

LOWER ST. JOHNS RIVER TECHNICAL ADVISORY COMMITTEE MEETING
St. Johns County Utilities Department
1205 State Road 16, St. Augustine, Florida 32084
March 12, 2014

Participants

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| Shauna Allen, National Park Service | Laura Line, Water & Air Research |
| Neil Armingeon, Matanzas Riverkeeper | Pam Livingston Way, SJRWMD |
| Katie Bizub, JEA | Jim Maher, FDEP |
| Tiffany Busby, Wildwood Consulting | Lori McCloud, SJRWMD |
| Greg Caldwell, St. Johns County | Margo Moehring, NEFRPC |
| Ed Cordova, JEA | Mark Nelson, Jones Edmunds |
| Julie Espy, FDEP | Marcy Policastro, Wildwood Consulting |
| Alan Foley, Jones Edmunds | Cicely Pontiflet, National Park Service |
| Tina Gordon, GTMNERR | Jennifer Sagan, AMEC |
| John Hendrickson, SJRWMD | Scott Schultz, Green Cove Springs |
| Mike Hollingsworth, USACE | Lucy Sonnenberg, JU |
| Jay Kamys, St. Johns County | Angelo Speno, Putnam County |
| Matt Kershner, FDEP | Lisa Sterling, CDM Smith |
| Glenn Landers, USACE | Press Tompkins, St. Johns County |
| Xiaohai Lin, Taylor Engineering | |

Welcome and Introductions

Tiffany Busby welcomed everyone to the quarterly meeting of the Lower St. Johns River (LSJR) Technical Advisory Committee (TAC). The participants introduced themselves and the entity they represent.

Water Quality Assessment Under Numeric Nutrient Criteria (NNC)

Julie Espy stated that the new NNC give the Florida Department of Environmental Protection (FDEP) a better way to identify nutrient problems. Previously, FDEP mainly used chlorophyll-*a* but now they also have criteria for total nitrogen (TN), total phosphorus (TP), and nitrate-nitrite in springs. In addition, FDEP can still look at algae or plant abundance and bioassessments, such as stream condition index (SCI). As part of the NNC, data are needed over a longer period of time. It used to be that a waterbody could be identified as impaired with one year of chlorophyll-*a* data, but now at least two years of data in a three-year period are required. A total of four samples are required with at least one between May and September, which is the growing season. The Impaired Waters Rule (IWR) sets data sufficiency requirements, and one of these standards is that the samples must be at least one week apart.

For streams, when the NNC are exceeded, data are also needed for SCI, rapid periphyton survey (RPS), and linear vegetation survey (LVS). RPS and LVS data are required, and these are floral measures. The biological data must be from two temporally independent samples collected at least three months apart within the seven and a half year assessment period. There are some exclusions for streams. Julie noted that she has a handout with the details on the stream exclusions that she will send to Tiffany to provide to the TAC members. These exclusions to the criteria are for streams that are really a ditch or canal.

For lakes, Julie stated that more data are needed to classify the lakes as clear or colored and to determine their alkalinity. While there are a lot of nutrient data for the lakes, there are not a lot of data to classify them. The data needed include alkalinity (or specific conductance) and true color (filtered for turbidity), and FDEP will be working to collect these data. The color and alkalinity data must be long-term geometric means. The rule does not specify a timeframe so all available data will be used. Some lakes vary between colored and clear from year-to-year, which made it difficult to determine the impairment. Lakes were previously identified as impaired using the trophic state index (TSI), and lakes could meet the TSI one year but not the next. The NNC takes this effect out. A minimum of ten samples from at least three years must be collected.

Julie stated that total maximum daily loads (TMDLs) that have been adopted can serve as site-specific alternative criteria (SSAC). FDEP has submitted almost all of the TMDLs to the U.S. Environmental Protection Agency (EPA) for approval, except for those TMDLs based on a percent reduction without an associated nutrient concentration or load. Some of the TMDLs have been approved by EPA, including the LSJR TMDLs. FDEP submitted the TMDLs to EPA late last year and EPA has approved about 18 of them. This process is taking a while because both EPA's TMDL and water quality standards section are reviewing them, and they do not always see eye-to-eye on the sufficiency of the TMDLs.

Tiffany asked if the LSJR main stem freshwater TMDLs were also approved by EPA. Julie responded that they were, but she unintentionally left them off the presentation. Tiffany asked if EPA's process of reviewing FDEP's TMDLs affects any adopted EPA TMDLs. Julie responded that if EPA approves FDEP's TMDL then it will replace EPA's TMDL for that waterbody. John Hendrickson asked if there has been any consideration to set an established category for all lakes now using available data before the assessments are conducted. Julie responded that FDEP considered doing this through lake regions but they decided this process would not work. Ed Cordova stated that FDEP has acknowledged that portions of the St. Johns River act as series of colored lakes as opposed to streams; therefore, it is not obvious what criteria would apply. Julie responded that FDEP's assessment section has several portions of the river designated as lakes, so they will be assessed as lakes. One of the stream criteria exclusions is for lake-like streams. Tiffany noted that some of the Middle St. Johns River (MSJR) lakes have adopted TMDLs.

Julie stated that FDEP also has new dissolved oxygen (DO) criteria. The previous standard was based on a milligram per liter concentration, which has been replaced with a percent saturation value. The new criteria apply differently to Class 1 and Class 3 freshwaters versus Class 2 and Class 3 marine waters. The new criteria also allow for the use of diel monitoring in the assessment, which allows for less trips to collect data while providing a more robust dataset than a one-time measurement. For one-time measurements, there is a time of day translation to account for the time when the sample was collected and the region of the state to determine if the sample meets the standard. There are adopted DO SSACs around the state and these remain unchanged by the new standard. There are five bioregions across the state for the DO criteria. The previous Panhandle region was split in two, with a new Big Bend region because of differences in DO and biology in this area.

For freshwaters, the data sufficiency for the DO criteria require a daily average assessment, which can be done with either a single grab sample or diel sampling. There must be a minimum of 20 samples and five temporally independent samples. The samples do not have to be one week apart, so if diel monitoring is conducted for four days, it would count as four samples. For marine waters, there is a seven-day and 30-day average assessment. The seven-day assessment requires three full days of diel data, which are collected at least hourly. If grab samples are used, ten samples are needed over at least three days, with the samples collected at least four hours apart. For the 30-day assessment, three daily average DO concentrations are needed from three full day diel measurements collected during three weeks of the month. If grab samples are used, at least ten samples must be collected from at least ten different days of the month. For lakes, DO must be measured in the upper two meters of the water column to determine what the DO conditions are near the surface. Any DO saturation measurement greater than 100% will be set to 100% for calculating the average. Tiffany asked if the DO samples in a deep lake could be collected deeper than the two meters. Julie responded that the samples could not be collected at a greater depth because the criteria are based on what is happening near the surface.

Julie stated that FDEP's assessment schedule uses a basin rotation approach so that each year a different group of waterbodies is evaluated. The Ocklawaha Basin is part of Group 1 and it was last evaluated in 2012. The LSJR and MSJR basins are both in Group 2, and they would have typically been evaluated in 2013. With the changes to NNC and the new DO criteria, FDEP delayed the assessment until this year so that the new criteria could be approved by EPA. Therefore, the new criteria will be used to assess the Group 2 basins for this year. The assessment is based on a seven and a half year period, which will be 2007 through June 2014. There is also a planning period of ten years, which is used to figure out FDEP's strategic monitoring. For those waterbodies that do not have much data but look as if they could be impaired, FDEP will collect additional data to fill in the gaps.

Lisa Sterling asked how the necessary biological data would be collected for the Group 2 basins, since this is the last year of the assessment period. Julie responded that the biological data are another reason that FDEP delayed the Group 2 assessment for a year. Last year, they spent time collecting some of the biological data needed. Tiffany asked if there are waterbodies on the impaired list that also trigger strategic monitoring, in addition to the planning list waterbodies. Julie responded that the monitoring primarily occurs based on the planning list. The strategic monitoring plan this year includes the LSJR Basin for some additional RPS and LVS data. Tiffany asked Julie to explain the RPS and LVS. Julie responded that for the RPS, a 100-meter stretch of the waterbody is measured out, and every ten meters there are ten observations collected. The observations are conducted by reaching down in the water and grabbing to see if there are any algae. If algae are collected, the length is measured because part of the rank is based on the length of the algae. The overall rank, based on all the observations, indicates whether there is an imbalance. The LVS follows a similar process except it evaluates vascular plants in the system, such as hydrilla and water lily. The score is determined based on the type and amount of plants observed. For instance, hydrilla results in a lower score because it is an exotic plant, while the water lily would have a higher score because it is a native plant.

Julie stated that FDEP uses waterbody identification (WBID) numbers as the assessment unit, and the WBIDs are segments of waterbodies. Those WBIDs that are potentially impaired but need

more data will go onto the planning list. FDEP is now also creating the study list, which includes stream WBIDs that do not meet the TN and TP criteria but do not have the necessary biological data. Waterbodies are placed in category 4d if they do not meet the standard, but there is not enough information to determine the cause of the impairment. This category is mainly applied to DO- or biology-based impairments, because a causative pollutant must be identified if the DO standard is not achieved.

Going forward, the Department will reassess waters using the new criteria. If a waterbody attains the NNC, it would be delisted for meeting standards. If applicable, the assessments will be done using the adopted TMDL concentrations or loads as the criteria. Therefore, the loads in the LSJR Main Stem TMDLs will be used in the assessment; not the NNC. Some waterbodies that were previously identified as impaired may remain impaired if the data do not show the water as meeting the new criteria. Tiffany asked if the TMDLs based on the old criteria (such as TSI) would stay in place or if the new criteria would be used for reevaluation. Julie responded that the adopted TMDLs become the criteria. The assessment group will also evaluate the waterbodies using the new criteria and will let the TMDL section know if something does not seem right when comparing the evaluation of the new criteria to the evaluation of the TMDL criteria. The TMDLs are considered SSACs because they are based on a more detailed evaluation for that waterbody.

Julie stated that the Group 2 draft assessment lists will be provided in May or June and will be followed by a series of public meetings and a comment period. FDEP will incorporate the comments received, and conduct another data pull to add data through June 2014. The updated lists would be provided in September, followed by another series of public meetings and a comment period. The final lists will be prepared in October for upper management review and adoption by the FDEP Secretary in December.

John asked how FDEP would determine if the TMDL load reductions have been achieved for non-National Pollutant Discharge Elimination System (NPDES) permit holders. Julie responded that the assessment group would rely on the BMAPs and stakeholders for this information. She has reviewed the LSJR Main Stem BMAP annual reports, and that information will be used. The listing schedule could change since this process still needs to be figured out and information will be needed from other people. John asked if the tributaries that flow into TMDL waterbodies will be assessed with NNC, even though some of the sources may have allocations in other areas. Julie responded that the tributaries impaired for nutrients would be assessed using the NNC, as long as they do not have an adopted TMDL. Tiffany asked if FDEP has enough DO data for the new criteria. Julie responded that they do have a lot of data because most providers report both DO concentration and percent saturation. Where DO saturation is not provided, FDEP can use the concentration if there is temperature and conductivity or salinity data to make the conversion to percent saturation. However, these data must all be measured at the same depth and collected at the same time. Mark Nelson asked for the tributaries to the LSJR, if only the FDEP-adopted TMDLs would be used in the assessment, and not the EPA-adopted TMDLs. Julie responded that only the FDEP-adopted TMDLs would be used in the assessment.

Julie stated that FDEP has been holding meetings around the state to obtain input on how to prioritize TMDL development. Rule 62-303.500 of IWR says that waters should be categorized as high, medium, or low priorities. Any waterbodies used for drinking water are categorized as

high. Most waterbodies are categorized as medium, and fecal coliforms are low priority. Since FDEP is no longer under the consent decree that previously drove TMDL development, FDEP is trying to figure out how to best schedule TMDL development. EPA has a tool, the Recovery Potential Tool, which FDEP has built on to prioritize new TMDL development. The tool evaluates ecological, stressor, and social factors to determine which waterbodies are most likely to achieve restoration. In looking at the impairments, FDEP removed mercury because there is a statewide TMDL, and also removed bacteria impairments. FDEP chose numeric indicators, in which numbers could be assigned to the factors, and non-numeric indicators, which were used to ensure the priority order made sense. Julie stated that she brought copies of the priority waterbodies, which includes LSJR waters, and these are the priority areas that FDEP is planning to develop TMDLs for over the next two years. Some of the indicators used include the severity of impairment, number of point source outfalls, whether the waterbody is an Outstanding Florida Water (OFW), age of impairment, and proximity to other impaired waters.

Sea Level Change Considerations for Water Resources Planning in Northeast Florida

Glenn Landers stated that the U.S. Army Corps of Engineers (USACE) Civil Works Program focuses on water resources, starting originally with ports and navigation then going into flood damage reduction and now into ecosystem restoration. There is an international team, which is made up of several agencies, that looks at sea level change. For Florida, there are several climate change concerns. The first is sea level rise, which results in salinity changes in habitat along the coast, shoreline retreat, increasing flood frequency and depth, and saltwater intrusion. Another concern is warmer temperatures, which increases evaporation losses so the water supply goes down; stresses on plants, animals, and marine ecosystems (such as corals); changes the growing seasons and migratory patterns; and changes water quality. In addition, hydrologic pattern changes are a concern because there is the potential for less frequent but more intense rain events and the potential for increased tropical storm intensity or frequency.

Dr. Harold Wanless at the University of Miami looked at geologic evidence to evaluate changes in water levels over time. The current conditions indicate we are in a time period of rising seas. The rates of sea level rise based on historical data average about two to three millimeters per year (mm/yr). However, during times when glaciers have turned loose and melted, the rate has been as high as 40 mm/yr. The current rate of sea level rise will result in an eight to ten inch increase over the next 100 years.

USACE uses a National Research Council (NRC) study from 1987, which estimates sea level rise between 0.5 and 1.5 meters by 2100. It is generally acknowledged that a two-meter increase is credible by 2100. The NRC guidance includes high, intermediate, and low curves to evaluate potential impacts. Using tide stations in Florida that have a 40-year or longer period of record (Fernandina Beach, Mayport, Daytona Beach, Miami Beach, Vaca Key, and Key West), most of the stations average 2.2-2.3 mm/yr increase, which would result in about a nine inch increase in sea level over 100 years. Based on the historic rate of sea level rise, there would be an eight to nine inch increase by 2100; however, with the melting of the glaciers, the rate of increase will be higher than historic rates.

For development planning purposes, it is important to estimate sea level rise beyond 2100. The National Academy of Sciences estimates that for each degree Celsius increase, there will be about

2.3 meters of sea level rise. Glenn noted that the current predictions are an increase of at least two degrees Celsius. When planning for sea level rise, the goal should be to protect the built environment to extent possible, while recognizing that buildings and lands will depreciate in value as the risk for sea level rise increases. A timeline should be established for voluntary actions to exit an area. The focus should be on long-term risk reduction. During planning efforts, the flood risk frequency should be considered. This is a combination of sea level rise and storm surge.

There are several direct impacts of sea level rise. One impact is street flooding, which is already occurring in south Florida. Also in south Florida, the aquifer is made up of porous limestone so as the ocean level increases, there will be saltwater intrusion into the water supply. Lake Okeechobee could be an alternate source of water, but it is not sufficient to meet all the demands. Therefore, there will be a need for a desalination process to use deep Floridan water, which is brackish, but less so than ocean water. There is also a concern about infrastructure in south Florida, such as the Turkey Creek power plants, which will be flooded when there is two feet of sea level rise. North Florida will need to start planning for more people in the area in the future when south Florida is partially flooded. There will be a need to ensure that north Florida has an adequate water supply and infrastructure. Lake Okeechobee is a good resource for storing stormwater runoff, but there is no storage in north Florida for use during drought times.

Glenn noted that a lot of the Everglades restoration work is being done to correct problems from past actions. With the Jacksonville Harbor, there has been historical deepening and narrowing of the river, which has allowed saltwater to move further upstream. The proposed deepening project to the Dames Point Bridge included an evaluation of salinity changes, and the modeling showed very small changes. Therefore, past actions have had the impacts but USACE has not been given the assignment of fixing past impacts.

Risk is a measure of probability that something will happen. With risk, there are opportunities for gain, when planned properly, and potential losses, if not planned properly. Risk assessment is an analytical approach whereas risk management is a policies-based approach. Risk communication is needed to exchange information to help with planning. To mitigate risk, some larger measures can be taken to provide protection long-term. There are also smaller measures, such as retreating a block from the coast, which can help. The goal of risk management is to create something that is sustainable, that is robust and performs well under a wide range of scenarios, and that evaluates the cost-risk trade-offs.

In general, a systems approach to adaptation should be used to address short- and long-term problems. There is a need to come up with plan to protect people and to give them an exit so they do not lose money when they leave an at risk area. There is also a need for a long-term strategy for major roads and other infrastructure in areas where growth will move. Coordination is required across a large range of agencies. Incentives should be provided to private development to guide them to develop in desired areas. Hurricanes and other disasters give an opportunity for rebuilding, and it may be helpful to have pre-storm agreements to get people to commit to being bought out if their property is destroyed. This would prevent the need for rebuilding along the coast.

Lucy Sonnenberg stated that the Turkey Point power plants issue concerns her and does not make her optimistic about risk management looking forward to 2100. Lucy asked if Glenn is optimistic

that effective measures will be taken before catastrophic events unfold. Glenn responded that in terms of sea level rise, measures are coming. North Florida have the ability to plan ahead and he hopes this will occur. The south Florida communities are already planning. In terms of the power plants, Florida Power and Light (FPL) is phasing out two plants and adding new plants in this area, which will be constructed on pads that are 50 feet high. The argument is that it is politically easier to build a plant where one already exists; however, with flooding, there might not be many customers left in the area.

John stated that USACE and the military have resources along the shore, and he asked if there is any evidence of whether information on sea level rise will guide where USACE funds projects. Glenn responded that that USACE helps the Navy with dredging but does not do many projects along the coast. He did hear a presentation recently about Navy base realignment and closures, and there could be several bases in Florida that are moved because they do not have a place to retreat to with sea level rise, including Mayport. Some bases, such as the one in Pensacola, could retreat upland. Jim Maher asked why the base in Pensacola would be able to move more easily than Mayport. Glenn responded that Mayport is on a small piece of land with nowhere to move; however, there is space for Pensacola to retreat upland. It takes the Navy awhile to obtain funding, so they plan far ahead, which is why they are starting to think about realigning some bases to a better location. Neil Armingeon asked if Glenn makes this presentation to business groups. Glenn responded that he does make presentations like this periodically. He is happy to make a presentation to a group, he just needs a request to go to the chief of the planning division.

Regional Coordination on Sea Level Rise

Margo Moehring stated that she brought hard copies of the Regional Action Plan on sea level rise. She noted that northeast Florida is a conservative region that does not like to discuss climate change, but sea level rise is being used to start a dialogue. The action plan has been adopted by the Northeast Florida Regional Council. The council covers seven counties and consists of elected officials. The council formed the Emergency Preparedness Committee, which is a group of volunteers who came together to make policy recommendations on sea level rise. About 18 months ago, the council saw Glenn's presentation and they also received a presentation on the Matanzas Basin study. With this information, the council realized that northeast Florida is vulnerable to sea level rise. When developing the plan, the committee looked at six inches, one foot, three feet, and six feet of sea level rise. At about three feet of sea level rise is where the area starts to see impacts. The committee conducted community resiliency assessments with local governments to determine what community assets would be affected with different amounts of sea level.

The action plan recommends creating a clearinghouse to gather information for the public, such as what flood zone they are located in. Margo noted that the efforts of the committee went under the radar because the discussions occurred at regular meetings with no media coverage. Therefore, there is a need to begin public engagement. The committee will be at One Spark to get the word out about sea level rise. The message will be somewhere between the details that Glenn provided and a softer message. Part of the plan also involves saving money by using the community rating system to help lower flood insurance rates. The committee will be working with Palm Coast on improvements to their rating system. The National Oceanic and Atmospheric Administration (NOAA) released a report, "What Will Adaptation Cost," which includes methods for assessing

costs of different options. More information will be needed to determine the correct assumptions that should be used with this report to apply to northeast Florida.

The plan also recommends leveraging existing success. Naval Air Station Jacksonville has worked on sustainability practices, and several of the local governments have included sea level rise in their planning. There is also the need to engage the private sector to ensure long-term resiliency. The goal is to create a blue ribbon committee with more private than public sector members. The focus of the Public/Private Regional Resiliency (P2R2) Committee will be to move the investment and people out of the vulnerable areas. The idea would be to make northeast Florida more attractive by putting thought into how the growth would occur.

John asked if the committee reviews local comprehensive plans to evaluate large communities in relation to sea level rise. Margo responded that she believes that some local governments are thinking about sea level rise. The committee also hopes that landowners will start to realize that they own property on high ground, and the people in south Florida will need to move somewhere when the flooding increases. Part of what the P2R2 Committee will try to accomplish is to incentivize moving out of vulnerable areas and giving people the opportunity to benefit from creating development. Tina Gordon added that local governments are still in the learning phase on planning with sea level rise in mind. People are now coming to the table to discuss sea level rise, which is more than what was occurring a few years ago.

Technical Updates and Announcements

St. Johns River Water Management District (SJRWMD)

John stated that SJRWMD is moving back into a strategy where they are focusing on projects through initiatives with specific objectives. They are realigning to be more product-based, and they are in the process of creating work plans to be more specific about what will be done in the future. The current organization is similar to the organization SJRWMD had by basin. In areas with TMDLs, there will be more projects implemented with fixed timelines and objectives.

USACE

Mike Hollingsworth stated that the Jacksonville Harbor deepening feasibility report was approved in February. USACE is in the process of the final state agency review, and they will be enlisting some of the TAC members in that review. Once the comments from this review have been addressed, the report will be sent to the Secretary of the Army with the Chief's Report. This will occur by April 30th. The project will then have to go to the Office of Management and Budget and must be included in a Water Resources Development Act (WRDA), although this project may not be ready for the next WRDA. Two members of Congress are working on language to allow approval of the project post-WRDA adoption. Once the project is included in WRDA, then \$700 million in funding will be needed. The final report is available on USACE's website.

Other Member Updates

Jim stated that most of the TAC participants also attended the LSJR Main Stem BMAP annual meeting so they are aware of the progress made, challenges ahead, and movement in the agricultural area. He noted that he thought Ron Littlepage's article in the *Florida Times-Union* was interesting. The article basically said that progress has been made, but it is time to get back to work. The Governor has included budget for springs, with a proposal of \$220 million. Jim

stated that a new initiative is coming to LSJR Basin, which is liquid natural gas (LNG) for maritime industries. There are three facilities proposed to provide LNG as fuel instead of diesel, which will make the energy used here cleaner. This change requires infrastructure retrofits. Construction of these facilities should start soon and they should be completed by 2016.

Angelo Speno stated that Putnam County has started constructing the wastewater treatment facility in East Palatka, which will take septic tanks offline in that area.

Lucy stated that work on the River Report is underway, and input from the TAC is welcome.

Next Meeting Date

Tiffany stated that the next TAC meeting will be in June 2014 and will be hosted by Jacksonville University. She asked if there were any dates in June that should be avoided. Jennifer Sagan stated that the Florida Lakes Management Society (FLMS) has a conference from June 16-19. The annual symposium includes not only lake management but springs restoration, upland best management practices (BMPs), minimum flows and levels (MFLs), estuarine systems, rivers, and streams. Julie's group will be attending to conduct a workshop on NNC and water sampling standard operating procedures. The symposium will be held in Stuart, so there will be a special session on the Indian River Lagoon. Jennifer stated that she would send the call for abstracts to Tiffany to send to the TAC members. Matt Kershner stated that FDEP has a conference the first week in June. Tiffany added that the Florida Stormwater Association (FSA) is holding its annual conference from June 11-13 in Sanibel. She will be participating on a session about springs. The conference agenda is on the FSA website.

Adjourn

The meeting was adjourned at 3:39 PM.