

## **Weeki Wachee Spring and River Basin Management Action Plan Meeting Summary**

*Tuesday, June 14, 2016 at 2:00 PM*

*Southwest Florida Water Management District Board Room  
2379 Broad Street, Brooksville, FL 34604*

### **Attendees**

Andy Auner, HELP  
Matthew Bearden, DEP  
Juanita Bernal, Pasco County Stormwater  
Clay Black, Hernando County  
Glenn "Will" Bryant, FDOH-Citrus County  
John Burnett, Hernando County Stormwater  
Tiffany Busby, Wildwood Consulting  
Kevin Coyne, DEP BMAP  
Stuart Dawson, Pinellas County  
Eric DeHaven, SWFWMD  
Dave Dewitt, SWFWMD  
Jon Dowler, City of Brooksville  
Kirstin Eller, DEP Ground Water  
Cathy Foerster, Wildwood Consulting  
Albert Gray, FDOH-Hernando  
Charles Greenwell, HB GAC  
Diane Greenwell, HB GAC  
Roxanne Groover, FOWA

Terry Hansen, DEP BMAP  
Jeff Harris, Pasco County  
Janet Hearn, ATM on behalf of FDOT  
Sean King, SWFWMD  
Mary Lusk, UF-IFAS  
Christine Lynch, Pasco County Stormwater  
Celeste Lyon, DEP Ground Water  
Chuck Murton, Hernando County Task Force  
Sky Notestein, SWFWMD  
Linda Prescott, GCC  
Curt Reill, Paddling Adventures  
Brad Rimlien  
Danielle Rogers, SWFWMD  
Mary Szafraniec, Amec Foster Wheeler  
Elke Ursin, FDOH  
John Walkinshaw, GPI  
Curt Williams, FFBF

### **Introduction**

Tiffany Busby opened the meeting at 2:00 PM by welcoming everyone and stating that the Florida Department of Environmental Protection (DEP) is excited to be back in the basin to discuss the basin management action plan (BMAP) for Weeki Wachee. The DEP ground water staff are present to discuss the nutrient source inventory. Terry Hansen, the DEP basin coordinator for Weeki Wachee, will be discussing new legislative requirements, overview of the BMAP process, and time tables. She thanked Southwest Florida Water Management District (SWFWMD), particularly Sky Notestein, for arranging the meeting room. She reminded attendees to sign in and to provide their email information should they desire to be on the DEP contact list to receive meeting notices. She then requested that each person in the room introduce themselves.

### **Review of BMAP Process for Weeki Wachee Spring and River**

Terry Hansen introduced himself and directed the audience to the agenda projected on the screen. He briefly explained each topic that will be discussed and transitioned to his PowerPoint presentation. He stated that within the Springs Coast Basin, BMAPs are in development for Crystal River/Kings Bay and Weeki Wachee Spring and River; total maximum daily loads (TMDLs) are being finalized for Homosassa Springs and Chassahowitzka River; and TMDLs are in development for Aripeka Springs. The Springs Coast Basin is comprised of three counties (Pasco, Hernando, and Citrus) within five springsheds; therefore, solutions are needed basin wide, but with a county focus.

He presented a pie chart that depicts the DEP water quality framework that includes the following components: Set water quality standards; monitor water quality; determine pollution problems; if

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exceedances, establish restoration goals (TMDLs); work with community leaders; develop and implement restoration plans (BMAPs); and measure success and adapt (a continuous process).

Terry's next slide focused on the BMAP itself. He emphasized that the BMAP is a restoration plan, not a remediation plan. The overall restoration goal is to reduce the nutrient footprint – reduce the amount of nutrients in ground water going to Weeki Wachee Spring. He further stated that a BMAP is adopted by DEP through a Secretarial Order, enforceable by DEP, and reviewed annually and updated every five years.

He discussed the regulatory framework for BMAPs. The process for preparing BMAPs and issues to be addressed are in Section 403.067, Florida Statutes, also known as the "Florida Watershed Restoration Act."

He presented a table on the TMDL components of the Weeki Wachee Spring and River. Key points were made including that nutrient loading in the watershed needs to be reduced by more than 70%. Also, there are significant legacy loads (sediment accumulation over time) and that water in the spring flows quickly. To achieve the TMDL, we need to understand what is happening in the entire spring and river. The key is to measure how projects affect the system.

Terry presented a table on the TMDLs for the Aripeka group of springs. Terry noted that the Weeki Wachee BMAP will likely include the Aripeka group of springs. The Aripeka group includes seven springs within a small geographic area and the nutrient reduction goals range from 48% to 77%.

Terry also stated that the primary stakeholders in the Weeki Wachee BMAP study area are homeowners and agriculture producers, since nonpoint sources contribute to most of the nutrient loading. The stakeholders need to reduce their nutrient footprint through reduced fertilizer applications, best management practices (BMPs), and healthy septic tanks. Terry emphasized that there are no silver bullets to reduce the nutrient loading; the first step is everyone agreeing to improve the overall spring and river system. Stakeholders need to ask, "What can I do to help?"

Terry inquired if the audience had any questions thus far. There were no questions.

### **Nitrogen Source Inventory and Water Quality Projects**

Kirstin Eller of the DEP ground water management section provided a PowerPoint presentation on the results of the nitrogen source inventory and loading tool (NSILT) assessment for the Weeki Wachee Spring contributing area. There are multiple sources of nitrogen that contribute to the water quality impairment of the spring and river. The NSILT was developed to identify and quantify the major sources of nitrogen contributing to the ground water in the Weeki Wachee contributing area. The NSILT is a geographic information system- (GIS-) based and spreadsheet-based tool that provides spatial estimates of the relative contribution of nitrogen from various sources while considering the transport pathways and processes affecting the various forms of nitrogen as they move through the land surface through soil and geologic strata into the Floridan aquifer.

In addition to the NSILT for Weeki Wachee, DEP is also developing an Aripeka/Magnolia NSILT and the Homosassa/Chassahowitzka NSILT, both expected to be complete by September 2016.

Kirstin provided visual depiction of the overall BMAP study area with further delineations of the Weeki Wachee contributing area and Aripeka contributing area. Terry interjected that the BMAP uses a

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"geopolitical boundary," not a TMDL boundary. He indicated that Hernando County staff pointed out that the BMAP boundary needs to be moved west to include more complete coverage of the coastal areas.

The Weeki Wachee contributing area was enlarged on a slide with locations of seven springs and two municipalities identified (Weeki Wachee and Brooksville) within the area. The seven springs discharge from the same aquifer and have similar nutrient reduction needs.

Kirstin provided the steps to estimating the nitrogen load to ground water:

1. Estimate the nitrogen input to the land surface from various sources (best available data) within the BMAP boundary.
2. Estimate the environment's ability to uptake and utilize the nitrogen. This process is called "attenuation."
3. Evaluate the degree of recharge within the BMAP boundary; this naturally varies based on geologic conditions and influences the quantity of water reaching the aquifer. DEP applies a weighted recharge factor to account for the variation.
4. Reach out to stakeholders regarding estimates and methodology; fine tune as needed.

She presented a hybrid flow chart to visually depict the nitrogen cycle and attenuation. The nitrogen sources are the following: atmospheric deposition, wastewater treatment facilities, septic systems, livestock operations, urban fertilizer, and crop fertilizer.

Kirstin showed the ground water recharge areas within the Weeki Wachee contributing area. Most of the area is a high recharge area with over ten inches of water per year infiltrating the ground water. Recharge areas (high, medium, and low) are categorized based on U.S. Geographic Survey (USGS) values. Recharge rates are weighted to estimate loading potential for each source category.

She presented a pie chart of land uses within the Weeki Wachee contributing area based on the SWFWMD 2011 land use layer. The majority of nitrogen inputs occur within agricultural and urban land areas.

### *Nitrogen sources in Weeki Wachee*

Kirstin presented slides on nitrogen sources: atmospheric deposition, wastewater treatment facilities (WWTFs), septic systems, livestock operations, crop fertilizers, urban turf grass fertilizers, and sports and golf course turf grass fertilizers.

### *Biochemical attenuation factors*

Attenuation factors for each nitrogen source were determined upon an extensive literature and peer review.

### *Recharge factors*

Recharge factors are used to estimate the percentage of the non-attenuated nitrogen expected to reach the aquifer in a given year. In the high recharge area, DEP estimates that 90% of the non-attenuated nitrogen will reach the aquifer; 50% in the medium recharge area; and 10% in the low recharge area.

### *Results – estimated annual average nitrogen loading to ground water*

Each year, 988,548 pounds of nitrogen enters the aquifer, mainly in the high recharge area. The estimated nitrogen load to the aquifer is higher than what is currently discharging from the spring, which may indicate an over-estimation or there could be considerable nitrogen storage in the subsurface which may

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enter the aquifer slowly over time. Another key takeaway is that nitrogen discharge from the spring is higher than the target--the TMDL. We need to close this gap between the discharge amount and the TMDL.

Kirstin concluded her presentation by encouraging attendees to contact her with any questions.

### *Questions/comments by attendees*

1. Is DEP estimating total nitrogen (TN) or nitrates? Kirstin: The NSILT estimates TN to account for all forms of nitrogen.
2. Is recharge described as inches per year? Does it include more than rainfall? Kirstin: Yes, recharge is reported in inches per year and includes water sources other than rainfall.
3. How fast does ground water reach the aquifer? Kirstin: It is highly variable, but all recharge estimates are based on the total amount of water that reaches the aquifer over a one-year period.
4. How do you define "rangeland"? Terry: Our GIS staff reports that it is an agricultural land use not covered by any other type of agricultural activity.
5. How do mining operations fit in the land use categories? Kirstin: I do not recall, but I can find out.
6. Are the 13 identified WWTFs both domestic and industrial? Kirstin: Just domestic WWTFs were included in the inventory since nutrient discharge data are available for domestic facilities; many industrial facilities do not report nutrient levels in their discharge.
7. Elke Ursin confirmed that the Florida Department of Health (FDOH) recently completed their update of septic tank numbers in Citrus, Hernando, and Pasco counties.
8. Can you update the septic tank map to reflect city locations, including Hernando Beach? Terry: Yes, we can help identify where the cities are located with respect to septic tank locations.
9. Fertilizers have different nitrogen quantities. Therefore, how did you determine the application quantities? Kirstin: The annual application rates of residential fertilizers were based on a SWFWMD study and the average TN content of residential fertilizers.
10. When are we going to talk about reuse and how nitrogen in reuse water will be handled in load reduction expectations as well as project credits? Terry: We will talk about it soon.
11. Is the general TMDL for springs 0.35 milligrams per liter (mg/L)? Terry: Yes.
12. Is the TMDL for Weeki Wachee Spring 0.28 mg/L? Terry: Yes.
13. How was the 0.28 mg/L TMDL set for the spring? Terry: The TMDL was set based on historical nitrogen concentration data when the spring was not impaired by algae. The TMDL provides an estimated target of the concentration where a waterbody will not show signs of impairment.
14. Just because there is a WWTF located in the area does not mean that effluent disposal is within the area. Kirstin: We look at permit files to obtain the latitude/longitude of the effluent disposal location. We also look at aerial photographs to confirm that the location cited does look like an effluent disposal site.

### **Florida Springs and Aquifer Protection Act**

Terry presented three slides on the recent legislation that goes into effect July 1, 2016. Since Weeki Wachee is an Outstanding Florida Water, a BMAP must be adopted within two years of its initiation. Also, the TMDLs must be met within 20 years of the BMAP adoption and the BMAP must include five-year milestones. The BMAP must provide list of projects; include an on-site sewage treatment and disposal system (OSTDS) remediation plan; and identify point sources and nonpoint source categories with estimated load allocations (NSILT).

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The legislation further specifies that a fertilizer ordinance shall be adopted by each local government and identifies agricultural BMPs. Prohibitions include WWTFs greater than 100,00 gallons per day (GPD), unless advanced wastewater treatment (AWT) is used; new OSTDS on less than one-acre lots; land application of biosolids; and hazardous waste facilities.

After the BMAP is adopted, stakeholders have access funding sources that require an adopted BMAP to be considered for receiving funds; allows the development of priority focus areas and required actions for the listed springs; allows refinement of the NSILT to determine the required estimates of a project's nutrient load reductions; and allows development and implementation of innovative pilot BMP activities and effectiveness determination prior to required rulemaking.

### *Questions/comments by attendees*

1. Roxanne Groover: Clarification is needed regarding the new septic tank requirements. Conventional septic tanks are not allowed on less than one acre, but those that meet nitrogen reduction standards are allowed. Terry: Our message is that not all septic tanks are banned. There are "drain field enhancement systems" that will also be available when the permit process is adjusted by FDOH.
2. TMDLs are to be met within 20 years. How clueless are the legislators that this will actually happen? If there are no further loads now, we still cannot meet the TMDLs in 20 years. Kevin: DEP does not have a choice. This is the law and we hope that the TMDL goals are accomplished in 20 years. We are here today to start on that path.
3. Hernando County has a fertilizer ordinance. When does the clock start on the 20 years? Terry: Twenty years starts from adoption of the BMAP.

### **BMAP Timeline**

Terry provided the following timeline: BMAP adoption by June 2017. To achieve this deadline, there will be monthly meetings to develop strategies to meet legislative requirements. The next meeting is planned for July 19, 2016 and will focus on OSTDS remediation plan. Future meetings will focus on the different source categories and how to address each one.

Terry mentioned that the Springs Coast Basin does not have an OSTDS committee requirement as in other basins.

### **Maps**

Terry briefly reviewed maps he had in PowerPoint format and proposed items for contemplation. He stated that septic tanks, agriculture, and golf courses are topics to focus on going forward.

While showing a map of septic, sewer lines, and WWTF locations, Terry stated that DEP will speak with utilities regarding various options – run sewer lines, support enhanced septic tanks, etc. DEP does not want a lot of money spent for limited impacts; look at a holistic system. DEP does not have all of the answers right now. For example, where does all of the effluent go? What are the solutions?

While showing a map of golf course locations, Terry stated that DEP needs to verify and document activities undertaken by golf courses.

Agriculture in the area is not a major issue, but still a contributor to nitrogen loading.

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### **Next Meeting**

Terry stated that the next meeting will be July 19, 2016 in Brooksville and will focus on septic tanks. Expected presenters are FDOH (to discuss public health threat) and possibly Roxanne (onsite wastewater association representative). He further stated that we need to holistically understand the issues – nitrates, public health, and drain fields.

In the meantime, presentations from today's meeting will be placed on the DEP website at the following location:

[http://publicfiles.dep.state.fl.us/DEAR/BMAP/Springs Coast/BMAPs/WW\\_BMAP/](http://publicfiles.dep.state.fl.us/DEAR/BMAP/Springs Coast/BMAPs/WW_BMAP/).

### **Additional Questions/Comments by Attendees**

1. Why can't reclaimed water be a means to reduce demand on the aquifer as well as recycling nitrogen to reduce fertilizer application? Terry: Reuse has to meet certain standards which means it may not have enough nitrogen in lieu of fertilizer application. Kevin: It is an education issue, especially in south Florida. There are homeowners that use fertilizer and reclaimed water.
2. In terms of the limitation on new septic systems on lots of less than one acre, what is considered a new septic system? Current permitting considers replacing the tank and field as a "new system." Kevin and Terry: We need to research and get back to you on this. Roxanne: The focus needs to be on nitrogen performance-based treatment systems.
3. This seems to be a gigantic algebra equation with multiple variables. I like this systems-type approach. I like that you admit that you do not know everything.
4. There has to be push back from economic sectors affected by this. Where are the special interests? Who are they? Kevin: Those are questions for your local legislator.
5. We are at the bottom trying to push a rope uphill, but new development is occurring in extremely sensitive areas. These developments will be complete before the BMAP is done. We need to tell the higher level to do something about new sources entering the system that are adding to the loading we already have to reduce.
6. The key is that people have to want to do something; they will not be forced. Terry: Education!
7. Get people to want to do it. For example, agriculture owners now plant buffers.
8. Are the Surface Water Improvement and Management (SWIM) Program and BMAP Program working together? Terry: Yes, we are coordinating with Sky and Danielle Rogers (SWFWMD SWIM Program).
9. How do you reconcile flow when evaluating concentration and load in the springshed? Terry: Flow is not considered a contribution to impairment if the nitrogen concentration is reduced as low as possible.
10. If a property has an irrigation well and a septic drain field, why can't there be a pipe under the drain field to the well to recycle nitrogen for lawn application? Terry: DEP is exploring this kind of approach with dairies in the Santa Fe Basin. Other comments: Potential health concerns of bacteria in the system. Never close the door on innovation, but others may not implement the concept as well which would result in public health issues. Terry: No door is closed because we need ideas. Kevin: We need to come up with every idea we can to meet the 20-year requirement.
11. Is there a penalty if we don't make the 20-year requirement? Terry: Unknown, but our marching orders are to meet the requirement. We need to show monumental progress.
12. Kevin: If someone is not here that should be, please forward their contact information to Terry.

### **Adjournment**

The meeting adjourned at 3:54 PM.

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### **Action Items**

Tiffany concluded the meeting by reciting the below list of action items.

1. Kirstin – Schedule completion of the Aripeka/Magnolia NSILT and the Homosassa/Chassahowitzka NSILT by September 2016.
2. Kirstin – Determine where mining operations fall within the land use categories.
3. Terry – Show city locations on maps, including Hernando Beach.
4. Terry/Kirstin – Follow-up on WWTF effluent disposal locations and if that affects the NSILT results.
5. Terry – Post the meeting materials on the DEP website.
6. Terry – Research what is considered a “new” septic tank system as defined by statute and if the replacement of a system falls under the definition of a “new system.”
7. All – Save the date for the next meeting on July 19<sup>th</sup> in Brooksville.