Wakulla Springs Alliance

**Friday, March 22, 2019 Board Meeting Minutes**

This section provides information on what you and others can do to support research-based actions to enhance water quality and quantity in Wakulla Springs and springshed and to improve related environmental, economic and social systems. Efforts by all, produce results!

**Background on Wakulla Springs**

• Wakulla Springs Information

• WSA Purpose and Plans

• WSA Action Resources

**Strategic Opportunities**

* Nominate yourself or others for, 2019 WSA Chair, Secretary, board member or advisor, by emailing [ttaylor@fsu.edu](mailto:ttaylor@fsu.edu). The success of the WSA depends on its leadership, members, advisors and supporters; make a commitment and make a difference.
* Take the lead on updating the WSA bylaws.
* Provide WSA website management (It is easy, training will be provided).
* Attend these WSA meetings: 4-26, 5-24, 6-28, 7-26, 8-23, 9-27, 10-25, 11-22, 12-13, all meetings are from 9:00 to 12:00 (Nov 22, 9:00 to 11:00). Put on your calendar.
* Everyone is encouraged to follow the Clean Waterways Act and other springs related legislation. Make your voices heard. Go to the 1000 Friends of Florida and <https://www.wearefcc.org/>websites to learn about the bills and sign up for news blasts and action opportunities.
* Doug Barr and Sean McGlynn met with DEP on Nitrogen Target Revisions.
* Attend [Springs Academy](https://floridaspringsinstitute.org/springs-academy/?utm_source=FSI+News&utm_campaign=ad478c1961-EMAIL_CAMPAIGN_2017_11_03_COPY_03&utm_medium=email&utm_term=0_1610aea1ed-ad478c1961-98086349) classes and/or review past classes.
* State Nonpoint Source Education Collaboration: Low Impact Development: How to Grow Community Support Through Education, Tallahassee, April 9, 2019. To register, email [Emily Brown](mailto:Emily.Brown@FloridaDEP.gov)
* Attend Comp Plan Update Workshops from 6:30-8:00
* Workshop on Goal 4: Housing Options for Our Diverse Population Thursday, 4/11 Renaissance Center
* Workshop on Goal 5: A Balanced Transportation Network Tuesday, 4/16 Renaissance Center
* Take the Comp Plan Update SURVEY.
* Participate in the Comp Plan Digital Workshop
* We need to ask Theresa Heiker about the 319 Grants.
* We should ask the TAPP staff to present on their activities.
* Invite the contractor for the Wastewater Facilities Engineering Plan speak to the WSA after the contract is signed.

**WSA January 25 Board Meeting Minutes**

**Overview**

The Wakulla Springs Alliance held their regular Board meeting on March 22, 2019 at the Renaissance Building. The agenda and participants are in Appendices A and B. Review the action items underlined for your commitments and actions you can help with. Our success in protecting and enhancing Wakulla Springs depends on the actions of the WSA board, advisors and supporters. This report is based on the recorder’s notes and does not capture everything or exactly what was said.

**Opening**

* Welcome and meeting agenda review (Seán McGlynn).
* Introductions (Board, advisors and guests – See Appendix B).
* The Secretary’s Report was prepared by Tom Taylor, acting secretary. The motion to approve the minutes passed unanimously.
* There was no treasurer report.

**Wakulla County has proposed rescinding Comprehensive Plan Septic Tank rule**

* Old Rule: One Advanced Septic Tank per 5 acres
* New Rule: One conventional septic tank per acre
* The vote will be April 1st, this is a preliminary procedure for moving the bill forward, and we will not need to be at that meeting.
* Tom Frick, the director of the Division of Environmental Assessment and Restoration at FDEP, wrote a note concerning this (see attached). The note is very critical of this ordinance and basically shows that FDEP funded a feasibility study for sewer to septic conversion and they need to do the study before changing their rules
* The WSA asked Anthony Gaudio to write a letter summarizing our criticisms of this proposed action by the Wakulla County Commission which could be issued on out letterhead.
* Wakulla County Commissioner Chuck Hess will keep us informed and we may need to appear in force at future Wakulla County Commission meeting.

**Mitigation for the Hwy 319 Widening Project**

* Cal Jamison reported that Sean McGlynn asked him to talk to the Park Manager, Amy Conyers, Amy Conyers, Edward Ball Wakulla Springs State Park Manager, about her concerns with the compensation the park has received subsequent to the Park land acquired by FDoT for the road widening. She said she is totally satisfied with the mitigation and that the matter is settled and over.
* She gave us maps of parcels we did not know about that had been acquired by the park (see attached). There are important properties that protect important wetlands and connect important parcels.
* Unrelated to the swap she reported that FDoTs sale of timber from the 40 acres of Park and acquired had been donated to the park, will provide $250,000 for archeological surveys and other projects. FDOT will also be making parking lot improvements for the Riversink area. She also reported that the sale of timber from the River Sinks tract, from future selective harvesting, would be a new revenue source for the park.
* Jim Stevenson said that timbering on State Parks was currently a very popular idea for with the State. Wakulla County Commissioner Chuck Hess mentioned that FDoT did not really have any experienced forester, most are right out of school. Jim Stevenson requested more detail on the mitigation projects.

**Leon County Commissioner Kristen Dozier tapped to tackle state water problems**

* She is working on efforts in Leon County and with the FL Association of Counties statewide.
* Anthony Gaudio will be meeting with Kristen.
* $250,000,000 is needed to address the septic system problems

**Brief Summary of SB 1758 (Clean Waterways Act)**

* The bill is changing daily
* Everyone is encouraged to follow the Clean Waterways Act and other springs related legislation.

**BMAP, TMDL Nitrogen Targets**

* Doug Barr and Sean McGlynn will meet with DEP this afternoon to discuss Nitrogen Target Revisions.
* Doug has done an analysis that suggests setting it at .27 rather than .35, which almost doubles the required reduction in nitrogen loading.
* [The notes from the meeting are in Appendix C]

**Springshed Status** Cal Jamison reported:

* We did a submerged aquatic vegetation survey that showed that the sag, val, naiad and other grasses are coming back.
* The McBride Slough and Sally Ward Run vegetation is coming back too.
* There is a washout in the channel with 60-80 feet of exposed sand and there are objects that have been exposed that are of interest to archeologists.
* There will be a tour with scientists on May 2 at 10:30 that others can join.
* All springs are flowing including Spring Creek for the last six months.
* The number of fishes, birds and gators are down.
* Jim Stevenson stated that in 1837 the Wakulla Springs was crystal clear. We have been tracking dark water days for a long time. In 1987 it went from clear to green in four months They went from brown to green between 2002 and 2009. The green is permanent now.

**St Marks Minimum Flows and Levels**

* Doug Barr mentioned his letter with comments on the St Marks Minimum Flows and Levels.
* His letter is in Appendix D

**BMAP Administrative Hearing**

* The hearing is scheduled for September 3-13.
* Springs include Wekiva, Volusia Blue, Rainbow and others.
* Paul Still and John Thomas are representing the springs.

**319 Grants**

* Applications are due in April.
* We need to ask Theresa Heiker about the 319 Grants.
* We should ask the TAPP staff to present on their activities.

**Viewing of the informative 30 minute video ‘Gimme Green**’

Appendix A

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Wakulla Springs Alliance

**Friday, March 22, 2019**

**9 am to 12 pm, Renaissance Center**

**435 N. Macomb Street, 2nd Floor Conference Room**

**WSA March Board Meeting Agenda**

1. **Wakulla County rescinds Comprehensive Plan Septic Tank rule** (Vote April 1st)
   1. Old Rule: One Advanced Septic Tank per 5 acres
   2. New Rule: One conventional septic tank per acre
2. **Compensation for 319 widening** 
   1. Widening road take 40 acres of Wakulla State Park
   2. Park supposed to be compensated with 5 times the value of land
   3. Park did not get 200 acres of comparable land, did not get 5 acres…
   4. WSA needs to propose a new compensation package.
3. **Viewing of the informative 30 minute video ‘Gimme Green**’
4. **Florida’s state parks are treasures to be preserved for all**
5. **Leon County Commissioner Kristen Dozier tapped to tackle state water problems**
6. **Brief Summary of SB 1758 (Clean Waterways Act)**

Appendix B

**Board, Advisors and Guests**

\* Indicates 3-22-19 Participants

Board Members

Doug Barr \*

Jim Davis, Treasurer

Gail Fishman

Albert Gregory

Jamie Hughes

Cal Jamison \*

Howard Kessler, V-Chr. \*

Debbie Lightsey \*

Sean McGlynn, Chair \*

Jim Stevenson \*

Vivian Young

WSA Advisors

Bob Deyle

Anthony Gaudio \*

Pam Hall

Julie Harrington

Chuck Hess

Todd Kincaid

Bob Knight

Terrance McCaffrey

Pam McVety

Dan Pennington

Bob Thompson

Guests

Kathleen Coates \*

Mark Heidecker \*

Mary Beth Litrico \*

Tom Taylor \*

David Henry

Appendix C

**Summary of March 22, 2019 Meeting with DEP on**

**Reexamining the Nitrogen target Concentration for Wakulla Spring**

On March 22, Sean McGlynn and I met with Tom Frick and Moira Homann of DEP to discuss the analysis and findings outlined in my two previous papers on the need to lower the BMAP Nitrogen target concentration. I spent a few minutes going through the more important technical findings from the TMDL report, which is source for the 0.35 mg/L Nitrogen target concentrations. These included the statistical Change Point Analysis, the shortcomings of the exponential regression analysis used to reduce target concentrations from 0.44 mg/L obtained from the Change Point Analysis to the final TMDL of 0.35 mg/L. I also discussed the N target concentrations from all other springs in the state for which a TMDL/BMAP had been completed. The N levels for the other spring fell into two groups. The first group had N target concentrations from 0.23 to 0.28 mg/L. These 29 springs had current N concentrations of 0.29 to 1.02 mg/L with a mean of 0.61 mg/L. The second group, generally, had much higher current concentrations ranging from 0.64 to 3.5 mg/L with a mean of 1.64 mg/L. The current concentration of Wakulla Spring at the time the BMAP was completed was 0.42 mg/L. This fits into the lower part of the range for the first group of springs with target concentrations from of 0.23 to 0.28 mg/L. Unfortunately, the target concentration for Wakulla was set at 0.35 mg/L which is the level for 2nd group of springs with much higher concentrations. This is out-of-line with the other 35 springs for which a TMDL/BMAP has been prepared. Based on the break point in the periphyton data, the data from an Ecological Efficiency analysis which yielded a target concentration of 0.29 mg/L and the historical N levels from before the spring was impacted by excess nitrogen; I had recommended a revised target concentration of 0.27 mg/L.

Tom briefly went over the status of discussions between FDEP and the two counties. The individual discussions with Leon and Wakulla counties are moving slowly which is not surprising since the burden of implementation of the BMAP recommendations is the responsibilities of the counties. He expects these discussions to continue for the next two years. He felt that trying to change the target concentration to the lower level would further delay reaching some sort of agreement with the counties. When asked, I told him that I agreed with this assessment based on my experience with local governments. However, if the reduction of the N target level is not advisable at this time, I suggested that DEP prepare a new or updated periphyton analysis using the recently developed analytic protocol that can be completed in 3 years. In this way, the new analysis would not be finished until after the discussions with the counties were completed. Meanwhile, additional data can be collected from the spring and potential source areas that would be helpful in fine tuning the new 0.27 mg/L target concentration. This would also allow time to better define the recently reported improvements in aquatic vegetation coverage in the basin. Tom didn’t see any problems with proceeding with the new periphyton analysis.

He then asked me what areas they should target for future restoration projects. I related that projects should be focused to the north of the spring. For septic to sewer conversion projects, I suggested they stay north of the spring but that the closer to the spring the better. I also related that I thought storm water loading had been underestimated especially given Sean’s dye studies that have demonstrated the interconnection of Lake Lafayette and Lake Jackson with the spring. Since storm water is the primary source of nutrients discharging to the lakes, this provides a connection between nutrient loading of the spring and storm water. I also indicated that I’d updated the analysis of the time during which the septic to sewer projects in PFA2 in Wakulla County provided any benefit to Wakulla Spring. The results showed that the Wakulla County PFA2 projects would only reduce the yearly nitrogen loading of the spring by a yearly average of about 10% of the time for the period 2014 through 2018. This further reinforces the exceedingly small benefit resulting from the $20million being spent on these projects.

Finally, Sean highlighted the recent reductions in the coverage of aquatic vegetation downstream of the spring. He noted that additional surveys are planned so more information will be available in the future. As I recall, this is the first such decline since completion of the wastewater treatment improvements by the City of Tallahassee. This action resulted in the reduction of N levels in the spring from a little over 1.0 mg/L to the current (2014-2018) annual average of about 0.4 mg/L. I don’t believe were certain but hopefully we are seeing beneficial changes in the aquatic vegetation resulting from the City project.

I believe this was a productive meeting and am pleased with the outcome and plans for re-examining the target nitrogen level of Wakulla Spring.

Doug Barr

04/02/2019

Appendix D

**Doug Barr Comments on the St Marks Minimum Flows and Levels**

February 12, 2019

Northwest Florid Water Management District

81 Water Management Drive

Havana, Florida 32333

The Northwest Florida Water Management District has prepared a draft report on the Minimum Flow for the St. Marks River Rise Spring (SMRR Spring) located near the border between Leon County and Wakulla County. As defined in Chapter 373, Florida Statutes, a minimum flow [for a surface stream] is the flow below which further withdrawals would cause significant harm to the specified stream or stream segment. In the case of the minimum flow of SMRR Spring, the MFL is intended to protect the flow of the spring and “Spring Run” of the St. Marks River. The report states that the spring run extends approximately 11.2 miles from the spring to the confluence of the St. Marks River and the Wakulla River in Wakulla County (see Map below, from page 30 MFL report).



North of the SMRR Spring, the St. Marks River flows into the subsurface via two swallets and emerges approximately 0.6 miles south of River Rise (page 18 of the MFL report). The location of the SMRR Spring, the swallets and the USGS flow monitoring stations used for MFL are shown on the map illustrated below (page 21, MFL report). This shows the locations of SMRR Spring and the two USGS flow stations. These are the St. Marks River Swallet near Woodville, Fl. station (Woodville Station, or Woodville) and the St. Marks River near Newport, Fl. station (Newport Station or Newport). 

The SMRR Spring flow is not monitored but instead is computed from flows at the Woodville and Newport Stations. Specifically, the SMRR Spring flow is calculated as [SMRR Spring flow = Newport flow – Woodville Flow]. The SMRR Spring flow is used to evaluate the flow required to for boat passage, manatee passage and various woodland habitats, root habitat, and dead vegetation habitat. Flow reductions are computed for transects along the length of the spring run for the various habitats and uses. Based on a single transect for “Hardwood Hammock”, the District establishes the MFL as an allowable flow reduction of 33 CFS yielding a 419 CFS long term average daily minimum flow. This is equal to the difference between the mean daily computed spring flow of 452 CFS for the baseline period 10/01/1956 to 11/27/2017 and the 33 CFS allowable spring flow reduction. Compliance with the flow reduction is computed as the daily 30-year running average flow of SMRR Spring. If established, this will be the limit below which further withdrawals would be significantly harmful to the water resource (SMRR Spring and Spring Run).

**The Impacts of Current or Future Withdrawals South of the St. Marks Flow Station are Unmeasured for Purposes of Computing the SMRR Spring Flow and the Impacts of withdrawals north of the Woodville flow station are Subtracted Out of the Computed Spring Flow.**

The minimum flow is the level below which further withdrawals would result in significant harm or equally the consumptive withdrawals above which significant harm would occur. Flows below an established minimum that result from drought conditions are not a violation of the established minimum flow. These events are to be expected as a result of natural variation in the severity and duration of droughts.

In the case of the MFL for SMRR Spring, the district subtracts the flow at Woodville from the flow at Newport and assumes this difference is the spring flow. For example, if the unimpaired (no upstream withdrawals) flow at Woodville is 100 CFS with an intervening flow of 300 CFS between Woodville and Newport then the Newport Flow is 400 CFS and the computed spring flow is 300 CFS (Newport 400 CFS minus Woodville 100 CFS). If, however, a 33 CFS consumptive withdrawal upstream of Woodville is now assumed, then the Woodville flow is 67 CFS, the Newport flow is 367 CFS but the spring flow is still 300 CFS (Newport 367 CFS minus Woodville 67 CFS). In the first case (w/o the withdrawal), the measured flow of 100 CFS is subtracted from the Newport to obtain the spring flow. In the second case, 33 CFS is withdrawn (subtracted) upstream of Woodville and the remaining 67 CFS (for a total of 100 CFS) is subtracted from the Newport Flow. The basin mass balance is conserved; however, there is an actual loss of 33 CFS from the Newport Flow, the SMRR Spring flow and inflow to the Spring Run. For purposes of MFL compliance, however, the computed spring flow is still 300 CFS. The MFL, therefore, does not prevent impacts to SMRR Spring or the Spring Run from increased withdrawals in the upper basin (north of Woodville) up to or even exceeding the allowable reduction of spring flow since no violation of the MFL is triggered.

As discussed above, the SMRR Spring and Spring Run MFL is a 33 CFS reduction from the 452 CFS mean flow (=419 CFS) computed as the daily 30-year running average flow at Newport minus the daily 30-year running average flow at Woodville. The Newport station, however, can only be used for compliance monitoring of flows and flow reductions that occur upstream of the station. Withdrawals downstream of the station, of course, are not monitored by this station and will have no impact on the SMRR Spring flow. As a result, the Newport station cannot be used to assess or prevent impacts of increased downstream withdrawals up to and exceeding the MFL allowable flow reduction. It should be noted that the Newport station appears to be upstream of 95%+ of the St. Marks River Spring Run. Without monitoring of flows, no violation of the MFL spring flow reduction will be triggered resulting in “significant harm”, as defined by the District, to the Spring Run of the St. Marks River.

The two-fold problem of removing the impact of withdrawals from the upper basin (north of Woodville) from the computed flow at the SMRR Spring and inability to monitor the impact of withdrawals south of the Newport in the SRMM Spring Run and negates the purpose of the MFL to prevent “significant harm” resulting from increased withdrawals impacting the SMRR Spring flow.

**Insensitivity of Daily 30-Year Running Average as a Measure of Compliance with the MFL**

Compliance with the MFL is determined using a daily 30-year running average of the computed flow of the River Rise Spring. Having been appointed Florida’s technical expert under during the Apalachicola-Chattahoochee-Flint River water war with Georgia, I frequently dealt with similar compliance measures proposed by Georgia. In the case of the St. Marks Rise MFL, the approximately 10,950 string of daily flows is advanced one day at a time and the 30-year average recomputed. This approach tends “averages out” flow violations resulting from low flows exacerbated by increased demands. For the SMRR MFL no compliance violations occur when 33 CFS is subtracted from the daily 30-year running average flow since late 1956. The insensitivity of the daily running average can be demonstrated in several ways. For example, repeating the flows for the two years with the lowest average daily flows for the last 30 years and appending these to observed flows beginning in 1989 will provide an estimate of the insensitivity of the running average for detecting violations from extreme low flows. For this example, it takes 6 years before the first violation of the 419 CFS daily MFL to occur. In other words, it takes 6 years of continuous low flow/drought year flows before a violation of the MFL occurs. During the six years, the average flow at the St. Marks Rise Spring is 362 CFS in comparison to the actual average of 451 CFS, a difference of 89 CFS or 20%. This illustrates the insensitivity of a daily 30-year running average flow as a measure of compliance. This along with removal of impacts from withdrawals as outlined above ensures that no violations of the allowed flow reduction will occur that can be attributed to human activities or can even be distinguished from natural variation of streamflow at the Newport Station. This is especially the case since no analysis was made of the impacts a 33 CFS flow reduction in exacerbating conditions during critical drought periods.

**Sources of Error in the St. Marks Rise Spring Computed Flows**

The MFL analysis is based on computed (synthetic) flow data for the St. Marks River Rise Spring. As noted above, the flows are computed by the subtracting flow of the St. Marks River at the Woodville station from the flow at the Newport station. The period of record for the Newport station is October 1, 1956 to the present. Data for the river station near Woodville, however, only began on June 4, 2015 resulting in an extremely short data record for purposes of the MFL. To overcome this problem, the district developed a synthetic data set at the Woodville station for the period October 1, 1956 to June 3, 2015 using the long-term data set at Newport and the short string of observed flows at Woodville.

A time-series model of the Woodville flows was developed using the short observed record for model “calibration”. As a result, comparison of the observed data beginning on June 4, 2015 with the computed data for this same period can provide a perspective on the accuracy of the computed flows. Of particular interest are model results during low flows periods since these are the flows of most impacted by the increase in allowable withdrawals. Figure illustrates the observed vs. computed flow at the Woodville streamflow station for the lower 50th percentile of the 790 daily flows values. As shown, during low flows there is wide discrepancy between the observed and calculated flows and overall the correlation and percent of variance of accounted for by the linear regression is not strong.

**Summary**

The MFL for the St. Marks River Rise Spring and associated monitoring program afford no protection from withdrawals that could cause “significant harm” to the SMRR Spring and, perhaps more critically, to the various habitats, manatee, etc. of the approximately 11 mile Spring Run. Present and future withdrawals upstream of the spring are computationally removed by subtraction from the Newport Flow when computing the spring flow. Present and future withdrawals impacting the Spring Run are downstream of the Newport Station and not measured by this or any other station. An MFL, however, is the flow below which significant resource harm will occur from additional withdrawals. The St. Marks MFL provides no such protection as the withdrawals (or other flow related impacts from human activity) are excluded from either the computed flow of the spring or excluded from flows at the Newport Station owing to its location at the top of the St. Marks River Spring Run. As a result, the MFL and associated analysis is technically flawed and does not provide protection from significant harm. This is at least the third time the District has recently based a major and very costly program or project on analysis that created a hydrologic impossibility.

Monitoring compliance with the MFL uses a daily 30-year running average. A string of 10,950 daily values is advanced one day at a time and the running average recalculated over the 30-year period. A violation occurs if the 30 year daily average is below 419 CFS (452 CFS average minus 33 CFS). As a result, it is easily demonstrated that low flows or droughts far in excess of what has historically occurred will not result in a violation of the minimum flow.

The MFL will be monitored using a computed flow for the spring. Flow at the spring is computed as the flow at the long-term flow station at Newport minus flow at the newly installed (2015) station near Woodville. It was necessary for the district to create a synthetic data set for the new Woodville station for the period from 1959 to 2015. The actual data from the station after June 2015 can be compared with the synthetic data for the same period as a check on the accuracy of the computed values. Comparison of the two data sets indicates that for flows less than or equal to the median post-June 2015 period, there was a wide discrepancy between the actual data and the computed data. This indicates that the there is a problem with the synthetic data for low flow periods (the flows of most interest).

Finally, the District has placed itself in the position of adopting an MFL that is not only flawed but also does more potential harm than good to the SMRR Spring and Spring Run. The resource would be better protected without the allowable flow reduction of 33 CFS representing a 1,000% increase in current withdrawals.

Douglas E. Barr

February 12, 2019

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