

LOWER ST. JOHNS TECHNICAL ADVISORY COMMITTEE (TAC) MEETING
University of North Florida
University Center, Room 1058-1
Jacksonville, Florida
March 24, 2010

Participants

Khalid Al-Nahdy, FDEP	Dana Morton, COJ
Dave Briglio, MACTEC	George Myers, FDEP/CAMA
Tiffany Busby, Wildwood Consulting	Pat O'Connor, FDEP
Dean Campbell, SJRWMD	Ying Ouyang, SJRWMD
Stuart Chalk, UNF	Marcy Policastro, Wildwood Consulting
Ivan Chou, ECT	Radha Pyati, UNF
Ed Cordova, JEA	Steve Richter, SJRWMD
Betsy Deuerling, COJ	Geoffrey Sample, SJRWMD
John Higman, SJRWMD	Vince Seibold, COJ
Mike Hollingsworth, USACE	Justin Solomon, FWC
Chuck Jacoby, SJRWMD	Angelo Speno, Putnam County
Michelle Jeansonne, BCI at SJRWMD	Danny Turner, WSEA
J. David Lambert, UNF	Scott Turner, DCHD
Justin Levine, COJ	Jessica Weatherby, Jones Edmunds
Erich Marzolf, SJRWMD	Gary Weise, COJ
Lori McCloud, SJRWMD	Pat Welsh, UNF
April Moore, UNF	April Williams, COJ

Welcome and Introductions

Tiffany Busby welcomed everyone to the Lower St. Johns River (LSJR) Technical Advisory Committee (TAC) meeting and thanked April Moore and Radha Pyati for hosting the meeting. The participants introduced themselves and the entity they represent. Tiffany noted that Robert Burks was scheduled to speak but he is sick and his discussion will be rescheduled for the next meeting.

University of North Florida (UNF) Environmental Center St. Johns River Multidisciplinary Transformational Learning Opportunity

April Moore stated that the UNF Environmental Center does this trip each year. In addition, they do a waste audit of the university as part of the sustainability program, and they work with Jacksonville University (JU) on the state of the river report. This was the fourth year of the transformational learning opportunity program, and they had eight students participate along with five staff members. As part of this program, each student had a study objective. For instance, one student analyzed nitrates and phosphates and another student did water quality analyses.

On the first day of the trip, everyone met at the Georgetown marina, where they rented the houseboat, and headed to Turkey Island. On Day 2, they left from Turkey Island, and went through Lake George to Lungren Island. Along the way, they stopped at Salt Springs where they saw many manatees. They also stopped and snorkeled at Silver Glen Springs. Day 3 started at Lungren Island and they headed to Hontoon Island where they hiked. After the hike, the "Alligator Princess" came and spoke to the students about her experiences kayaking the entire extent of the river. On Day 4, they left Hontoon Island and went to Blue Springs where there were too many manatees to snorkel, but one student helped collect water quality samples. That afternoon, the students had a cultural experience with a cast net maker from St. Augustine. He is also a musician so he performed for the students and later several folk artists came to sing. Two of the students play instruments so they also performed. In addition, the students received guidance from a pastel artist and watercolor artist. On Day 5, they left Butcher's Bend and headed to the

Wekiva River, which the students kayaked before going to Brick Yard Slough. This was the first year they were able to go into Lake Harney and Deep Creek as part of the trip. They left Brick Yard Slough on Day 6 and Sherry Brandt-Williams (SJRWMD) came to speak to the students about the work she has done with Lake Jesup. They traveled across Lake Monroe and anchored at Butcher's Bend, where storyteller Bill Dreggors from DeBary came to speak with the students. On Day 7, they left Butcher's Bend and Bill Bellville, author of *River of Lakes*, came to speak. Each student was required to have a creative goal as part of the trip and some of the students wrote and performed a song about the trip. That night Neil Armingeon (St. Johns Riverkeeper) spoke to the students.

Steve Richter asked if the students receive credit for the trip and what does it cost them. April responded that some students do receive credit. The cost is \$150 per student plus about \$50 for food. The trip occurs over spring break and students must fill out applications and provide faculty recommendations to be selected.

Low Impact Development (LID), Green Infrastructure (GI), and Stormwater Best Management Practices (BMPs)

Dave Briglio stated that LID is not highly technical and there is no set formula to determine what BMPs should be used. The goal of LID, GI, and BMPs is to mitigate or prevent problems associated with stormwater runoff. The Sarasota County LID Manual made a point to state that the goal is to take care of the problem at the top of the hill and not once the pollution has rolled down to the bottom. This is a new and different way of thinking about the design of projects, so it takes some time for people to adjust to the changes.

Dave noted that most people are familiar with wet and dry stormwater ponds and stormwater wetlands. However, LID focuses on BMPs, such as bioretention areas, which would be used as part of a treatment train to help offset nutrients and make it easier for ponds to treat nutrients. The conveyance features are important to not only infiltrate water but to treat it. These are simple techniques that can be added to treat stormwater and do not always require an engineer to design. Different options work well in different areas, so it is important to determine the site conditions before selecting the BMPs. Some options include grass channels, which work well and do not require a lot of operation and maintenance (O&M); porous concrete, which the Stormwater Academy at the University of Central Florida has done a lot of research on; managed aquatic plant systems to help remove nutrients in ponds; and harvesting and reuse of stormwater. Additional information about LID can be found in the Sarasota County LID Manual, Florida Department of Environmental Protection (FDEP) Draft Applicants Handbook, and the Georgia Coastal Stormwater Supplement.

LID guidance manuals can help with structural control selection to choose the right BMP for the right place. Considerations for selecting a control include whether it needs to deal with water quantity, water quality, or both; what needs to be treated (nutrients, bacteria, total suspended solids); how much water is going to the BMP; drainage area; space required; and minimum head versus water table. The site characteristics, including soils, type of impairment, and who lives in watershed, are also very important. Once the controls have been selected, the next step is get the project permitted. Factors for permitting include jurisdictional waters and wetlands, floodplains, local buffer requirements, utilities, roads, structures, and wells. For the project to be successful, consideration should be given at the watershed scale, not just the site level. The idea behind LID is to create a green infrastructure network to connect ecosystems and landscapes. By using LID techniques, the site should function more naturally. The steps that should be implemented for better stormwater site design are: (1) identify natural areas; (2) lay out the site to preserve conservation areas and minimize stormwater impacts; (3) use various techniques to reduce impervious cover in the site design; and (4) utilize natural features and conservation areas to manage stormwater quantity and quality.

There are arguments against LID due to costs, time for construction, zoning restrictions, perceived values, permitting, and redevelopment. However, people who are problem solvers will find a way to implement these practices. There can be incentives such as credits for better site design techniques. Developers could see added value because of more green space, less gray construction, and reduced user fees. The community could also see benefits from good growth. The longer it takes to make the change towards LID, the longer we will have to keep fixing past projects. Tiffany asked what is meant by gray construction. Dave responded that this refers to redirecting stormwater through pipe systems. It is better to “go green” with the LID options discussed that promote infiltration and reduce the amount of water that needs to be conveyed away from the site and to a treatment structure.

Vince Seibold noted that the City of Jacksonville (COJ) is starting on a LID manual using the Sarasota County manual as a starting point. COJ is working with the St. Johns River Water Management District (SJRWMD) on this effort, which should help with permitting. The goal is to make implementing these designs easy for the developers. Anyone interested in participating in the LID meetings can email Vince to be added to the distribution list. The COJ Environmental Protection Board (EPB) has allocated \$100,000 to hire an engineering firm to organize the efforts and develop the manual. The EPB will consider approving this funding amount at their April meeting. If approved by EPB and the City Council, the request for proposals will go out.

Ed Cordova stated that the presentation noted that the water table should be a consideration when selecting LID options. This area has a high water table, which would seem to limit the options. Vince responded it is all about putting the right thing in the right place. Smaller BMPs can be implemented as part of a treatment train because stormwater ponds are not enough on their own to meet the Basin Management Action Plan (BMAP) nutrient reduction requirements. Dave added that there are tables to help screen options based on site conditions and goals to narrow down what BMPs to use. Tiffany asked if other local cities or counties are working on their own LID manual. Vince responded that he does have some of the other counties on the COJ LID manual distribution list.

Vince noted that the annual EPB Environmental Symposium is scheduled for July 16th at UNF. The presentations will include Sustainability, LID, River Accord, and the State of the River Report. Registration information should be sent out shortly.

Overview of Nutrient Impairment and Restoration in the Middle St. Johns River Basin

Erich Marzolf stated that meeting the goals for the Middle St. Johns River (MSJR) Basin will help the quality of water that flows to the LSJR Basin to help meet goals in that part of the river. The MSJR Basin (based on the SJRWMD delineation) includes about 20 miles of river, three large lakes of which two are flow through lakes, and three large tributaries (Deep Creek, Econlockhatchee River, and Wekiva River). The biggest influence in the Middle Basin is metro Orlando. Similar to LSJR, the Middle Basin does not have much slope. There is a gradual increase in slope until Lake Jesup, after which there is a lesser slope. A good portion of the basin is slow moving, and the tides die out around Lake Monroe. In addition, this can be a flashy system when there are storms that cause the river to flow in both directions. The Middle Basin is divided into five subbasins: (1) Wekiva River, which is moderately developed with moderate nutrients problems and a sensitive springshed; (2) Lake Jesup, which has very poor water quality; (3) Lake Monroe, which has fair water quality; (4) Econlockhatchee River, which has good water quality; and (5) Deep Creek, which also has good water quality.

The MSJR Surface Water Improvement and Management (SWIM) Plan was adopted in 2002. The plan objectives include monitoring and modeling to assess water quality and working with local governments and other agencies on projects in the basins. SJRWMD has developed Pollutant Load Reduction Goals (PLRGs) for Lake Jesup, Wekiva, and the river between lakes Harney and Monroe. A Total Maximum Daily Load (TMDL) was adopted for Lake Jesup in 2006 and the TMDL for the river between lakes

Harney and Monroe was adopted in 2009. SJRWMD is working to expand the hydrodynamic model to the Middle Basin. In addition, SJRWMD started collaboration with private industry on Lake Jesup nutrient reductions with what is called the “pay-for-performance project.” The private industry will get paid based on the pounds of phosphorus removed from the lake. The technology is working, but not at the level the industry originally thought.

SJRWMD has also put a lot of effort and funding into land acquisition of sensitive properties, such as key floodplain and recharge lands but the urbanized areas in the Middle Basin provide fewer opportunities for land acquisition. Particularly in the Upper Basin, however, the district has acquired substantial amounts of land, especially in the riparian areas along the main stem.

There are springs throughout the basin and Wekiva and Rock are the two largest springs in the basin. A TMDL for the Wekiva has been adopted and the BMAP process is underway. This BMAP is difficult because it needs to focus on both the watershed and springshed, which cover different areas. This is difficult for some of the stakeholders because they are used to focusing on reducing stormwater but now they also need to address the groundwater component for the springs. The TMDL includes reductions in both nitrate and total phosphorus (TP). The nitrate reductions are approximately 80%, and the TP reductions are 23% for Rock Springs and 64% for Wekiwa. SJRWMD is conducting a study with FDEP to look at the fate of nitrogen in groundwater. SJRWMD is also mapping submerged aquatic vegetation (SAV), and this is the first detailed survey of the area.

Lake Jesup is a large Middle Basin lake, and the river does not flow through it. Several of the lake’s major tributaries go through metro Orlando. The Lake Jesup watershed also includes a lot of smaller lakes with people living on them, and efforts have been made to improve the quality of these lakes. In the past, there were multiple wastewater treatment facilities (WWTFs) that discharged to Lake Jesup, which caused high nutrient loading in the lake. The problems with Lake Jesup go back to 1800s when the connection with the river was altered for steam boats. In the mid 1900s, there was floodplain drainage for agriculture in the area. The WWTF discharges were removed from the lake in 1983. SJRWMD has purchased some the floodplain around lake, and dikes have been removed to reconnect wetlands. There are a lot of unknowns about the lake included in the BMAP; therefore, SJRWMD, FDEP, and the Florida Fish and Wildlife Conservation Commission (FWC) developed the *Lake Jesup Interagency Restoration Strategy* to help understand these issues and turn this knowledge over to the stakeholders.

In 2010, the bridge over the confluence of the lake and river was rebuilt as a high span bridge, and modifications were made to help with flushing of the lake. The implementation of this project was due in a large part to the Friends of Lake Jesup. The Lake Jesup BMAP should be adopted by the FDEP Secretary next month and this BMAP includes a 15-year timeline for project implementation. The U.S. Army Corps of Engineers is looking at options to restore old flow patterns between the lake and river. Erich noted that so far there has not been much of a recent change in TP concentrations in Lake Jesup, but the concentration is much lower than it was with the WWTF discharges and more progress should be seen with BMAP implementation.

Erich stated that the Lake Jesup example shows it is essential to remove WWTF loads to improve water quality. However, it should not be assumed that the nutrients discharged through reuse cannot return to the river. There is a need to educate reuse customers to use less fertilizer because the water already has some nutrients. SJRWMD is working with the Institute of Food and Agricultural Sciences (IFAS) on BMPs for reclaimed water, which can then be used to educate homeowners and utilities. Ideally, it would be good to include site-specific fertilizer information for each property with the utility bill. There are consequences of excessive nutrient applications to turf including paying for unnecessary fertilizer, excessive growth of grass, a less healthy lawn, and increased pollution. Orlando and Jacksonville are the two largest cities on the river. Orlando is sending about 95% of wastewater to reuse and Jacksonville is

using about 9% of wastewater for reuse, but efforts are underway to increase this amount. Both these cities have a higher per capita water usage than the state average.

Erich noted that the U.S. Environmental Protection Agency (EPA) is proposing a TMDL for the St. Johns River at Astor. The TP target in this draft TMDL is very low and likely lower than natural background. SJRWMD has provided extensive comments to EPA on this TMDL. They have found that the system is assimilating about 9% of the TP before it reaches Astor. Based on these calculations, if the water quality goals for the Middle Basin are met then the TP concentration in Lake George will be very close to what is needed to meet water quality standards.

Pat Welsh asked if anyone has talked about reopening the old channels to Lake Jesup. Erich responded that there has been discussion about opening Channel B but SJRWMD thinks that the river will do some rearranging once the first big storm hits the area. Pat O'Connor asked where else can nutrients from reuse water be removed if reuse on turf grass is not the focus. Eric responded that plants do a really good job with nitrogen. The WWTFs that send water to reuse often use rapid infiltration basins (RIBs) to dispose of excess water. The karst geology in the region provides good drainage and opportunities to dispose of large quantities of water when reuse is not in demand. However, because of the karst geology, those loads can be a source of pollution to groundwater, and there is growing interest in finding alternatives to RIB disposal. Another option is to use RIBs with the addition of an infiltration wetland, so that the wetland provides carbon to drive denitrification before the effluent reaches groundwater. Gainesville is working on a pilot test of this type of system. Soils generally do a good job of removing phosphorus. Dealing with overspray onto impervious surfaces would help a great deal with addressing nutrient impacts from reuse. Pat asked if the Gainesville utility has plans to harvest the plants in the wetlands. Erich responded that they have done some pilot projects, which have required very little maintenance or plant removal. Over time, however, it is possible that some harvesting and soil conditioning might be needed to maintain infiltration within the wetland; the pilot projects have not been in place long enough to fully understand how infiltration might change over time and with mature vegetation. Overall, the goal is to keep the wetland plants in place for as long as possible to provide the carbon to drive denitrification.

Technical Updates and Announcements

St. Johns River Alliance Update

Tiffany stated that the House just passed the St. Johns River license plate, partly in honor of the late Senator King. The Senate now needs to pass the plate and Tiffany stated that the Alliance will keep the TAC up to date on the status. The money from the license plate will go towards river projects. Tiffany added that the Alliance is in the process of planning a River Summit for September 15th and 16th at the Prime Osborne Convention Center.

Fisheries Data Collection Update

Justin Solomon stated that they have been conducting fisheries sampling at the same 113 sites each month, of which 32 sites are done in cooperation with SJRWMD. The minimum flow report should be completed soon, and, with this report, SJRWMD asked for information on changes in salinity gradients due to proposed water supply withdrawals.

Fecal Coliform TMDL Update

Vince stated that the second tributaries fecal coliform BMAP is closing in on adoption and a meeting is scheduled in May for endorsement of the BMAP by the Basin Working Group. The BMAP should be fully adopted in early fall. This BMAP is progressing faster than the first BMAP because the process has been figured out and the stakeholders were able to use what they learned from the first BMAP. Vince also noted that the COJ water quality laboratory is now able to run fecal coliform samples, and they are working on building a data set for certification. Tiffany added that COJ has undertaken a lot of additional sampling for the first tributaries BMAP and they are also doing storm event sampling for the main stem

BMAP. FDEP is also doing additional sampling for both BMAPs. Pat O'Connor noted that the tributaries stakeholders divided up the responsibility for the monitoring stations for the new BMAP earlier this month. The FDEP Northeast District also obtained a new sampler to take storm event samples, which can be placed in the field and it will initiate sampling during rain events. Tiffany noted that SJRWMD has also started their storm event samples for the main stem BMAP. The links to the draft and final BMAPs can be found on the TAC website.

Other Member Updates

Pat Welsh noted that one of his students has designed a sheltered water quality buoy with solar power and wireless networking technology. The buoy was recently presented at several workshops and was well received. If anyone has online, real time monitoring requirements in sheltered water, let Pat know and he and his student may be able to help.

Angelo Speno stated that the Putnam County Fair is going on now, and the County is distributing educational materials to make the public aware of nutrient impacts on the river. Jessica Weatherby added that the County is also looking at structural and nonstructural project options to meet BMAP requirements, and this report should be completed soon.

Mike Hollingsworth stated that the U.S. Army Corps of Engineers still has funding to complete the feasibility studies for the Big Fishweir Creek and Hogan Creek studies. The Corps recently met with FWC to discuss the Big Fishweir project and benefits for manatees. The Corps also has a model to determine what depths would affect the manatee and how to sustain the hydrology of the watershed. Once this modeling is complete, the Corps would like to meet with TAC members to discuss other options and benefits for this project. The Hogan Creek project is also moving forward, and they had a site visit about a month and half ago. The Corps has found some opportunities with ecosystem restoration potential. A sediment toxicologist is analyzing sediment samples and they have found elevated samples in parts of system. The Corps is trying to determine if this will limit what can be done in certain areas. Mike noted that there is still no plan to deepen the river. The Corps is working on an economic analysis and they have found some issues. The Mile Point project to remove the hairpin turn at the Intracoastal Waterway and the river has simulation modeling underway. The Mayport project is in the final stages of permitting for deepening to allow carrier access. The notice of intent will be released in April, which will provide an opportunity for comments. The Blount Island slipway is still under design, along with structural analyses to ensure that the deepening will not affect piers in the area. Dana Morton asked if the sill that will be removed as part of this project is concrete. Mike responded that it is reinforced concrete, which will likely require blasting. Dana asked if they have looked at disposal options yet. Mike responded that the Corps will have an industry day to allow contractors to provide options.

Pat Welsh stated that the new UNF student union has free room rentals for academic meetings, and this could be a good location for future TAC meetings.

Next Meeting Date

The next meeting will be held in June and will be hosted by COJ. The Florida Stormwater Association (FSA) conference is June 9-11 and the Florida Lake Management Society (FLMS) conference is June 14-17, so these dates will be avoided for the next TAC meeting.

Adjourn

The meeting was adjourned at 12:27 PM.