

# **Santa Fe Springs Basin Working Group Coordination**

**August 2004-June 2005**

**Final Report**

**Purchase Order S 3700 210904**

**June 15, 2005**



**Prepared For  
The Springs Initiative  
Florida Department of Environmental Protection**

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*Cover photo: Local Government Workshop, photo taken by Tom Staley.*

***The Working Group's progress this year owes much to the efforts of its individual stakeholder members. In particular, Pandion Systems would like to acknowledge the time and talent of the members of the Coordinating Committee:***

- ***Hugh Thomas (Suwannee River Water Management District);***
- ***Kim Davis (Blue Springs);***
- ***Chris Bird and Robin Hallbourg (Alachua County Environmental Protection Department);***
- ***Tommy Langford (Gilchrist County Commissioner);***
- ***Bobbie Suggs (Ginnie Springs)***
- ***Dan Rountree (Adopt-A-River/Current Problems).***

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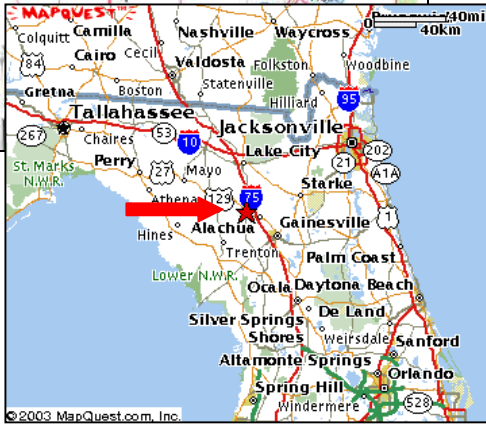
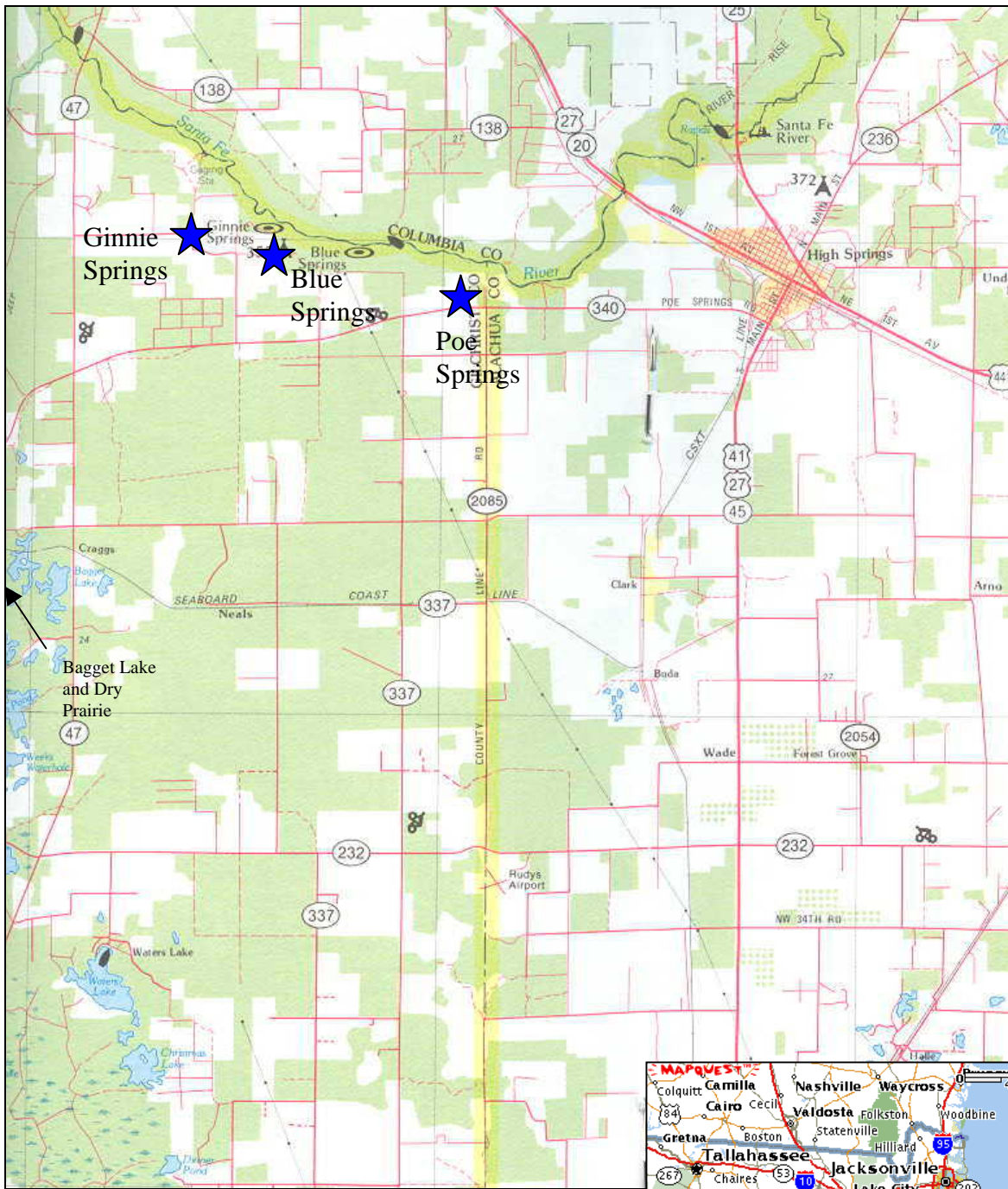
## **Introduction and Background**

This report summarizes the activities that have been completed during the period July 2003 through June 2004, to fulfill DEP Purchase Order S 3700 210904 for coordination of the Santa Fe Springs Working Group. The report is organized based on the listing of tasks that were included in the Purchase Order, and activities undertaken to complete these tasks.

The Santa Fe Basin Working Group is the most recent version of a larger group known as the Santa Fe Basin Water Quality Working Group that was formed in 1998 to track issues of concern to water quality throughout the 1,440 square-mile Santa Fe basin. This group was led at various times by James Higman, then with FDEP; Tom Taylor of the Florida Conflict Resolution Consortium; and John Owens (IFAS/High Springs citizen). In November 2002, Pandion Systems, Inc. was contracted through the Florida Department of Environmental Protection's Springs Initiative to work with the group, and to focus in particular on the area that influences Poe, Ginnie and Blue Springs west of High Springs. Many of the original stakeholder groups and individuals are still involved in this new version of the Working Group, although the focus has changed to groundwater quality and quantity that affects the three springs from a surrounding groundwater basin of 100-150 square miles in size.

**Location and Setting.** The general location of the springs and contributing groundwater basin (Figure 1) is to the west of Interstate 75, to the east of the Wacassassa Flats, and south of the Santa Fe River extending at least as far as the city of Newberry. In this area which is sometimes referred to as the "High Springs Gap", water in the Floridan Aquifer flows through branching conduits that diminish in size with increasing distance from the Santa Fe River. The Gap is characterized by small, highly dissected conduits and caves at around 60 to 130 feet below the land surface. In most areas of the Gap there is very little overburden on top of the limestone to provide attenuation and nutrient removal from fertilizer use, dairy runoff, and septic tank effluent in much of the area to the south of the Santa Fe River. This means that there are two major issues of concern to groundwater quality in the contributin area:

- agriculture, especially as dairy farming is relatively new in North Florida and has the potential to create water quality impairment;
- population growth of residential areas, with its accompanying increases in groundwater withdrawal and land use conversions.



*Figure 1. Location map, Santa Fe Springs neighborhood.*

*Source: Florida Atlas and Gazetteer; www.mapquest.com*

## **Task 1: Basic coordination**

This task consisted of arranging and publicizing four quarterly Working Group meetings during the year. Meeting notes from these four meetings are included as Appendix A. The stakeholder/contact list was updated throughout the year; the most recent version is included at the end of Appendix A. This list indicates which people on the stakeholder /contact list have actually attended a Working Group meeting or event since 2002 (a total of 68 people have attended at least once).

## **Task 2: Define area of contribution to Poe, Ginnie and Blue Springs.**

The currently defined “basin” area is based on a 2002 potentiometric surface map, and is sufficient to guide Working Group activities at the present time. The largest uncertainty continues to be on the eastern margin, which is the edge of the Cody escarpment and features several sinking streams. Dye studies are planned by Alachua County EPD in the summer of 2005 at several of these streams and this may provide clarification on whether these streams flow underground toward the Poe-Ginnie-Blue section of the river. Bob Simons of Gainesville, who is extremely knowledgeable about karst features in the San Felasco Hammock Preserve, offered guidance and a day-long hike to look at some of the areas he is aware of that will be included in the dye studies.

In the spring 2005 the statewide Florida Aquifer Vulnerability Map became available. All of the area within the PGB basin shows on this mapping as in the “more vulnerable” category for the Floridan aquifer, as opposed to the other two categories of aquifer susceptibility to contamination, which are “vulnerable” and “less vulnerable”. Therefore, within the PGB area it should be considered that there is no area that is free of vulnerability to contamination that might eventually flow toward the Santa Fe River and affect springs.

Based on our current understanding of the extent of the contributing area, the groundwater basin comprises a land surface area of 100 to 150 square miles, about half in Alachua County and half in Gilchrist County. The predominant land use is rural and agricultural, including silviculture. There are also two substantial mining areas in the groundwater basin, one northeast of Newberry and one about halfway between Newberry and the three springs. Numerous former mines and phosphate pits are located throughout the basin and sometimes resemble natural sinkholes. Unfortunately, these areas are very attractive for disposing of trash.

### **Task 3: Local government workshop**

The purpose of this task was to provide a brief introduction to springs protection issues targeted toward local elected and appointed officials, and then take them on a “guided tour” of some features of interest in the contributing area of the springs. Input was solicited from various advisors on the Working Group as to the format and timing that would be most effective, and a brief survey to learn more about what potential participants would like to know and when they would have optimal availability. Based on the survey results, the workshop was offered on a weekend morning as opposed to an evening or weekend.

The workshop was publicized through posting and mailing an informational flyer to the following groups:

- Alachua County Board of County Commissioners and various boards with land use planning duties;
- Gilchrist Board of County Commissioners and Planning/Zoning Board;
- City of Newberry Commissioners and Planning/Zoning Board;
- City of High Springs Commission and Planning Zoning Board.

An email version of the invitation was also circulated. The final turnout was 7 people, which although small turned out to be an excellent size for guiding the “tour” for the first time. Materials that were distributed to participants are included in Appendix B.

As part of the planning for the tour, the coordinator accompanied a group led by Jim Stevenson on a tour of the Ichetucknee Basin in February 2005. This tour was a turning point in gaining ideas for a similar effort in the Poe-Ginnie-Blue basin to make the local officials workshop more valuable to participants.

The workshop and tour convened at the “Little Red Schoolhouse” in Newberry on May 18<sup>th</sup>, 2005 and began with an introduction to the basin and to springs protection issues about 45 minutes in duration. Following this, the participants were given maps and divided up into three cars to depart on the tour. The tour went extremely well and only ran slightly behind schedule. The group caravanned to the stops, which roughly encircled the contributing area closest to the Santa Fe River. At different stops the group was met by Hugh Thomas of the Suwannee Partnership, Frances Brooks of the Spring Ridge Neighborhood Association, and Jim Drumm, High Springs’ City Manager. A listing of the stops, their significance, and topics discussed, is included in the Appendix.

#### **Task 4: Outreach opportunities and professional gatherings**

During the project year the coordinator represented the Working Group at the following events, workshops and conferences:

- 1) Regular Board meeting, Suwannee River Water Management District, September 2004 (presentation);
- 2) Regular Board meeting, Gilchrist County Board of County Commissioners, September 2004 (presentation);;
- 3) U.S. Geological Survey symposium on Suwannee River basin research efforts, September 2004;
- 4) Suwannee Partnership meeting October 2004 (presentation);;
- 5) Springs Task Force, October 2004 and April 2005 (presentation);;
- 6) Poster presentation on springs working groups at American Water Works Source Water Protection Symposium, January 2005;
- 7) Shoreline restoration project at Poe Springs, February 2005;
- 8) Workshop on springshed delineation at University of Florida, March 2005;
- 9) Booth at High Springs Farmers Market, January 2005;
- 10) Booth at “Living With Earth” Day at Fanning Springs, March, 2005;
- 11) “Solving Pollution Problems in the Wakulla Springshed”, a symposium hosted by 1000 Friends of Florida in May 2005.

## **Task 5: Reactive issues**

**Regional wastewater treatment.** In November, the coordinator was invited to attend a meeting convened by the Mayor of High Springs to discuss the situation at the High Springs wastewater treatment plant. The plant itself is complete and has been online since early 2004, and the first phase of the collection system has been installed. However, the High Springs Commission had recently been informed that funding which had been obtained from the Federal government through the Rural Development Assistance program for Phases 2-5 had been cancelled due to changes in funding eligibility and an increase in the City's average income level, partly due to annexations which added land that has a higher-income population. At the November meeting it was resolved that High Springs would make an appeal to the legislative delegation for help in obtaining an appropriation from the State Legislature and would also explore whether the Federal funding had any chance of being reinstated. (More details of this meeting are provided in the Working Group meeting notes for December 16, 2004 in Appendix A.)

The coordinator joined the Mayor and City Manager in making a presentation to the legislative delegation in January regarding the situation, its relevance to local springs and the local economy, and reminding the delegates that these local springs have statewide value but the responsibilities and financial obligations of protecting them are expected to be paid locally.

As of the time of this report, some of the funding problems appear to be resolved. The situation generated some interesting discussion in the first half of 2005, regarding whether the High Springs wastewater treatment plant could become a regional facility, serving areas outside incorporated High Springs and even outside Alachua County (Gilchrist and Columbia are nearby). The idea however is still in the discussion stage. It would be beneficial to revisit the issue in the future through a follow-up meeting that could be held in conjunction with a Working Group activity.

## **Task 6: Springs Memories Event**

In previous year, the Working Group has held Springs Memories Days at Poe and at Blue Springs, and a goal for this fiscal year was to arrange a similar event at Ginnie Springs, with a special emphasis on cave divers. However, due to scheduling conflicts and time needed for other tasks, the event was not brought to fruition. Another attempt will be made during the upcoming project year.

## **Conclusions and Suggestions for Next Fiscal Year**

A table listing current threats, issues and opportunities is presented below. These have not changed substantially in the past year. The Working Group has continued to gain exposure and new members.

More time spent in the field this year has reminded the coordinator of the high risk of groundwater contamination throughout the High Springs Gap because of numerous and often spectacular sinkholes. A suggested new priority for next year is to develop some materials that communicate this risk effectively to people in the area. Outreach activities in combination with the Santa Fe Partnership should continue also.

Regulatory issues continue to surround the dairy industry. The group should continue to seek opportunities to explore and discuss the necessary coexistence between springs protection and a healthy agricultural sector.

**Table 1. General threats for Poe, Ginnie and Blue Springs.**

<b>General category</b>	<b>Specific threat</b>	<b>Level of concern</b>
<b>Residential uses and future population growth</b>	Increased water withdrawals from Floridan Aquifer; potential long-distance transfers were vigorously discussed in local forums associated with the Florida Council of 100 report.	Moderate
	Increase in population density in areas served by new treatment plant for High Springs could increase stormwater pollution; potential water quality impacts from new High Springs sewage treatment plant sprayfield	Moderate; address through Florida Yards and Neighborhoods and sprayfield monitoring
	Past use of sinkholes to dispose of trash and stormwater. Cleanups depend on landowner permission and raise liability concerns. Stormwater retrofits are very costly.	Moderate to High
	Growth management planning is dependent on state funding, local support and local staffing	Moderate to High
<b>Agricultural activity and practices in vulnerable areas</b>	Dairy farms are more numerous and more intensive than 30 years ago	Moderate
	Local governments have no control of new or intensified agricultural operations	High
	There is an undetermined number of sinkholes historically used for trash disposal	Moderate to High
<b>Miscellaneous</b>	New industrial activity	Unknown
	Mining: two large active mines in springshed	Unknown
	Expansion of bottled water industry	Unknown

**Appendix A: Meeting Notes and Working Group List**

***Santa Fe Springs Working Group***  
***September 2, 2004***  
***Poe Springs Park Lodge***  
***10 AM- 1 PM***

**Meeting Notes**

1. **10 AM Welcome and Introductions.** An attendance list is attached.
2. **Guest speaker: Tom Mirti, Hydrologist, Suwannee River Water Management District.** Tom gave a presentation regarding flood forecasting in the “springs reach” of the Santa Fe basin. Some highlights:

The flood of record for this reach of the Santa Fe River was in 1964 (Hurricane Dora) and was caused by heavy rainfall throughout the basin. Farther downstream, near its confluence with the Ichetucknee River, Santa Fe flood heights are strongly influenced by backwater from the Suwannee River when it is flooding, especially in the springtime. In our area, severe flood events are not associated with the Suwannee but with heavy rain in the upper basin such as was seen in 1964. Typically these happen during tropical weather and so are found in September and October, compared to February and March for the Suwannee floods. Flooding in the Suwannee can also back water up into the lower reaches of the Santa Fe.

Flooding in 1998 was the largest event since 1964, but went on record as a 20-year flood (i.e. this extent of flooding has a 1 in 20 chance of occurring in any given year). High water during large flood events commonly persists for nearly a month along the lower Santa Fe River. Flood-forecasting is done by the National Weather Service, with SRWMD providing river level and rainfall data, and disseminating forecasts and related information locally.

Poor agreement between flood forecasting and tropical storm-induced events in the Hollingsworth Bluff area (near the State Road 47 bridge) led to the establishment of a new flood-forecasting gage near Fort White, not far from Blue Springs. At that location, flood stage is 24 feet above sea level; at this elevation property damage and roadway/driveway flooding begin to be observed. More rain gages have also been added to the flood-forecasting network since 1992 to improve the accuracy of flood forecasting.

Tom is working on a rating curve for Poe Springs (i.e. a graph that reliably shows the relationship between water depth and discharge rate at the spring). At Poe, the agreement between water depth and discharge rate is not very good, due to backwater effects from the Santa Fe River and other complications. Water levels measured in a Floridan Aquifer well in High Springs show more reliable agreement with discharge rate at Poe than water depth at the spring itself.

Tom responded to questions from the group regarding current saturation conditions in the basin currently (given the imminent arrival of Hurricane Frances this was of great interest), flooding in 2003, septic system damage reporting after floods, and how major floods affect Floridan Aquifer recharge.

3. **Report from coordinator and action teams.**

- a. **Local Government workshop planning.** Fay reported that she will visit the Gilchrist County Commission later this month to discuss the upcoming workshop with them and solicit contact information for members of the Planning and Zoning Board.
  - b. **Other activities.** Fay reported that she is scheduled to give a brief presentation to the Suwannee River Water Management District Board about the group and its activities September 14. She has been in touch with the Florida Geological Survey regarding the Florida Aquifer Vulnerability Assessment and working with them to disseminate the information once it is released.
  - c. **Florida Yards and Neighborhoods Program (FYN).** Hugh Thomas introduced Sarah Carte, the new education coordinator for the Suwannee Partnership. They are exploring the opportunity to work with High Springs as a FYN “project community” in which a homeowner education effort is undertaken. The primary goals that have been determined at this point are to promote the use of slow-release fertilizers, conserve water used in landscaping, and plan for stormwater. Other goals were solicited. The resulting program would include workshops at relatively new developments such as Cinnamon Hills, possible demonstration projects at public sites such as the library and City Hall, and slow-release fertilizer sales.
  - d. **Upcoming dye studies of sinking streams.** Robin Hallbourg of Alachua EPD updated the group about this department’s long term interest in identifying the endpoints of sinking streams. They have funding to do at least one dye study in the next year and will begin with Mill Creek Sink (Alachua). Lee Sink (behind the Progress Center) is also high priority. These streams may or may not be in the recharge area for Poe, Ginnie or Blue, since the dividing line between the recharge areas for Hornsby and Poe has not been determined.
  - e. **Grant for shoreline restoration at Poe Springs.** Robin informed the group that the County got an EPA Five Star Restoration grant to restore the mowed edge of the river next to the Multipurpose Lodge to native shoreline vegetation, to remove exotics in the small spring run west of the main spring, and restore shoreline areas affected by foot traffic along the main run, Poe Springs itself, and nearby bank areas of the Santa Fe River. The project includes public education component, with three one-day workshops to be conducted at Poe Springs Park. These workshops would combine lecture material and hands on experience. The tentative dates selected are February 3, 17<sup>th</sup> and 26, 2005. Mark Clark at UF is working with both this project and the FYN project.
  - f. **High Springs wastewater treatment plant.** There was discussion that some of the funding might be in question for this project. There was consensus that the next meeting should include a field trip to the treatment plant. The group expressed interest in operational details, such as the type of crop to be used on the sprayfield.
4. **Guest Speaker: Eberhard Roeder, Florida Department of Health.** “Karst, Tracers and Nutrients at Manatee Springs State Park: Initial Results from DOH's Karst Study.”

This study used wells in the vicinity of two existing septic systems at Manatee Springs State Park to monitor transport of nutrients from standard septic systems and drainfields in a karst environment. Tracers (fluorescein and sulfur-hexafluoride) and water quality monitoring for nitrate, fecal coliform and total phosphorus were used to track septic system effluent. The hypothesis was that there would be rapid recharge of groundwater from the drainfield and little attenuation of wastewater components. This hypothesis was strongly borne out by the results.

Travel times for the effluent at two sites ranged from 5 to 100 feet per day at one site and 1 to 280 feet/day for the other site. Nitrate concentrations as high as 60 mg/l were observed in monitoring wells near the septic systems (drinking water standard is 10 mg/l and change in spring systems is associated with 1 mg/l). The next phase of the DOH study will be to examine the performance of onsite systems specifically designed to remove nutrients. Eberhard will be presenting the study at the upcoming Integrated Science Workshop for Suwannee River Basin and Estuary Initiative hosted by the U.S. Geological Survey in Cedar Key (September 22-24).

5. **The arrival of Hurricane Francis now appearing imminent**, the group hastily scheduled its next meeting on December 9<sup>th</sup>, 2004 at the Spring Ridge Fire Station and adjourned for sandwiches kindly provided by the Alachua County Environmental Protection Department.

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*Some notes from the Coordinator in October 2005 regarding the effects of Hurricanes Francis and Jeanne in the Poe, Ginnie and Blue neighborhood*

Hurricane Francis came through north Florida on September 12 and Hurricane Jeanne followed on September 26. Both were tropical storms by the time they came through and left substantial damage and rain. As of the first week of October, the flooding of the Santa Fe River and its surroundings is still occurring. The crest at Fort White occurred on October 2, while the peak at Three Rivers and the 129 bridge is not predicted to go by until October 14<sup>th</sup>. Flooding of highway 49 in Gilchrist County continues to keep the road impassable which is a problem for people trying to get to Trenton from High Springs. The Gilchrist County homepage prominently displays the following warning: "Flooding has produced a very dangerous situation including several sinkholes. Extreme caution must be exercised when driving. Driving conditions tend to deteriorate at night when water covered roads become difficult to detect. If you see water covering a roadway, please TURN AROUND. DO NOT ATTEMPT TO DRIVE THROUGH WATER. It is impossible to determine whether or not a sinkhole has compromised the road subsurface, and the depth of the water can be deceiving."

At the Gilchrist County Commission meeting that I attended on September 20<sup>th</sup> (before the arrival of Jeanne) a number of citizens had come to alert the Commissioners to severe flooding around Waters Lake, which is in our basin and drains into a sinkhole at some times. The flood damage was being exacerbated by people on jet skis creating extra wave damage. I am attaching an article from the October 8<sup>th</sup> Gainesville Sun regarding the Waters Lake situation which is of interest in the reported observation of extremely high rainfall for August and September, and the remarks regarding the Wacasassa Flats.

In addition I have been collecting reports of sinkholes that have occurred since the hurricanes- there are quite a few in Alachua and Gilchrist Counties, including 2 around Newberry within the area that we believe contributes to Poe, Ginnie and Blue. In downtown Trenton, which is not in our recharge area, a building (the kidney dialysis center) will reportedly have to be abandoned due to a new sinkhole. If any of you is aware of new sinkholes in our recharge area I'd be grateful to hear about it.

A St John's Water Management District planner I was talking to recently said there is a favorite statement they have used for years - that something like 80% of people in Florida have never experienced a hurricane. "We can't use that line any longer," he said.

## **Attendance List 9-2-2004**

Bobbie Wray Suggs, Ginnie Springs Resort  
Chris Bird, Alachua County EPD  
Eberhard Roeder, Florida Department of Health  
Fay Baird, Pandion Systems, Inc.  
Frances Brooks, Spring Ridge Civic Association  
Fritzi Olson, Adopt-A-River  
Gary Maddox, FL DEP Springs Initiative  
Hugh Thomas, Suwannee River Partnership  
Janet Johnson, YMCA  
Jennifer Gihning, FL DEP Springs Initiative  
John Abendroth, DEP  
Kari MacLauchlin, UF  
Kim Davis, Blue Springs  
Pete Butt, Karst Environmental Services, Inc.  
Robin Hallbourg, Alachua County EPD  
Sarah Carte, UF-IFAS  
Tom Mirti, Suwannee River Water Mgt District  
Tommy Langford, Gilchrist County Commissioner  
Wendy Wilbur, Alachua County/UF/IFAS Extension

Article published Oct 8, 2004 Gainesville Sun

## **Flooding woes weigh heavily on Waters Lake Frustration grows as water keeps rising**

WATERS LAKE - Theron Hudson thought he would be ready for any future floods when he used both the financial aid and the rebuilding advice he got from FEMA following the floods of 1998.

The Federal Emergency Management Agency recommended Hudson and his wife Sue use their federal money to repair their flooded Waters Lake home by raising it to above the level of the 1998 flood. If they did not build higher, Hudson said he was told he would not be eligible for federal help if there were ever any more floods of his Waters Lake neighborhood.

"Well we raised up our house and now it's flooded worse than ever," Hudson said Thursday. "Now we are waiting for help."

Although FEMA has provided families with one-time checks of \$449 to help pay for temporary housing expenses, the residents said the assistance was a small drop in a large bucket. Several have grown frustrated and angry waiting for FEMA to respond to their requests for help.

On Thursday, the Hudsons and many of their neighbors in northeastern Gilchrist County got some help from an unexpected source - volunteers from the American Red Cross and two recent college graduates who are serving with AmeriCorps.

Andrea Kellner of Cainsville, Mo., and Heather McCoy of Nashville joined AmeriCorps after finishing undergraduate degrees and were assisting Red Cross volunteers Thursday at the picnic shelter next to the Walters Lake boat launch. The AmeriCorps members took applications for emergency housing assistance, and distributed food, water, cleaning kits and personal care items.

"We really appreciate them coming out here because this is much worse than the 1998 floods," said Tina Sanchez. "In 1998 we were out of our house for three weeks. This time the water is probably three feet higher and we have already been out for one month and one day and they are telling us it may be another three weeks or more before we get back."

Kellner said her assignment to the rural flooded area was part of a 10-month commitment she made to AmeriCorps.

"Today (Thursday) we are doing outreach to people who can't get to the Red Cross office in Gainesville to apply for help," Kellner said. After nearly a year of similar assignments, Kellner said she now knows what real hardships look like and no longer takes her life for granted.

Another concern for flooded residents in the Waters Lake area as well as along the flooded Santa Fe and Suwannee rivers has been the potential for looting. To minimize opportunities for criminals, the Florida Department of Law Enforcement established command posts at three locations and coordinated patrols of flooded neighborhoods by law enforcement officers from several local and state agencies. Trucks, boats and aircraft have been used in the patrols.

"To my knowledge nobody has been arrested," said Phil Kiracofe, an FDLE public information officer. "The high visibility (patrols are) keeping problems to a minimum. We have people scheduled to remain out there for the foreseeable future."

Kiracofe said patrolling officers have noted that the water is still rising in many areas and "waterways and roadways are now about one and the same."

County coordinator Ron McQueen said that in addition to raised river levels from water flowing downstream, Gilchrist County has been dealing with water sheeting off the center of the county.

"The Waccasassa Flats that run down the center of our county are higher than the sandy areas on the east and the west, so we are still getting an inland rise of two to four inches a day in places as the water on the flats tries to flow to lower ground," McQueen said.

Waters Lake resident Steve Gladin has checked the numbers several times and continues to come up with a startling realization. Gilchrist County's average annual rainfall is 50 inches, but many parts of the rural county got nearly that much rain during a stormy 23-day period in August and September.

"No wonder we're flooded," Gladin said.

With floodwaters still rising, officials have had a hard time getting an accurate count of the number of homes affected.

"We are still working with estimates and right now it looks like there are still 30 to 35 in Trenton and about 59 in the Waters Lake area, but those numbers seem to be going up every day," McQueen said.

Some residents said this flooding happened even faster than the 1998 floods.

"I have lived out here 20 years and never had water in my house until this, but it all happened in one day," said Waters Lake resident Janice O'Steen. "I spent one day walking in that water trying to save stuff in my house and I am a diabetic so I guess that was one day too much for my feet because I wound up loosing my right little toe."

O'Steen's neighbors, Howard and Mary Daniels, have owned their lakefront land since 1979. They used it for camping and picnicking until 1999 when they put a mobile home on it.

"We saw the 1998 flood and how high it got, so we elevated everything four feet, which is above what FEMA told people to do around here," Howard Daniels said. "Now everything on the floor of our house is ruined. I don't know how we're going to deal with this."

Mary Daniels made her first trip back inside the house Thursday, picking up a few items with sentimental value, but nothing very large because the couple only had a 14-foot jon boat to transport things to dry ground. "It's just stuff and none of us are hurt, but it is sad," Mary Daniels said. "It's very sad."

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***Santa Fe Springs Working Group***  
***December 16, 2004***  
***Spring Ridge Volunteer Fire Department***  
***9:00 AM- 3 PM***

***Meeting Notes***

9:00 – Sign in; coffee/goodies courtesy of Pandion Systems

**1. 9:30 AM Welcome and Introductions.** (Fay Baird, Coordinator)

**2. Report from coordinator and others**

**a. Report from Springs Task Force meeting December 9 in Homosassa Springs**

- i. **A Springs Curriculum for middle school children is in production.** Draft Materials are due in February 2005. Will be available next Fall. Mike Bascom at FDEP is the contact.
- ii. **Project Underground** (see last page). Fay would like to bring this in next Spring to target Gilchrist, Alachua, and Columbia County. Fay offered to coordinate fundraising to raise the money from local agencies. A member suggested that we coordinate with the new curriculum. Fay will talk with Mike Bascom about timing.
- iii. **Rashes from water in springs.** Five occurrences were reported last season at Ichetucknee, 1 report at Fanning, and 1 at Juniper springs. We know that some types of algae, such as *Lyngbia*, cause rashes. There is an effort underway to better coordinate reports of rashes from springs water. Fay asked that occurrences be reported to her or to Mike Bascom.
- iv. **Springs Initiative project ranking.** The Task Force is developing a new process for ranking projects that will make the decision process more transparent.
- v. **Florida Springs website** (<http://floridasprings.org>) has new information including “documentaries” on springs, particularly Wakulla. Fay requested simple websites for active springs working groups to enhance outreach and education about local springs.
- vi. **Interesting presentation regarding the bottled water industry by a representative of Nestle.** The US is considered an “immature market” for bottled water especially compared to Europe, with much opportunity for growth. In many parts of Europe people don’t normally consider tap water drinkable. Some interesting statistics include: there has been a 204% increase in per capita consumption in the US in the past 10 years; consumption is 18 gallons per capita per year throughout the US compared to 114 in California and more than 100 gallons in Italy, Germany and France. The industry is regulated by the FDA (not EPA) as it is considered a food product.
- vii. **The Task Force is looking for nominees for “springs protection champions”** for citizens or private companies. Past awards include a golf course developer who implemented BMPs for springs protection next to Rainbow Springs, and Annette and Mark Long, cave divers who were able to convince Levy County to pass an

ordinance protecting areas within 1 mile of a mapped cave system. Nominations will be accepted until March 2005 (to Mike Bascom).

**b. Proposed springs protection legislation**

- i. Text is in the final stages of comment from various reviewers. It will be filed in February for the 2005 Legislative Session. The Senate sponsor is Nancy Argenziano, and a House sponsor is being sought. Fay will email a copy to the full Working Group when it is finalized. A member suggested that support should be solicited from legislators that represent areas where there are springs.

**c. IFAS education and outreach project in High Springs**

Wendy Wilbur updated the group on the new Florida Yards and Neighborhoods program that will target High Springs in Spring 2005. A demonstration garden in front of City Hall is planned for January 29, 2005 in coordination with the High Springs Garden Club. There will be space for signage. The education program starts in January 2005, including a weekly booth at the Farmers Market. Materials will include FYN brochures and handouts, with some tailored to High Springs – for example, a poster to hang in shop windows. Fay suggested including septic tank educational materials from the Department of Health. FYN will also promote the new Shoreline Restoration Program (see 3.d.) and will talk to the developer of the Tillman Acres expansion about including this type of landscaping in their development.

**d. Upcoming Shoreline Restoration Workshops**

Fritzi Olson informed the group about the upcoming workshops to be held at Poe Springs. These are aimed at changing attitudes about what constitutes a healthy shoreline. Three dates are set, one to target each of 3 groups: County Extension Agents statewide, local government and land management personnel, and waterfront property owners. The public is welcome at any of the 3 workshops, which will include lecture and hands-on restoration work. Workshops are free and lunch will be served.

**e. Proposal for a Hydrologic Observatory for the Suwannee River Basin**

Fay distributed a handout from Dr. Jon Martin at UF, who is heading up this proposal to a group called the Consortium of Universities for the Advancement of Hydrologic Sciences. The Suwannee River is the last major river in the United States with unrestricted flow and relatively good water quality. This is one of the main reasons it was chosen as a candidate. If achieved, it will mean funding for Universities, coordination of research, and national attention focused on the Suwannee River.

**f. Local Government workshop**

Fay is coordinating this workshop to target local officials and decision makers. She conducted a survey of the Gilchrist planning board to assess their interests, needs, and timing. Issues of interest include existing water regulation and long-range transport concerns. The workshop will include a driving tour of features in the recharge area.

**g. Project Underground opportunity**

The SFSWG requested but did not get funding from the Springs Initiative last fiscal year for a one-day-long inservice training workshop by Project Underground (based

in Virginia) for north Florida middle and high school teachers, and Springs Ambassadors. (See <http://www.dcr.state.va.us/underground.htm> .) Fay believes that private sponsors could be found to fund such a program and asked for approval to proceed to do this, assuming it would not conflict with the curriculum that the Initiative is working on. There was consensus that this should be pursued if there is no conflict with or duplicate the Initiative's curriculum.

### **3. High Springs wastewater treatment plant (WWTP) funding and regional situation.**

In November, Kirk Eppenstein (Mayor of High Springs) convened a meeting to discuss the situation at the High Springs wastewater treatment plant. Funding which had been obtained from the Federal government (Rural Development Assistance program) for Phases 2-5 has been cancelled. The funds were in the form of a combined grant and loan. Funding was lost due to changes in funding eligibility changes and an increase in the City's average income level, partly due to annexations which added land that has a higher-income population. The first phase was completed about a year ago, and included construction of the treatment plant and connection of the downtown "core" of High Springs, about 300 homes. Phase 2 - 5 remain unfunded. This group asked that the Working Group explore the issues that were enumerated at the November meeting.

High Springs City Manager Jim Drumm provided additional background information to the Working Group. High Springs is an older community with older homes, old septic tanks, and numerous sinkholes. When homes in the core area were connected to the plant and the septic systems were "abandoned" (i.e. disconnected, filled with sand, or removed), it was confirmed that these older "systems" were providing little or no wastewater treatment. Some septic tanks were under concrete and inaccessible (therefore had never been maintained), and some were put in before permits were required and were really just holding tanks for waste. In addition, it has been standard practice for the Department of Transportation to route stormwater to sinkholes, and it is not uncommon for residents to use sinkholes as drains for washwater and garbage.

There is interest in whether the treatment plant could become a regional facility, serving areas outside incorporated High Springs and even outside Alachua County (Gilchrist and Columbia are nearby). This is a regional issue because many other areas besides the city of High Springs affect the Santa Fe River and its springs, including Columbia County and areas downstream of High Springs where the only option is septic systems. The High Springs treatment plant disposes of treated wastewater via a sprayfield, but it would be desirable to explore options for increasing the level of treatment to tertiary and providing this reclaimed water for nonpotable uses such as landscaping. This would reduce or even eliminate the need for a sprayfield.

Discussion by the Working Group included the following points:

Tillman Acres and Cinnamon Hills subdivisions will be connected to the WWTP. The City no longer allows any new subdivision development on septic tanks.

As an example of a similar regional approach to water management, the Suwannee River Water Management District (SRWMD) contributed to the purchase of a wellfield site that is intended to serve both Alachua and High Springs. One entity will run the wellfield for the benefit of both communities through interlocal agreements. After new wells are installed, the intent is to reduce withdrawals at older wells to reduce the impact of withdrawals on aquifer levels. The site is located north of 202<sup>nd</sup> Street.

Timing on an expansion to a regional level may be good because the Suwannee River Partnership has recently expanded to the Santa Fe region, and the FDEP's TMDL program must be regional in order to address water quality in the Santa Fe River. The TMDL process will look at everyone, so all communities will have to do their part, not just High Springs.

Phase 1 of the High Springs wastewater treatment plant can be looked at as a groundwater remediation project in which 300 inadequate septic systems located on karst terrain next to a springfed river were removed.

Homes served by septic systems on the riverbank also add wastewater to the river. There are studies on this that can be utilized in a regional effort.

Sprayfields have a life expectancy in regards to nutrient buildup. The High Springs plant includes nitrate removal in the wastewater treatment system, which is over and above what is required by state law. This reduces nitrate levels in effluent to 5 mg/L (standard is 10). While this level is still higher than the level that is thought to trigger problems in springs, it is a great improvement over the state requirement. The sprayfield is located about 2.5 miles southeast of Poe Springs.

Gilchrist County Commissioner Tommy Langford is encouraging the town of Bell to install a WWTP now, while they are still small and can get funding. He also suggested that road improvements wait until after the sewer system is put in. Gilchrist County is bordered by both the Santa Fe and Suwannee Rivers.

There is still an unresolved question on whether installing a WWTP in any area promotes development to higher intensity uses that will increase eventually nutrient loading to the springs. There is a clear benefit in having removed old septic tanks in High Springs, but future development patterns need to be considered as local land uses are changing from agriculture to subdivisions.

**An Action Team was formed** to address the issue of funding and regional expansion. Members include: Fay Baird, Alachua County EPD (Robin Hallbourg), Jim Drumm, Gilchrist County (Tommy Langford), Pete Butt, and John Catches of Jones Edmonds. The group will look at action items such as visiting government bodies to ask for a resolution of support and the possibility of a Santa Fe River Utility District to coordinate water, wastewater, and groundwater protection.

#### **4. Status report on springs conditions and hydrology in the lower Santa Fe River and basin**

Fay read emails that she received from Kim Davis at Blue Springs and Bobbie Suggs at Ginnie Springs on the effects of Hurricanes Frances and Jeanne. Kim's email noted that the springs are well, that the hydrilla was washed out when the floodwaters receded and "the water is flowing out with great force". The flow was recently measured at 53 million gallons per day, previous rates were around 40 million gpd. Nitrate levels in onsite wells at Blue were a little higher than previously at well #1 and a little lower at well #2, (0.754 mg/L at well #1 and 0.468 at well 2).

Bobbie Suggs's email reported that Ginnie Springs received about 20 inches of rain from Frances, they lost 100 trees in the park and water level was up into the bathhouses. Ginnie then got another 10 inches of rain from Jeanne. It was the first time the park had closed in 28 years. Pete Butt told the group that all the runs at Ginnie are plant free, similar to Blue - no weeds or weed walls -(Dogwood, Little Devil, and Ginnie), and the bottomland is still a mish mash of fallen and smashed trees.

There was discussion about how rising river water levels can actually create a barrier for water exiting a spring, so spring flow may not come up immediately in response to rainfall. When the river levels drop, it causes the spring flow to increase. Pete predicted that when floodwaters fall completely (which they have not yet done), the springflows will be very large.

Tom Mirti of SRWMD presented photos and new data showing the effects of two hurricanes hitting the area in one month. Previous data had shown that the Santa Fe River is more influenced by tropical storm flooding than the Suwannee, which has high flood levels in the spring rather than the fall. This was borne out by the river's response to Frances and Jeanne rainfall - flooding on the Santa Fe was more severe than on the Suwannee. Near Ft. White, the river's crest from Frances occurred on September 12<sup>th</sup>, this was at the 8-year flood level. For comparison, the 1998 El Nino flood was a 15-20 year event.

West of the Wacasassa Flats, the intersection of Hwy 232 and Hwy 47 was flooded throughout the fall and is still under water at 232. This was not surface water flow, it was the aquifer level rising above ground, as ground level there is ~75 feet above sea level. (A group member said that these water levels are now leveling out, as nearby property that was not flooded earlier is now flooded as the flood levels at Rt232 go down.)

Ten to twelve inches of rain in 24 hours is considered a 100-year rainfall event, but this amount of rain may not produce 100-year flood levels. Measurements at Oleno were 14.77 inches of rain, Trenton rainfall was 17 inches, both exceeding a 100-year event from Frances alone. The Waccasassa Flats received 14-18 inches of rain. Readings from a Floridan Aquifer well in Trenton went from 55 to 77 feet after Frances (USGS well data).

In some nearby areas outside our basin, Alligator Lake in Lake City reached a record high level in September after Frances, 100.79 feet above sea level. In 1999, Alligator Lake had dried down to only a small sinkhole. Calloway Estates in Lake City (a new development) was badly flooded and there was substantial damage throughout the low areas in the Ichetucknee Trace. Rainfall was extremely heavy in some very localized areas; for example, Rose Creek got much more rain than the surrounding gauges. A new gauge that was installed at Long Pond (Levy County), which was set three feet above the water level in July/August, is now several feet under water.

## **5. Atlantic Multidecadal Oscillation**

Fay attended a seminar at the St. Johns River Water Management District in November which she felt was important to inform the group about. Research on sea surface temperatures in the Atlantic Ocean show that a cycle of wet and dry periods repeats approximately every 60 years, with about 30 years each of wet and dry. Climate data indicate that there was a shift from dry to wet around 1995, going into a wetter cycle. Fay noted that she is not sure how the drought of 1999-2002 fits into this. Florida and the Northeast United States run the opposite of the rest of North America, i.e. when Florida and the Northeast are in a wet part of the cycle, the rest of the country is in the dry part. The fact that Florida is now entering a wet part of the cycle may mean there will be more flooding of recently developed areas which were thought to be dry when they were developed.

Martin Kelly of the Southwest Florida WMD has analyzed how this cycle is reflected in Florida river flows. In Florida, northern rivers peak in the Spring, and southern rivers peak in the fall associated with tropical storms. He also uses the term "bimodal rivers" for those that have peaks in both Spring and Fall. Fay observed that these "bimodal" rivers are located in the springs area of the state and wondered whether the influence of springs on these peaks has been taken into account.

Tom Mirti said that 1965 to 1995 was considered a low-activity hurricane period and we seem to be entering a higher-activity hurricane period. Fay noted that in the context of a 60-year cycle, a 30-year

wet period provides opportunity for aquifer recharge and water storage in the aquifer, but this would be depleted through the following 30-year period. Tom noted that because this is a 60-year cycle, we have a problem with shorter data records since they do not capture all parts of the full cycle.

**6. Announcements**

- a. Todd Kincaid announced that this year's Hydrogeology Consortium will be held at Wakulla Springs in March and he will inform us when the actual date has been set.

7. **Schedule next Working Group meeting:** March 17<sup>h</sup>, 2005 was chosen for the next meeting.

The meeting adjourned and was followed in the afternoon by a tour of the High Springs Wastewater Treatment Plant. Thanks to City Manager Jim Drumm and John Horvath of Jones Edmonds for making this a very useful and informative tour.

## **Attendance list December 16, 2004**

Barbra Larson, UF-IFAS  
Brian McCord, CCDA  
Chris Bird, Alachua County EPD  
Dan Rountree, Current Problems  
Eberhardt Roeder, FL Department of Health  
Fay Baird, Group Coordinator, Pandion Systems  
Frances Brooks, Spring Ridge Civic Association  
Fritzi Olson, Adopt-A-River  
Hugh Thomas, Suwannee River Partnership  
Jim Drumm, city of High Springs  
John Abendroth, FL DEP  
John Catches, Jones Edmunds  
Karen Hill, Pandion Systems  
Mike Clark, citizen, High Springs  
Pete Butt, Karst Environmental Services  
Robert Norton, Alachua County Growth Mgt Dept.  
Sarah Carte, UF-IFAS  
Todd Kincaird, Hazlett-Kincaid  
Tom Mirti, SRWMD  
Tommy Langford, Gilchrist County  
Wendy Wilber, UF-IFAS

***Santa Fe Springs Working Group***  
***Poe Springs Lodge***  
***March 17, 2005***

***Meeting Notes***

6. **9:30 AM Welcome and Introductions.** Fay Baird, Working Group Coordinator, welcomed the group and asked all present to briefly introduce themselves.
  
7. **Report from coordinator and others on activities since the last meeting**
  - a. **IFAS education and outreach project in High Springs.** Wendy Wilbur of the Extension Service reported that the “Florida Friendly” landscaping installation at High Springs City Hall had gone very well with good attendance and media coverage. She has also completed several workshops at the library, with total attendance of 50-60 people. She expressed interest in doing a small festival type of event during the month of May, to be promoted during Pioneer Days. There is an opportunity for springs protection information to be incorporated into the event and for members of the group to be involved; Fay will follow up. Wendy also reported that Suwannee Partnership education coordinator Sarah Carte is installing a Florida Friendly landscaped area at the extension office in Live Oak.
  
  - b. **Local Government workshop.** Fay is continuing to plan, has had to move it to May.
  
  - c. **Project Underground opportunity in June 2005.** Fay reported that Mike Bascom had no objections to a local teacher training workshop and will pursue finding sponsors to cover the cost of bringing the trainer to this area. She has spoken to Carol Zokaides about coming in June after school gets out, but it may be too late for this spring because of the lead time needed for recruiting, in which case it could be offered in Fall 2005.
  
  - d. **Shoreline restoration workshops.** Robin Hallbourg reported that over one hundred people attended the workshops in February and March and the restored areas have benefited from the rain this season. She suggested that the group re-tour the area in the fall to follow up on how well established the areas have become.
  
  - e. **Proposed springs protection legislation.** Fay presented a fact sheet prepared by Richard Hamann of the UF Law School Conservation Clinic (attached). The House and Senate bills differ slightly in wording and the Senate bill is more specific. In the House the bill number is HB 1185 (sponsor Dwight Stansel) and in the Senate it is SB 2368 (sponsor Nancy Argenziano). Progress can be monitored on the Web; the next step would be submittal to various committees.
  
  - f. **Springs Memories Day at Ginnie.** Fay is continuing to try for a date in April or May in coordination with Ginnie Springs.
  
  - g. **Dye studies at Mill Creek, Lee Sink, Big Otter/Split Rock.** Robin said that the work is going ahead as planned except that Jon Martin’s group at the University is doing a dye study in the River Rise/Sweetwater Lake area in late April and they want to be sure all of that has moved through the system before the other studies are done. Wells in the area will be sampled as well as Hornsby and Poe springs, also possibly the Bellamy cave system.

h. **Well monitoring in High Springs Gap.** Pete Butt reported that there was a rise in well levels throughout the monitoring network on the day of the Asian tsunami in December. He also reported that CCDA Waters is contracting with Hazlett-Kincaid to create a groundwater flow model for the area.

8. **Guest Speaker Mark Hooks, Florida Dept. of Health: The Future of Sewage Disposal in Karst Areas.** Mark recently authored the study required by the Legislature regarding onsite sewage treatment in the Wekiva Basin (available at <http://www.myfloridaeh.org/ostds/pdf/WekivaStudyReport.pdf> ). Discussion followed the presentation and included the following points:

- a. Conventional onsite septic systems yield about 25 pounds of nitrate for a 4-person family per year.
- b. There are existing examples of “performance based treatment systems” in this area; the group would like to find one and have a field trip. Mostly now used on expensive waterfront property or expensive small lots in sensitive areas such as the Florida Keys.
- c. Existing systems can be retrofitted to give much better nitrate removal through adding a pump and a distribution line to provide drip irrigation of effluent to lawn areas.
- d. Cost for retrofit about \$2,000 plus \$140 annual cost for electricity (pump); many examples in Florida Keys
- e. Management of all systems is essential but especially enhanced systems
- f. There’s a need for a pilot program to study how well enhanced systems perform in karst areas-perhaps a cooperative effort involving system manufacturers could be done to install and then study treatment effectiveness for a few interested landowners- same for retrofits
- g. Onsite “package” systems are a good alternative for clustered-type layouts but must be monitored
- h. There will be a public input process for implementing the recommendations in the Wekiva report-goal is implementation by March 2006
- i. The FL Onsite Wastewater Training Center in Haines City has demonstration units

9. **The meeting was adjourned around 12:30.** Following the meeting, the group toured the shoreline restoration areas at Poe Springs Park, led by Robin Hallbourg of Alachua County EPD.

## **Attendance list March 17, 2005**

Annette Long, Manatee Springs Ambassador  
Dan Rountree, Current Problems  
Fay Baird, Group Coordinator, Pandion Systems  
Frances Brooks, Spring Ridge Civic Association  
Fritzi Olson, Adopt-A-River  
Gary Maddox, FL DEP Springs Initiative  
Hugh Thomas, Suwannee River Partnership  
Janet Johnson, YMCA  
Jennie Myers, Wakulla Springs Working Group  
John Catches, Jones Edmunds  
Karen Hill, Pandion Systems  
Kathy Fanning, Alachua County EPD  
Mark Hooks, FL Department of Health  
Mike Jamerson, Adopt A River  
Paul Booher, Dept. of Health  
Paul Myers, Alachua County Health Department  
Pete Butt, Karst Environmental Services  
Robin Hallbourg, Alachua County EPD  
Sarah Carte, UF-IFAS  
Wendy Wilber, UF-IFAS

FACT SHEET  
FLORIDA SPRINGS PROTECTION ACT

March 11, 2005

Prepared by Dr. Richard Hamann, Levin School of Law, University of Florida

BACKGROUND

The Florida Springs Protection Act has been introduced in the 2005 regular session of the Florida Legislature by Representative Stansel (HB 1185) and Senator Argenziano (SB 2368). Students in the conservation clinic at the Levin College of Law conducted supporting research and drafted the initial version of these bills for the Silver Springs Working Group. For their work see <http://conservation.law.ufl.edu> . The introduced bills are somewhat different due to subsequent refinement by the Working Group and bill drafting staff. The status of the bills may be followed through either the Senate or House websites, accessible through <http://www.leg.state.fl.us> .

PROBLEMS ADDRESSED BY THE ACT

The proposed legislation is intended to address four interrelated problems.

1. Springshed Delineation

In many cases we don't know the source of water for particular springs and those land areas that must be given the highest levels of management to protect springs. The Act requires DEP to identify those areas that supply water to each first and second magnitude spring (i.e. the springshed) and designate those parts of the springshed that are most important to the health of the springs as a primary protection zone.

2. TMDL Development

Although many of our springs are suffering degraded water quality, they often do not qualify as "impaired waters" under the states primary program for regulating the cumulative impacts of all sources of water pollution, the TMDL program. Furthermore, the TMDL program does not serve to prevent them from becoming impaired. The Act requires DEP to revise the criteria for impairment so that springs can qualify and so that springs that are likely to become impaired can be addressed.

If first or second magnitude springs are determined to be impaired, then DEP is directed to develop a Total Maximum Daily Load (TMDL) and allocate responsibility for the nonagricultural, nonpoint sources of pollution to those local governments with jurisdiction over the springshed.

### 3. Local Comprehensive Plans

Local governments are not currently required to address springs protection in local comprehensive plans. Local governments with jurisdiction over part of the springshed for a first or second magnitude spring are directed by the Act to review their comprehensive plans and amend them to ensure protection of the water quality and water recharge and implementation of the TMDL for nonagricultural, nonpoint sources of pollution.

The relevant state and regional agencies are directed to assist local governments in the review, amendment and implementation of their comprehensive plans. The model land development code for Florida springs protection being drafted by DCA should be useful to local governments in this process.

### 4. Primary Protection Zone

State regulatory programs give inadequate consideration to the location of facilities relative to springs. Under the Act, certain activities that have a great risk of damaging springs are prohibited or subject to greater restrictions when located within the primary protection zone. These include landfills, industrial wastewater disposal facilities, rapid infiltration beds, hazardous waste facilities, and wastewater treatment and disposal facilities.

*Santa Fe Springs Working Group*  
*June 14, 2005*  
*Poe Springs Lodge*  
*1 PM - 4 PM*

*Agenda*

**1 PM Welcome and Introductions.**

**1. Report from coordinator and others**

- a. **Local Government workshop.** Fay reported that the workshop to inform local government officials about springs protection issues took place on May 18<sup>th</sup> and included a tour of the recharge area. Hugh Thomas met the group at a stop at Waters Lake to describe the Suwannee Partnership, and Frances Brooks joined us at the Spring Ridge subdivision to emphasize landscaping and lawn care practices that affect groundwater. Fay distributed the handout and map that was given out at the workshop. She is open to a repeat of the workshop if the group believes it would be useful in the future but cautioned that plenty of lead time is needed to get maximum involvement.
- b. **Dye studies at sinking streams along eastern margin of area.** Kathy Fanning reported that the studies have not yet been completed due to weather, but it is expected that they could be done within the next month.
- c. **Springs task force meeting April 28<sup>th</sup>.** Fay reported on a couple of items she learned at the meeting that are of interest to this working group.
  - i. First, a septic system retrofit is planned for Levy County's Blue Spring near Bronson. The project features some of the ideas that this group has discussed at earlier meetings: retrofitting to achieve better water quality, pre- and post- construction water quality monitoring, and putting demonstration projects in publicly owned areas so that people can become familiar with them. The work at Levy Blue will include removing an existing 48-inch mound that will be replaced with a picnic area, and relocating the drainfield area to much higher ground with much better water quality results and fixing the problem of the system being submerged during flood conditions. In addition to relocating and retrofitting the existing septic system, sand and sediment will be

removed from the spring vent and there may be some removal of aquatic vegetation. Most of the work will not begin until after the summer ends so there is less inconvenience to users.

- ii. Second, during the meeting Wes Skiles described the situation at **Cinnamon Hills** (located about two miles southeast of Poe Springs) to the Task Force as an illustration of local government challenges for springs protection. The developer of Cinnamon Hills was applying for approval of the plans for Phase III of the development, despite the fact that Phase II (which included construction of the tie-in to the wastewater treatment plan) was not complete, and despite the planned discharge of stormwater into two sinkholes which is not allowed under current High Springs ordinances. The public hearing was taking place that night and Wes hoped to be able to present a statement from the Task Force giving guidance. The Task Force suggested that Wes let the commissioners know that disposing of stormwater in sinkholes is widely regarded as being detrimental to groundwater. Fay said that Wes attended the public hearing that night and the Commissioners denied the request for Phase III. She suggested that the Working Group should acknowledge the beneficial impact of this decision, as well as the fact that High Springs has adopted local ordinances that provide genuine protection to springs and groundwater. The group agreed that Fay should attend a High Springs commission meeting sometime during the summer and acknowledge the Commission's action as far as its impact in protection of Poe, Blue and Ginnie Springs.

- d. **Possible springs protection overlay for western Alachua county.** Fay had learned that Alachua County is considering the adoption of an overlay zone through the update of their land development regulations now underway. Kathy said that this was being planned but was not really underway yet, and followed the new county comprehensive plan that was approved in May. Fay suggested that Alachua County staff should attend the upcoming meeting in Ocala to kick off Marion County's local springs protection program (see info at end of these notes), since some of the ideas and final regulatory tools might apply and Marion County is benefiting from extra support through a contractor provided by DCA.

## **2. Input and Announcements.**

- a. Dan Rountree and Fritzi Olson reported on a water quality improvement effort underway related to the new Alachua County comp plan requirement for 20% open space, and the desire of landowners to legitimately use some of

that open space for stormwater treatment. Discussion followed of the effectiveness of constructed wetlands for treating stormwater, especially the example constructed wetland at the Center for Performing Arts at the University of Florida. The wetland overflows into a solution pipe. All are encouraged to have a look at this system, although John McPherson pointed out that the effectiveness is very dependent on the existence of a confining layer, and that this layer is absent in much of the springs contributing area.

- b. Tim Hazlett, Jon Radke and Brian McCord reported on TCCC's project that is just getting started, to create a regional groundwater model of the Poe-Ginnie-Blue aquifer system. The model will have higher spatial resolution than the regional model that is being done by the Suwannee River Water Management District (SRWMD), which uses a one square mile grid size. CCDA will fund the first part of the project but then will be seeking other funding sources. The use of section 319 funds was discussed as a possibility.
- c. Hugh Thomas had several items to report. First, SRWMD is interviewing this week for a "springs coordinator" whose funding will come from DEP. The District is especially interested in creating new programs for counties with publicly owned springs.
- d. Hugh also reported that the Suwannee Partnership will meet at the end of June, followed by the annual CARES dinner at Representative Dwight Stansel's farm in Suwannee County. The Partnership will be contributing to new springs education signage to be installed soon at Manatee Springs.
- e. And, Hugh informed the group that NRCS is now cost-sharing for an irrigation retrofit program that should be especially effective at saving water and money on center-pivot irrigation systems. He estimates that 20 farms in the Poe-Ginnie-Blue area are participating. The retrofits should be complete within the next year.
- f. AND, Hugh reported that as part of the outreach for the irrigation retrofit project, the Mobile Irrigation Lab will be doing demonstrations on ten retrofitted systems throughout the District. He promised to let Fay know when one in Gilchrist County is scheduled.

### **3. The next Working Group meeting was scheduled for August 31.**

*After the group adjourned, those interested walked down to the spring to look at the work in progress to build a new stairway on the main spring run, and see how the plants that*

*were put in during the shoreline restoration project were doing. The staircase construction is funded in part by the Florida Springs Initiative.*

### *Upcoming Events of Interest*

The Withlacoochee Regional Planning Council and the Department of Community Affairs are coordinating a workshop to introduce the Springs Protection Implementation Guidebook on June 20, 2005 at the Ocala Hilton (on S.R. 200 at I-75). For more info call Bruce Day at 352-732-1315 x230.

## **Attendance List 6-14-2005**

Brian McCord, TCCC

Dan Rountree, Current Problems

Fay Baird, Group Coordinator

Frances Brooks, Spring Ridge Civic Association

Fritzi Olson, Adopt-A-River

Hugh Thomas, Suwannee River Partnership

Janet Johnson, YMCA

John McPherson, Gilchrist County

Jon Radtke, Golder Associates

Kathy Fanning, Alachua County EPD

Paul Booher, Dept. of Health

Sarah Carte, UF-IFAS

Tim Hazlett, Hazlett-Kincaid, Inc.

## Stakeholder/contact list, June 2005.

First name	Last name	Organization	attended ?	Address	City
John	Abendroth	Florida Department of Environmental Protection	x	3900 Commonwealth BLVD	Tallahassee
Robert	Avery	Alachua County Parks & Recreation	x		
Chris	Bird	Alachua BOCC, Env Protection Dept.	x	226 South Main St.	Gainesville
Paul	Booher	FL Dept. of Health	x	Seagle Building Suite 108C 408 W. University Ave	Gainesville
Frances	Brooks	Master Gardener/Spring Ridge Civic Organization	x		High Springs
Richard	Brubacker	Gilchrist Hunting Club		360 central ave	St. Petersburg
Peter	Butt	Karst Environmental Services, Inc.	x	5779 NE County RD 340	High Springs
Ed	Carter	ITT Rayonier			Lake City
Sarah	Carter	UF-IFAS	x		
John	Catches	Jones Edmonds Associates	x		Gainesville
Mike	Clark	High Springs	x		
Trina	Coggins	CCDA Waters	x	7100 NE County Road 340	High Springs
Mary	Collins	IFAS faculty			
Lamar	Crevasse	EarthTek Systems of Florida, Inc.	x		
Art	Darling	Sunshine State Milk Producers			
Kim	Davis	Blue Springs	x	PO Box 331 County Rd 340	High Springs
Richard	Deadman	FL Dept. of Community Affairs		2555 Shumard Oak Boulevard	Tallahassee
Anthony	Dennis	Alachua County Health Department	x		
Gary	Dockter	Save Our Suwannee, Inc.	x	PO Box 669	Bell
Jim	Drumm	Manager, City of High Springs	x	110 NW First Avenue	High Springs
Ron	Dupont	Editor, High Springs Herald		5 NW 1st Street	High Springs
Kirk B.	Eppenstein	Commissioner, City of High Springs	x	110 NW First Avenue	High Springs
Jason	Evans	University of Florida, Conservation Clinic	x		
Kathy	Fanning	Alachua BOCC, Env Protection Dept.	x		
Lois	Fletcher	Gilchrist County Chamber of Commerce	x	220 S. Main Street	Trenton
Jim	Gabriel	Commissioner, City of High Springs		Santa Fe Bicycle Outfitters, 10 N Main St.	High Springs
Kathalyn	Gaither	DEP Office of Communications	x	3900 Commonwealth BLVD MS-31	Tallahassee
Lowell	Garrett	Planner, City of Newberry		25815 SW 2nd Ave., PO Box 369	Newberry
Billy	Gause	EarthTek Systems of Florida, Inc.	x		
Jennifer	Gihring	FL Springs Initiative, FDEP	x		
John	Good	SRWMD	x		
Doria	Gordon	Nature Conservancy			
Tom	Greenhalgh	FL Geologic Survey			
Sabine	Grunwald	University of FL/IFAS	x		
Robin	Hallbourg	Alachua BOCC, Env Protection Dept.	x	201 SE 2nd Ave. Suite 201	Gainesville
Tim	Hazlett	Hazlett-Kincaid, Inc.	x		
James	Higman	Ecosystem Mgmt. Consultant	x	622 SW 23rd Place	Gainesville
Mark	Hill	Alachua County, Asst. Cty Mgr.		12 SE 1st Street	Gainesville

Mark	Hooks	FL Department of Health	x		
Donna	Hopwood	NRCS District Conservationist		5709 NW 13th Street Suite B	Gainesville
David	Hornsby	Suwannee River Water Management District		9225 County Road 49	Live Oak
Mike	Jamerson	Adopt-A-River	x		
Janet	Johnson	Poe Springs Park/YMCA	x	28800 NW 182nd Avenue	High Springs
Wes	Jones	Ichetucknee State Park	x		
Brian	Katz	U.S. Geological Survey		2010 Levy Avenue	Tallahassee
Todd	Kincaid	Hazlett-Kincaid, Inc.	x	505 South Arlington Avenue Suite 203	Reno, NV
Mark	Lander	Columbia County Health Department	x		
Tomm y	Langford	Gilchrist County Commissioner	x	6650 NE 55th St.	High Springs
Barbra	Larson	UF-IFAS	x		
Lesley	Leader	Alachua County WAV Coordinator	x	201 SE 2nd Ave. Suite 201	Gainesville
Phil	Leary	Florida Farm Bureau			
Annette	Long	Manatee Springs Ambassador	x	P.O. Box 2656	Chiefland
Gary	Maddox	FL Springs Initiative, FDEP	x		
Joy	McBane	Alachua BOCC, Env Protection Dept.	x	201 SE 2nd Ave. Suite 201	Gainesville
Brian	McCord	Coca Cola Company	x	One Coca Cola Plaza	Atlanta, GA
Joseph	McEachin	EarthTek Systems of Florida, Inc.	x		
Kari	McLauchlin	University of Florida	x		
Sean	McLendon	Alachua BOCC, Env Protection Dept.	x	226 South Main St.	Gainesville
John	McPherson	Gilchrist County Attorney's Office	x		
Ronnie	McQueen	Gilchrist County Coordinator		PO Box 37	Trenton
Tom	Mirti	Suwannee River Water Management District	x	9225 County Road 49	Live Oak
Marci	Monchek	City of Alachua	x	PO Box 9	Alachua
Beth	Murphy	Karst Productions, Inc.	x	5779 NE County RD 340	High Springs
Paul	Myers	Alachau County Health Department	x		
Jennie	Myers	Wakulla Springs Working Group	x		
Dave	Newport	University of Florida			
Robert	Norton	Alachua County Growth Mgt Dept	x		
Brian	Olmert	Loncala, Inc.		125 NW 1st Avenue	High Springs
Fritzi	Olson	Current Problems, Inc.	x	PO Box 357098	Gainesville
John M.	Owens	UF-IFAS/Consultant	x	PO Box 2924	High Springs
Judy & Ed	Paradiso	Blue Grotto Dive Resort	x	3853 NE 172nd Court	Williston
Bob	Phillips	Manager (retired 2004) City of High Springs	x	110 NW First Avenue	High Springs
Amos	Philman	Hart Springs/Gilchrist County	x		
Sandra	Poucher	Cave Diving Section NSS	x		
Jon	Radtke	Golder Associates	x		
Eberhard	Roeder	FL Department of Health	x		
Dan	Rountree	Current Problems, Inc.	x	1205 NE 6 Terrace	Gainesville
Patti	Sanzone	Florida Department of Environmental Protection	x		
Lee	Schaltenbrand, Chief	Spring Ridge Volunteer Fire Department		5600 NE County Road 340	High Springs
Doug	Shaw	Nature Conservancy		UF Dept. of Env. Eng. Sciences, PO Box 116450	Gainesville

Georgi a	Shemtz	Karst Environmental Services, Inc.	x	5779 NE County RD 340	High Springs
Russel l	Simpson	FDEP, NE District, Gainesville Office	x		
Wes	Skiles	Karst Environmental Services, Inc.	x	5779 NE County RD 340	High Springs
Rep. Dwight	Stansel	House Representative District 11		208 N. Ohio Ave North	Live Oak
Jim	Stevenson	Ichetucknee Springs WG	x	4794 Lakely Drive	Tallahassee
Bobbie Wray	Suggs	Ginnie Springs Resort	x	7300 NE Ginnie Springs Rd	High Springs
Hugh	Thomas	Suwannee River Partnership, Santa Fe Initiative	x	c/o SRWMD, 9225 County Road 49	Live Oak
Craig	Watson	Watson Dairy, Inc.			Trenton
Kirk B.	Webster	Suwannee River Water Management District		9225 County Road 49	Live Oak
Wendy	Wilber	IFAS, FL Yards & Neighborhoods	x		
Kathy	Winburn	Planner, Levy County			Bronson
Mark	Wray	Ginnie Springs Resort	x	7300 NE Ginnie Springs Rd	High Springs
		Gilchrist Soil and Water Conservation District		P.O. Box 37	Bronson
		High Springs Chamber of Commerce		P.O. Box 863	High Springs

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**Appendix B: Materials from Local Government Workshop,  
May 18, 2005**

## ***The Santa Fe Springs Working Group***

The purpose of the Working Group (SFSWG) is to create a forum in which professionals, government entities, and the public can learn about and discuss issues and activities that can affect the quality and quantity of water in Poe, Ginnie and Blue Springs (sometimes known as the “Blue Group”) and their contributing areas in Alachua and Gilchrist Counties. The Working Group's coordination and activities have been funded by the Florida Department of Environmental Protection’s Springs Initiative since 2002.

The full Working Group meets at least four times yearly; the public is welcome at these meetings. At each meeting, the participants report on activities that are underway relevant to the three Springs and the areas that contribute to them. Action teams are formed to accomplish short-term projects.

The Group is guided by a Coordinating Committee that consists of stakeholders who are willing to take care of administrative details for the group, especially in planning the agendas for Working Group meetings. The current Committee members and their representative organizations are:

- Hugh Thomas (Suwannee Partnership, SRWMD, FDACS and FDEP)
- Commissioner Tommy Langford, Gilchrist County
- Chris Bird/Robin Hallbourg (Poe Springs-Alachua County);
- Bobbie Suggs (Ginnie Springs Outdoors)
- Kim Davis (Blue Springs)
- Dan Rountree (citizen/Current Problems).

**Fay Baird, the Working Group Coordinator, can be contacted at 352-372-4747 or [fbaird@pandionsystems.com](mailto:fbaird@pandionsystems.com).**

## **Poe, Ginnie and Blue Springs and their Contributing Area**

In the springs' contributing area, sometimes referred to as the "High Springs Gap", water in the Floridan Aquifer flows through branching conduits and caves at a depth of 60 to 130 feet below the land surface that diminish in size with increasing distance from the Santa Fe River. In most of the contributing area there is very little overburden on top of the limestone to provide attenuation and nutrient removal from fertilizer use, dairy runoff, and septic tank effluent. Sinkholes are numerous throughout the contributing area, along with both operating and abandoned phosphate mines; these are of concern due to widespread former use as dumps and have provided convenient but unwise locations to dispose of stormwater runoff.

While the Blue Group of springs has not seen the severe water quality impacts and flow reductions that have been observed at some other springs, their setting means that actions must be taken to protect water quality and quantity before, not after, these valuable natural treasures are harmed.

## **Selected Group Accomplishments and Activities since 2002**

*The group has worked to enhance the content and availability of springs education materials for use in the PGB area, including acquisition of a sand tank model that can demonstrate flow through karst.*

*A series of three newspaper articles on springs and issues surrounding their protection was prepared and published in the High Springs Herald and Alachua County Today in June 2004.*

*The group is collaborating to produce a draft map of the area that affects Poe, Ginnie and Blue Springs to guide future activities.*

*"Springs Memories Days" were held at Poe Springs (April 2003) and Blue Springs (November 2003). Planning is underway for a similar event at Ginnie Springs. These enjoyable local gatherings also provide useful information regarding former uses and conditions in the springs.*

*In collaboration with Alachua County Extension and Suwannee Partnership, SFSWG offered a homeowner's workshop in May 2004 at a subdivision near Ginnie Springs, entitled "Florida and Springs Friendly Gardening and Landscaping." About 20 homeowners attended to learn how landscaping and septic system maintenance practices can affect groundwater quality.*

## **An overview of springs protection issues**

### **1. Where are the boundaries?**

- “Springsheds” – the land surfaces that contribute both surface flow and groundwater recharge to a spring. They can change shape according to climate, but there is a core area that always contributes to the spring.
- Vulnerable areas – Within the springshed, some areas are more vulnerable than others. Where is there a high degree of connection between the surface and the Floridan Aquifer?

**2. Quantity:** consumptive use of water is regulated by water management districts, not local governments, but LGs have to plan for water availability. LGs can become parties of record in permit review process. WMDs must notify of the intent to issue the permit through newspapers. Case in Marion County: LG denied due to traffic issues, was sued, judge was impressed by testimony of neighbors unable to water lawns who objected to proposed bottler. Court held that traffic issues were valid and upheld LG decision.

**3. Quality:** who regulates? Many parties- regulatory aspects more complex, more cracks to fall through. Specifics of stormwater management can be significant to springs and are subject to review by both the WMD and the LG, so the applicant can get extremely frustrated.

Resources: BMP manual, websites

Summary: Current springs protection is very dependent on local government decisions and comprehensive plan elements that are already in place to support them. A statewide, consistent effort to protect springs would lead to protection that is less piecemeal.

**FACT SHEET**  
**FLORIDA SPRINGS PROTECTION ACT**  
**March 11, 2005**

Prepared by Dr. Richard Hamann, Levin School of Law, University of Florida

**BACKGROUND**

The Florida Springs Protection Act has been introduced in the 2005 regular session of the Florida Legislature by Representative Stansel (HB 1185) and Senator Argenziano (SB 2368). Students in the conservation clinic at the Levin College of Law conducted supporting research and drafted the initial version of these bills for the Silver Springs Working Group. For their work see <http://conservation.law.ufl.edu>. The introduced bills are somewhat different due to subsequent refinement by the Working Group and bill drafting staff. The status of the bills may be followed through either the Senate or House websites, accessible through <http://www.leg.state.fl.us>.

**PROBLEMS ADDRESSED BY THE ACT**

The proposed legislation is intended to address four interrelated problems.

**1. Springshed Delineation**

In many cases we don't know the source of water for particular springs and those land areas that must be given the highest levels of management to protect springs. The Act requires DEP to identify those areas that supply water to each first and second magnitude spring (i.e. the springshed) and designate those parts of the springshed that are most important to the health of the springs as a primary protection zone.

**2. TMDL Development**

Although many of our springs are suffering degraded water quality, they often do not qualify as "impaired waters" under the states primary program for regulating the cumulative impacts of all sources of water pollution, the TMDL program. Furthermore, the TMDL program does not serve to prevent them from becoming impaired. The Act requires DEP to revise the criteria for impairment so that springs can qualify and so that springs that are likely to become impaired can be addressed.

If first or second magnitude springs are determined to be impaired, then DEP is directed to develop a Total Maximum Daily Load (TMDL) and allocate responsibility for the nonagricultural, nonpoint sources of pollution to those local governments with jurisdiction over the springshed.

### **3. Local Comprehensive Plans**

Local governments are not currently required to address springs protection in local comprehensive plans. Local governments with jurisdiction over part of the springshed for a first or second magnitude spring are directed by the Act to review their comprehensive plans and amend them to ensure protection of the water quality and water recharge and implementation of the TMDL for nonagricultural, nonpoint sources of pollution.

The relevant state and regional agencies are directed to assist local governments in the review, amendment and implementation of their comprehensive plans. The model land development code for Florida springs protection being drafted by DCA should be useful to local governments in this process.

### **4. Primary Protection Zone**

State regulatory programs give inadequate consideration to the location of facilities relative to springs. Under the Act, certain activities that have a great risk of damaging springs are prohibited or subject to greater restrictions when located within the primary protection zone. These include landfills, industrial wastewater disposal facilities, rapid infiltration beds, hazardous waste facilities, and wastewater treatment and disposal facilities.

### **Status of the Legislation as of May 2005**

Rep. Stansel has delayed introduction of HB 1185 to committees until it can be reviewed and modified by the Florida Springs Task Force. Senator Argenziano did a strike-all amendment and replaced the bill with legislation titled “Minimum Flows/Surface Watercourses”, stating that she was not able to overcome aspects of the legislation that generated significant opposition to the original bill in the short time available during the legislative session.

The Silver Springs Working Group will determine what action to take regarding the legislation over the summer at its meeting on May. It is still possible for a modified House Bill 1185 be introduced to committees in the House, but a new bill will have to be submitted in the Senate when the 2006 session is convened.

## Some Websites of Interest

<http://www.dca.state.fl.us/fdcp/dcp/publications/springsmanual.pdf> Protecting Florida's Springs: Land Use Planning Strategies and Best Management Practices.

<http://www.floridasprings.org/> An ongoing project of the Florida Springs Initiative for general viewers, includes interactive features, education projects and details of cave explorations at North FL springs.

<http://www.dep.state.fl.us/springs/> FDEP's website on springs, many links.

<http://www.dep.state.fl.us/geology/> FDEP's geology site, includes the report First Magnitude Springs of Florida.

[http://fl.water.usgs.gov/fl\\_springs.html](http://fl.water.usgs.gov/fl_springs.html) Springs page by USGS with links to some publications.

<http://www.epa.gov/owow/nps/ordinance/> EPA model ordinances for various water resources.

\*\*<http://www.ecfrpc.org/Files/Projects/DOH-FinalWekivaStudyReport120104.pdf> FL Department of Health's report on onsite treatment needs in the Wekiva basin, prepared as a requirement of the Wekiva Protection Act.

\*\*[http://www.ecfrpc.org/Files/Projects/DEP\\_WekivaFacilityReport.pdf](http://www.ecfrpc.org/Files/Projects/DEP_WekivaFacilityReport.pdf) DEP's recommendations on wastewater treatment stemming from the Wekiva Protection Act in 2004.

<http://www.dep.state.fl.us/geology/> FDEP's geology site, includes the report First Magnitude Springs of Florida.

<http://sjr.state.fl.us/programs/data.html> SJRWMD's data reports index, including Hydrologic Conditions, which links to quarterly Springs reports. You have to look carefully to find the Springs report, but it includes springflow as measured over several decades at more than 2 dozen springs.

<http://sjr.state.fl.us/programs/outreach/pubs/index.html> Another SJR site that includes access to many publications, including "Springs of the SJRWMD", publication SJ2002-5.

<http://www.dep.state.fl.us/springs/reports/index.htm> Reports and publications on springs, from the Florida GS website. Mostly technical publications.

## **Local Government Workshop**

### **Notes for recharge area tour**

**May 18, 2005**

#### **Stop 1: Waters Lake boat landing. Meet Hugh Thomas of Suwannee Partnership.**

**Dairy** next door, Suwannee Partnership (Hugh)

**Geology:** Flow direction (see map)

“Sinking lakes”- this is one-stop on the way out at the stream, show them the map

Point out other sinking lakes along the Flats

On the wisdom of plugging sinkholes: flooding of properties around lake after hurricanes in fall 2004 and possible earlier attempt to block sinkhole

#### **Stop 2: Craggs (side of SR 47)**

another sinking lake situation, this one crossing a road

#### **Stop 3: Spring Hill subdivision. Meet Frances Brooks, resident and Master Gardener**

**New residents** need to be informed about the best turfgrass for and best fertilizer practices

**Spring Ridge subdivision** was platted before stormwater regs in 1985. Point out old-fashioned grid layout, narrow roads, no stormwater basins. It never floods and there are no areas where runoff is concentrated.

**Septic systems**- some issues: lot size, maintenance

**Walk in to sinkhole**- CCDA purchased due to concerns about potential contamination

Looking ahead- the Cinnamon Hills story, CCDA

#### **Stop 4: City Hall, High Springs. Meet Jim Drumm, City Manager**

**Very large sinkhole** next to City Hall was formerly very popular as a park, less so now that stormwater is being routed here from surrounding streets.

**Recent FloridaYards and Neighborhoods landscaping project** installed drought-tolerant plants and low-flow irrigation around City Hall

**Wastewater treatment issues** - How can revenue-starved local governments meet the challenge of projected growth??

### **Stop 5: Vampire Sink, south of High Springs**

No need to say much. The sinkhole is right next to the road and there is runoff coming right in creating erosion in some areas as well as putting stormwater right into the Floridan Aquifer. Cave Diving Section did an extensive cleanup here in August 2003 described at

[http://www.caves.com/fss/pages/events/08\\_9\\_03.htm](http://www.caves.com/fss/pages/events/08_9_03.htm)

### **Stop 6: Between High Springs and Newberry**

Growth issues to the south of High Springs: Tillman Acres, also much agricultural and forest land with enormous growth potential

Newberry incorporated area begins just south of Route 232 / Route 41 intersection

Note about silviculture – you see quite a bit of it along 41-27-45. Because it typically does not involved fertilizer and there are BMPs for sinkholes (at least a 35 foot no-disturb buffer), silviculture is compatible with springs protection.

