS is the happy beneficiary of that attitude.

FGS PERSONNEL CHANGES

Farewells

David Anderson joined the FGS in December 2004 as our GIS/Geologic Map Analyst. David proved to be a valuable addition to the organization; he initiated & conducted the first-ever FGS GIS needs assessment and worked towards including standardized metadata in all GIS projects. His efforts earned him widespread respect within the DEP GIS-user community and landed him the position of National Hydrographic Dataset Coordinator in DEP's Division of Water Resource Management in November 2006.

Jim Ladner became a member of the FGS Coastal Research Program team in October 1994 as a Professional Geologist. Jim's experience in coastal research was augmented by extensive boating skills and abilities; in fact, Jim eventually became the boating-safety trainer for DEP and received the "1st Runner Up" award in the Department's 2004 Safety Awareness Campaign. Jim left in September 2007 for employment in the private sector.

Bob Caughey joined the FGS in November 1979 as a Geologist I. At the time of his retirement in April 2007, he was responsible for overseeing all of the activities of the Ft. Myers Oil and Gas Field Office. Bob was meticulous with his inspections, expecting high standards of compliance from industry. At the same time, he maintained an excellent working relationship with those he regulated, resulting in high compliance rates and a better and safer environment. Bob was the FGS Employee of the Year in 1997 and received a letter of recognition from Governor Bush in 2002. He received a FGS Lifetime Service Award in March 2007 to honor his many years of on call service, 24/7.

DEP/FGS Welcomes New Employees **Traci Billingsley, Jeff Erb and Leslie Knight**

Traci Billingsley joined the FGS as an Administrative Assistant in November 2006. She is relied upon for advanced administrative support for the entire organization including personnel, general services, and purchasing functions. Her extensive experience in management and business, along with her great work ethic allowed her to "hit the ground running".

Jeff Erb accepted the position of Computer System Manager at the FGS in November 2006. He single-handedly keeps our local network and IT equipment running smoothly, secures and manages our data, and cheerfully assists all of us (including those who are technically-challenged) with IT trouble-shooting and training. We were extremely fortunate to find Jeff as he is one of those rare individuals who possess both superior technical skills and outstanding people skills.

Leslie Knight joined the FGS as a Secretary Specialist in November 2006. Leslie came with twenty years of experience including editing, fund-raising and marketing, in addition to the skills necessary for this position. Leslie's experience and can-do attitude, make her a unique asset and her assistance to the team that planned and managed the Association of American State Geologists meeting was invaluable.



The Florida
Everglades



FGS Employee Awards Luncheon held at Alfred B. Maclay Gardens State Park in Tallahassee.

In March 12th, 2007 the FGS held its annual awards luncheon for achievements of 2006. The informal family style BBQ was held at Alfred B. Maclay Gardens State Park in Tallahassee. Anonymous nominations by all the staff for several different awards were compiled, analyzed and then voted on by the FGS Awards Committee members: **Jackie Lloyd, David Files, David Paul, Eric Harrington, and Clint Kromhout.**

One FGS Team Extra Effort Award went to **Sarah Ramdeen and Muriel Hannion.** In addition to their regular job duties they covered library services while the FGS was without a staff librarian enabling its library services to continue uninterrupted.

Paul Attwood and Dave Taylor of the FGS Oil and Gas Section received Individual Extra Effort Awards. Paul Attwood was honored for his outstanding job performance and attention to detail. He performed over 18,000 well inspections and drove over 400,000 miles--all while being on 24 hours notice. Dave Taylor was recognized for his generous willingness to help others. He was described by many as the FGS's "third hand," available when anyone needed help.

The FGS Employee of the Year Award went to **Sharon Lee** for her outstanding work as FGS budget coordinator. Her accuracy in tracking of all of the FGS's funds and expenditures crossing over 3 different fund sources and at least 18 grants was applauded. She garnered praise for her enthusiastic attitude when working with grant managers and was recognized as the FGS My Florida Market Place and State Purchasing Card expert.

Two Lifetime Achievement Awards were given out this year, one to **Bob Caughey** and one to **Jim Balsillie.** These awards are not given out on a regular basis, thus representing special recognition of exceptional individual careers. **Bob Caughey**, who retired recently, was recognized for his nearly 30 years of service to the State while working at the FGS as a member of the Oil and Gas Section. Bob was responsible for the proper plugging and abandonment of many old oil and gas wells. He also oversaw the search and disposal of thousands of improperly disposed explosives used in the industry throughout the state. Bob was the recipient of the 1997 FGS Employee of the Year award, and in 2002 he received special commendation letter from Governor Jeb Bush for "a job well done".

Jim Balsillie, who passed away in December 2006, was recognized for his 37 years (29 with the State of Florida) of professional work. He authored over 125 publications and received awards from many professional and academic entities including "Outstanding Geologist of the Year" from Portland St. University, U. S. Army Commendation Medal, and 1998 FGS Employee of the Year. Jim was also a founder of the National Hurricane Conference and a member of the editorial board of the Journal of Coastal Research for 20 years.

Dr. Walt Schmidt, longest sitting State Geologist, (left) receives a Resolution marking the Centennial Anniversary of the Florida Geological Survey from Governor Charlie Crist and signed by Cabinet members, Bill McCollum, Alex Sink and Charles H. Bronson on May 1, 2007.



Walt Schmidt, the Nation's Longest Sitting State Geologist

The Florida Department of Environmental Protection (DEP) is honored to have the nation's longest sitting State Geologist. Florida Geological Survey (FGS) Director **Dr. Walter Schmidt** earned this title after 22 years of service to the state as State Geologist.

The head of the Florida Geological Survey is designated the "State Geologist" by statute. There have only been five State Geologists heading the FGS throughout its first 100 years, demonstrating stability and continuity within the agency that maintains geoscience data and inventories as well as sustains corporate memory to support the many and diverse needs of the public.

"**Dr. Schmidt** has been a valuable member of the DEP team since 1974," said DEP Secretary **Michael W. Sole**. "The stability, continuity and institutional knowledge that his uninterrupted service provides is an irreplaceable resource. Walt is a great public servant."

"State geological surveys are exciting, challenging places for geoscientists to work and mold their careers. I find the cross-disciplinary expertise developed, and the sense of serving the public good to be professionally and personally rewarding," said Schmidt. "I appreciate the opportunity to be a small part of such a diverse and exciting place to work, in a state so rich in natural resources and natural beauty."

State Of Florida

RESOLUTION

WHEREAS, 2007 marks the 100th Anniversary of the establishment of the Florida Geological Survey; and

WHEREAS, established in 1907, the Florida Geological Survey is the oldest state governmental entity serving under its original legislatively established name; and

WHEREAS, since 1993, the Florida Geological Survey has served within the Department of Environmental Protection; and

WHEREAS, the Florida Geological Survey is the premier source of objective geologic and hydrogeologic information responding to the state's critical environmental and natural-resource concerns; and

WHEREAS, the Florida Geological Survey maintains a unique repository for geologic samples and data from the entire state benefiting governmental, academic and private sector scientists who strive to better understand and protect our environment; and

WHEREAS, the Florida Geological Survey provides ongoing technical advice to water resource management programs, land use planning programs and the Professional Geologist Licensure Program; and

WHEREAS, nationally respected for its geological expertise, since 1919 Florida has had four State Geologists, each elected to serve as President of the Association of American State Geologists; and

WHEREAS, in recognition of its Centennial Anniversary the Florida Geological Survey is hosting the 2007 annual meeting of the Association of American State Geologists in Florida.

NOW, THEREFORE BE IT RESOLVED that the Governor and Cabinet of the State of Florida do hereby commend the

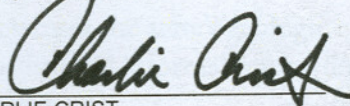
Florida Geological Survey

for its pursuit of knowledge of Florida's geology and hydrogeology, thereby contributing to the responsible use, understanding, and conservation of Florida's natural resources; and

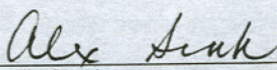
BE IT FURTHER RESOLVED that the Governor and Cabinet of the State of Florida congratulates the Florida Geological Survey of the Department of Environmental Protection on a century of geosciences excellence.

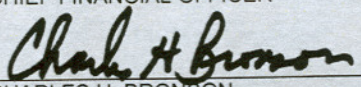
IN TESTIMONY WHEREOF, the Governor and Cabinet of the State of Florida have hereunto subscribed their names and have caused the Official Seal of the State of Florida to be hereunto affixed in the City of Tallahassee on this 1st day of May, 2007.




CHARLIE CRIST
GOVERNOR


BILL MCCOLLUM
ATTORNEY GENERAL


ALEX SINK
CHIEF FINANCIAL OFFICER


CHARLES H. BRONSON
COMMISSIONER OF AGRICULTURE



State of Florida
CHARLIE CRIST, Governor

Department of Environmental Protection
MICHAEL W. SOLE, Secretary

Florida Geological Survey
WALTER SCHMIDT, State Geologist



Designed by Paulette Bond. Editing by Paulette Bond, Jackie Lloyd and Walt Schmidt.

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