

**Everglades West Coast Basin Management Action Plan
Meeting Summary**

Tuesday, June 16, 2015

*SFWMD Lower West Coast Service Center – 1st Floor Large Conference Room
2301 McGregor Boulevard, Fort Myers, Florida*

Attendees

Martha Avila, FDEP Mike Bauer, City of Naples Amanda Booth, USGS Ansel Bubel, FDEP Tiffany Busby, Wildwood Consulting Marisa Carrozzo, Conservancy of SW Florida Kevin Coyne, FDEP Sara Davis, FDEP Tim Denison, Johnson Engineering Phil Flood, SFWMD Candise Forde, FDEP Mark Generales, WRAC Sara Hammermeister, USGS Janet Hearn, ATM	Keith Kibbey, Lee County Katie Laakkonen, City of Naples Jacqueline Langston, FDEP Estero Bay Julie Neurohr, FDEP Gary Nychyk, Johnson Engineering Judy Ott, CHNEP Erin Rasnake, FDEP Gary Ritter, Florida Farm Bureau Federation Steve Sentes, SFWMD Leigh Simmons, Lee County Gary Susdorf, Cardno Ashley Thomson, AECOM Rhonda Watkins, Collier County Ken Weaver, FDEP
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Welcome and Opening Remarks

Tiffany Busby welcomed everyone to the Everglades West Coast Basin Management Action Plan (BMAP) meeting. Tiffany thanked the South Florida Water Management District for the use of their room and facilities. Tiffany stated that Sara Davis is the basin coordinator for this BMAP and her contact information is listed at the bottom of the agenda; please contact Sara if you have questions or comments between meetings. There were no comments on the previous meeting summary from March 4, 2014. Everyone introduced themselves. Tiffany reviewed the items discussed at the March meeting.

Hendry Creek Update

Ken Weaver explained that Hendry creek exceeded the screening levels for dissolved oxygen (DO) and total nitrogen (TN). The stakeholders requested that the Department review the site specific alternative criteria (SSAC) options for Hendry Creek. Ken reminded everyone that there are three kinds of SSACs. A Type I SSAC is based on natural conditions or benign land uses. Ken reviewed a summary of the land uses in the Hendry Creek watershed. Ken noted that built-up land uses are a high percentage of the land uses in the basin. Ken described a measurement of the land disturbance in the basin called the landscape development intensity index, or LDI. A low LDI a number, such as one, indicates a natural land use. The scale ranges from one to 10. The downstream land uses in Hendry Creek rate a 3.95 on the LDI. The upstream area of Hendry Creek ranks a 7.05 on the LDI. These higher LDI ratings indicate that Hendry Creek is not a good candidate for a Type I SSAC; the land use in Hendry Creek is not consistent with a minimally disturbed condition.

Ken explained that the Department staff also looked at the water quality in Hendry Creek. They limited their review to water quality stations with at least 10 data points. The average salinity is fairly high in the creek, and may limit the tools to assess the biology which are freshwater-based criteria. The first question the staff tried to answer was whether Hendry Creek meets the new criterion for DO conditions. They found that the most DO

saturation exceedances occur in the upstream reaches of Hendry Creek. Only stations with at least 10 measurements were used to generate the maps that Ken displayed.

The criterion for marine areas is 42% saturation; freshwater areas must meet a 38% saturation rate. Areas that flux between marine and freshwater conditions are based on the salinity level at the time the sample was taken. In the freshwater portion of Hendry Creek, the creek did not meet the DO criteria. At least 10% of the samples exceeded the criterion, so it is still considered impaired based on the new DO criterion.

The Department staff also reviewed the water quality database on Type II and Type III SSACs. Type II and Type III SSACs must demonstrate they support the biological health of the creek. This standard is more difficult to assess because Hendry Creek includes freshwater, tidal, and marine segments. Ken reminded everyone that a Type III SSAC is only for nutrient impairments. The Type III SSAC relies on the stream condition index (SCI), the rapid periphyton index (RPI) and the linear vegetation survey (LVS). These three tools come together to screen a waterbody for biological health. Ken explained that Florida has not yet developed the biological indices for tidal or marine waters. He added that it is difficult to use the SCI because of the salinity fluctuations in Hendry Creek. The salinity conditions would likely cause Hendry Creek to fail the SCI.

Ken added that some work on using oysters as a marine indicator has been done. The Department has spoken to the U.S. Environmental Protection Agency (EPA) about the potential to use oysters, but as oysters are not the most sensitive species to DO conditions or nutrients, oysters probably won't be used as biological indicators for Florida marine waters.

Ken reviewed a graphic showing the DO saturation levels over time in Hendry Creek. There has been no trend in the DO percent saturation over the period of record. There may have been some changes to the sampling frequency of over time, but Hendry Creek is not meeting the new DO criteria.

The Department also reviewed the TN data in Hendry Creek. This information gave them some pause, as they indicate a problem in the system. The increases in TN over time are significant. Ken noted that Hendry Creek is not currently exceeding the peninsula stream TN threshold. However, Hendry Creek would fail the trend test because it is likely to be impaired in the next five years. Ken added that TN is listed as the causative pollutant for the DO impairment, but there is no DO trend there. It is more likely that TN is the issue in the creek. Upon further review of the nitrogen data, it was recognized that the trend is not due to changes in the monitoring stations but due to increases in Kjeldahl nitrogen (TKN) levels. Ken displayed trend charts showing the change in TKN levels over time.

A confounding factor in the water quality data is that chlorophyll a levels have been decreasing in Hendry Creek. The chlorophyll data exceeded the stream threshold of 3.2 µg per liter (ug/L) except in the three most recent years. Judy Ott asked if all the stations' data were used together for these results. Ken responded that, yes, all the stations' data were combined to analyze the trends. Ken added that he looked for changes in monitoring stations to account for the changes but none were found. Tiffany asked if any of the local stakeholders have observed shifts to macroalgae that would explain the changes in chlorophyll a levels or in nitrogen. No one had observed any shifts. Gary Ritter asked if rainfall changes correlated with any of the trends. Ken responded that they have not yet looked at correlations with rainfall. Once a trend is identified, they look for confounding factors first. A residual analysis has not yet been done. Judy suggested that it would be descriptive to see if the nitrogen trends were related to changes in salinity.

Ken reviewed the conclusions for Hendry Creek. A Type I SSAC is not supported due to a high level of landscape disturbance. A Type II or a Type III SSAC is limited by the data on biological health. The freshwater portion of Hendry Creek is likely unsuitable for an SCI. There are no current biological tools for the tidal or marine portions of the creek. Hendry Creek is exceeding the chlorophyll a threshold currently, although the recent years indicate the levels are decreasing.

Imperial River Update

Ken reminded everyone that the Imperial River was listed for this DO impairment with TN as the causative pollutant. TN was listed as the causative pollutant because the median values of TN exceeded the TN screening levels developed for the Estero Bay watershed. Ken stated that the Imperial River system is a freshwater system. It has a predominantly natural watershed with some urban areas immediately surrounding the water body. The LDI for the Imperial River is 2.76. This is potentially a natural breakpoint. There is some development in the watershed as well as some canals. There are areas within the 100 m buffer of the river with more intensive development, which makes a Type I SSAC not a good approach. A Type I SSAC would be difficult to defend given the level of development and landscape disturbance.

Ken reviewed a graph of the DO saturation levels over time. There is a slight decreasing trend in DO percent saturation over the period of record. The data indicate that the frequency of exceedances has increased for the Imperial River; a linear upward relationship was noted. The Imperial River is located in the Peninsula nutrient region, which indicates a TN threshold of 1.54 milligrams per liter (mg/L). TN is significantly increasing over the period of record and will soon exceed the threshold. In the Imperial River, TKN seems to be driving the upward trend in TN concentrations. It is interesting that total phosphorus (TP) has been decreasing in the system over the same period of record. Ken added that the TP nutrient threshold for the Peninsula region is 0.12 mg/L.

The chlorophyll-a in the Imperial River is below the 3.2 µg/L threshold and has decreased in the most recent two years. Ken stated that there is some promise for the Type II or Type III SSAC, except for the upward trend in TN.

For biological data assessment, three SCIs are collected. The first SCI was collected in March 2015. An additional SCI, RPS, and LVS sampling event is scheduled for the end of June 2015 at four sites in the Imperial River and Leitner Creek. Ken reported that currently, the floral health is inconclusive. There were exotics present in the Imperial River. No algae were present at the points assessed. Another sample needs to be collected to fully assess the present conditions. Previous data indicate that an algal bloom occurred in 2011. Also a natural substrate periphyton sample was collected in 2006 and included species indicative of a fairly normal periphyton community. Ken noted that while the next sampling event will take place within the next two months, and it will then take time to process the biological results.

The conclusions for the Imperial River are that a Type I SSAC is not supported. It is not yet clear whether a Type II or Type II SSAC is possible. The floral thresholds require additional sampling and review. The fauna results are based on the SCI.

Ashley Thomson asked why the TN trend is increasing and if anyone had any ideas. Ken responded that the Department is not sure why the TN trend is increasing. Local knowledge would help the Department understand what factors are affecting these creeks. Tim Denison commented that the TP levels are so low that it is difficult to analyze those data for trends. It is not uncommon to get laboratory results at the minimum detection limit. Ken replied that the trend seems to be driven by the initial higher levels of TP and then the levels drop to very low levels. The lower results may have some non-detectable numbers in there. Tiffany asked how long it would be until the SCI results will be available. Erin Rasnake responded that they need to finish the first sampling results, plus they need to conduct the second sampling event and process those results. It will take at least three months to complete the data collection and analyses. Erin added that the second sampling event is also weather dependent, so heavy rains could cause further delays. Judy asked how the Walk the WBID effort is being factored into these evaluations. Ken responded that the Walk the WBID effort this is more bacteria-focused, but sometimes the information is helpful for other impairment evaluations. For example, if an illicit source is discovered that was also a nutrient source, that helps to understand the immediate sources.

Rhonda Watkins asked if there were any particular stations causing the shift in trends. Ken responded that the data were consistent among the stations. Gary asked if the Department have looked at changes in human population in the watershed. Ken replied that they have not further investigated sources. Gary added that he was

wondering what the impact would be of a fertilizer ordinance and the fact that residential fertilizers no longer contain TP. Keith Kibbey added that Lee County has an ordinance that limits the amounts of fertilizer that can be applied and the timing of fertilization, but not the types of fertilizer that can be used. Tiffany stated that she believes there is a statewide rule limiting TP in any residential fertilizer sold in Florida, so the lack of TP in fertilizer is not dependent on the local ordinance. Ken asked when that rule change occurred. Tiffany and Kevin responded that they believe the rule change occurred approximately three years ago. Judy noted that there has been seagrass transect monitoring in the aquatic preserves and those data might be helpful for comparison with the water quality analysis.

Gordon River Update

Sara Davis explained that she would review the water quality data from the Gordon River basin. The Gordon River is a Class III water body and has a DO standard of 5.0 mg/L. The Gordon River was listed as impaired in Cycle 1 and in Cycle 2. Sara explained that in 2008 a TMDL was adopted for the Gordon River Extension, WBID 3278K. Sara reviewed the WBID boundary used for this TMDL. The TMDL was based on data from two stations, one collected by Collier County and one Department station. Most of the data used were from the lower station. The TMDL indicated that a 29% decrease in TN was needed to meet the water quality standard.

Sara noted that the main issue now is that boundary changes to the WBID have occurred. Sara compared the WBID boundary used in Run 32 compared to the WBID boundary use in Run 50 (the most recent run). The station where the most data were collected is no longer in the Gordon River Extension (3278K) watershed. There are two stations in the new upper WBID, so those data can be used to assess the revised Gordon River watershed. A new biology station has been established where biological data will be collected, plus the Department will attempt to measure water quality at this station. Sara showed a map of where the new biology station will be located.

Sara reviewed the data needs for the Gordon River. Sara reminded everyone that a ground water study is underway as well as a reuse study and both studies will continue. A BMAP is the next step in TMDL implementation. However, Sara added that additional analyses and monitoring must be completed to evaluate WBID 3278K and to understand the sources.

Sara reviewed the potential causes of the low DO concentrations in the Gordon River. Those causes include nutrients; low input DO; shallow water depth combined with high water temperatures; sediment oxygen demand (SOD); and water column DO processes. Sara added that the Department staff have a plan to further evaluate DO sources in the Gordon River. Sara asked Ansel to elaborate on the monitoring effort.

Ansel Bubel responded that the Department is considering deploying data sondes to track where the low DO water is coming from. These continuous data sondes would provide higher resolution data about the dynamics in the system. Their plan is to continue the two existing studies (ground water and reuse), plus the additional sampling efforts. Marisa Carrozzo asked the timeline of completion for the various studies. Sara replied that the ground water study should be done in the spring of 2016. She did not recall the deliverable date for the reuse study, but she offered to look it up and report the date to Marissa. Sara asked Ansel what is the timeline for the data sonde measurements. Ansel responded that they still need to develop a sampling plan and identify good, representative sites before the sondes can be deployed. They plan to conduct several deployments in different seasons. They want to have enough data to see what is going on. Katie Laakkonen asked to see the map where the biological station will be located. Erin noted that the station is near the golf course. Katie asked what data will be collected at that site. Erin responded that the site is in the South nutrient region, so the SCI does not apply. However, the RPS, LVS and a full suite of biological data will be collected.

Tiffany reviewed the action items. Marisa noted that in the previous meeting there was discussion about updating the land use from the 2004 data that were used in the TMDL. She asked if there have been further discussions on when that update will occur. Sara stated that there are plans for the land use data to be updated. However,

nothing yet has been updated as the focus has been on the data evaluations reviewed today. Sara will need feedback from the TMDL staff on when the timing will be to incorporate updated land use information.

Tiffany asked if the next meeting date has been set. Sara replied that the next meeting will likely be held in the next three to four months, but no date has been set.

Adjourn

The meeting adjourned at 3:10 pm.

Action Items

Ken--Review the data to see if the dissolved oxygen or nitrogen trends are related to changes in salinity or rainfall.

Ken/Sara—Review the SCI results for the Imperial River, when the data are available.

Ansel/Sara—Create a sampling plan and evaluate the feasibility of additional monitoring in the Gordon River.

Ansel/Sara—Continue to assess the results from the two existing studies in the Gordon River basin.

Sara--Look up the deliverable date for the reuse study and report the date to Marissa.