

LOWER ST. JOHNS RIVER TECHNICAL ADVISORY COMMITTEE (TAC) MEETING
Davis College of Business, Room 171/174
2800 University Boulevard North, Jacksonville, FL 32211
October 18, 2012

Participants

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| Dave Briglio, AMEC | Shanda Larson, JU |
| Russ Brodie, FWC | Tom Mallett, COJ |
| Derek Busby, SJRWMD | Jan Mandrup-Poulsen |
| Tiffany Busby, Wildwood Consulting | Kimberly Mann, JU |
| Ivan Chou, ECT | Pat O'Connor, FDEP |
| Ed Cordova, JEA | Gerry Pinto, JU |
| Barry Cotter, COJ | Marcy Policastro, Wildwood Consulting |
| Betsy Deuerling, COJ | James Richardson, COJ |
| Chris Fagerstrom, ECT | Katie Roark, JEA |
| John Hendrickson, SJRWMD | Vince Seibold, COJ |
| Mike Hollingsworth, USACE | Lucy Sonnenberg, JU |
| Huey James, Green Cove Springs | Doug Strom, Water and Air Research |
| Tom Kallemeyn, FDEP | Eric Summa, USACE |
| Kerry Kates, Florida Fruit and Vegetable Association | Scott Turner, DCHD |
| Ted Lange, FWC | |

Welcome and Introductions

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

Activities to Reduce Bacteria Contamination in the LSJR Tributaries

Tom Kallemeyn stated that the Tributaries Assessment Team (TAT) was created in 2002/2003 to assess high fecal coliform counts in about 50 tributaries to the LSJR, mostly in Duval County. The City of Jacksonville (COJ), JEA, Florida Department of Transportation (FDOT), Florida Department of Environmental Protection (FDEP), and Duval County Health Department (DCHD) were the original TAT participants. As the efforts expanded, the City of Atlantic Beach, City of Jacksonville Beach, City of Neptune Beach, and Naval Station Mayport were added to the TAT. COJ has an extensive sampling program, which is where most of the data come from. FDEP also has some data from their watershed assessment cycle sampling in 2002, 2007 and 2012.

The TAT developed a ranked list of the 75 impaired tributaries in LSJR Basin. The goal was to rank the streams with the most anthropogenic sources as the highest on the list. Available literature noted that concentrations over 5,000 colony forming units (CFU) per 100 mL most likely represented anthropogenic, rather than wildlife, sources. The TAT ranks the waterbodies based on exceedances over 800 CFU (the one-time state standard), 5,000 CFU, and 10,000 CFU. The ranking is done in rolling five-year periods.

The TAT manual was developed by PBS&J in 2006, based on lessons learned from previous TAT sampling with additional information on how best to assess and address sources. PBS&J also created detailed basin reports to help identify sources for each of the impaired waterbodies. In 2009, FDEP adopted about 25 fecal coliform total maximum daily loads (TMDLs) for the LSJR tributaries, and an additional 5 TMDLs were adopted in 2010. The TMDLs were adopted because the waterbodies were not meeting state standards for fecal coliforms, and then basin management action plans (BMAPs) were created to address the impairments. BMAP I was adopted by FDEP in December 2009 and it addresses ten tributaries that were ranked as the most impaired. BMAP II was adopted in August 2010 and it

addresses another 15 tributaries. The BMAPs identify pollutant sources in each tributary including sanitary sewers, onsite sewage treatment and disposal systems (septic tanks), and stormwater. The BMAPs also list management actions that will be implemented in each waterbody to address the sources. These actions include sewer infrastructure projects, capital improvement projects, walk the waterbody identification (WBID), septic tank phase out, and septic tank inspections.

Walk the WBID was a concept developed by the TAT because it is a good idea to walk some of the streams that have high fecal coliform counts. A team made up of different agencies goes to the watershed and walks to look for sources such as illicit connections, sanitary sewer line crossings, and pets. The information collected during the walk is used to help target sampling in the watershed and to address sources. The BMAPs also include monthly water quality monitoring to identify sources and quarterly sampling to track trends. The BMAP I monitoring plan includes all 10 WBIDs and the BMAP II monitoring plan includes 10 of the 15 WBIDs because some of the tributaries have fairly low fecal coliform concentrations. In addition, the COJ monitoring extends into some the WBIDs that are not included in the BMAPs. Each entity that is part of the monitoring plans samples on a monthly basis. If a count is over 5,000 CFU, they follow up within 24 hours by sampling upstream and downstream of the high counts to try and identify the source. This follow up sampling has been effective in identifying sources in some areas. The TAT has monthly conference calls to discuss any counts over 5,000 CFU and try to find a solution to the issue.

Milestones for the first 5 years of implementation are included in each BMAP that require a 50% reduction in the median fecal coliform concentrations from the TMDL period for each waterbody. The BMAP I milestone will be assessed 2014 and the BMAP II milestone will be assessed in 2015. The BMAP I annual report from February 2012 includes a summary of the median values in each of the ten tributaries. Six of the waterbodies are already meeting the 50% reduction milestone, three waterbodies have some improvement, and one waterbody (Butcher Pen) has gotten worse since the TMDL period. BMAP II has had more progress, which is expected because these waterbodies were not ranked as highly impaired as the BMAP I WBIDs. The October 2011 BMAP II annual report notes that of the 15 WBIDs, 13 are meeting the 50% target and 2 still need some more improvement to meet the milestone.

During the monthly calls, the TAT discusses what has been working and what has not to determine where sampling resources can be shifted to WBIDs that have not met the milestone or are not included in the BMAPs. FDEP added about three to five streams to their sampling because data are only available from 2007, which is affecting where these waterbodies are ranked. The additional data FDEP is collecting will help to determine the status of the fecal coliform impairments in these waterbodies. The TAT also realized that looking at the percentage of counts over 800 CFU does not really help in the ranking so the future rankings will focus more on the counts over 5,000 CFU and 10,000 CFU in each waterbody. The TAT will also continue to look for areas that should be walked to identify sources.

Pat O'Connor stated that as the TAT was sampling, they noticed that there is a lot of evidence of wildlife in certain areas. In the highly altered urban setting that is found in Jacksonville, these ditches/creeks are the main conduit for wildlife, so there is a higher than normal concentration of animals in these systems. To help quantify the potential wildlife loading, FDEP put out game cameras to get a picture of the number of wildlife using the creek. They are also collecting flow measurements in the streams and using literature values of the fecal coliform concentrations in a gram of dog feces to estimate loading. They determined that an eight-hour loading from one raccoon would be about 1,000 CFU, which is higher than the state standard.

The TAT also started to implement the same standard operating procedures (SOPs) that FDEP uses for the TMDL sampling, including not collecting a sample from a waterbody that is less than 0.1 meters deep. Shallower waters can be sampled in the follow up effort since this sampling is diagnostic to find sources

and will not be entered into the STORET database. In reviewing historical data, FDEP found that the site on Butcher Pen at Jammes Road was consistently high. FDEP examined the stream at the sampling location and they could hear water running in the culvert that was not typical stream flow. They found a shopping cart that had been wedged into the culvert and material backing up behind the cart creating a bank. The culvert is about 100 feet long and devoid of light, which creates a prime location for bacteria regrowth. FDEP removed the shopping cart and allowed the stream to remove the soils that had built up. As a result, they noticed that the fecal coliform counts dropped about 20%. For the follow up sampling, the TAT has not been entering any of the water quality data collected into STORET. FDEP has now started to enter data on the water quality parameters, except for fecal coliforms, to help provide background information on the creek.

John Hendrickson stated that the Jammes Road project received recognition from the Governor in one of his weekly updates. It is one thing to identify problems, but another, more difficult task, to figure out how to address them. He asked for the follow up sampling, how the samplers arrange their day since they need to go back out so quickly. Pat responded that the TAT's goal is to conduct the follow up sampling within 24 hours of finding a high count. FDEP has arranged with the contract laboratory to provide information if a sample is going to be over 5,000 CFU so that they can go out and resample quickly. If the follow up sampling does not occur quickly, there can be other factors that occur between the two sampling events that will confuse the potential source of the fecal coliforms. Lucy asked if FDEP thinks the culvert was the primary source of the impairment in Butcher Pen. Pat responded that they are not sure because Butcher Pen is an altered system with a lot of paved area that results in a lot of runoff. Gerry Pinto asked if all the homes in this area are connected to sewer. Pat responded that there are a few homes still on septic tanks based on the data record. The homes were built in the 1950s or 1960s so the systems could be older. The sewer system has been retrofitted with the old clay lines replaced with PVC. The TAT has been constantly looking for solutions in the Butcher Pen Creek watershed.

Overview of the Proposed Statewide TMDL for Mercury

Jan Mandrup-Poulsen stated that the mercury TMDL is the first time in Florida that a TMDL was developed on a statewide basis. TMDLs are usually done on a waterbody-specific basis leading to local solutions; however, since so many waterbodies are impaired for mercury, FDEP decided to develop this TMDL on a statewide basis. The mercury TMDL was originally just for the freshwaters, but it was expanded to include all coastal and estuarine waters, so it is truly statewide. This presentation will be a brief overview of the mercury TMDL, but the TAC members can contact Dr. Greg White (FDEP) for more details.

If FDEP fails to complete a TMDL document to reduce mercury, the U.S. Environmental Protection Agency (EPA) will need to adopt a TMDL because they are responsible for adopting a TMDL this year to meet the Consent Decree deadline. FDEP's mercury TMDL is the culmination of more than ten years of work, beginning with an effort to collect fish tissue across the state. The TMDL program is supposed to be science-based to meet the requirements of the Florida Watershed Restoration Act, which was passed by the legislature in 1999. FDEP's website includes the lists of verified impaired waterbodies and, once a waterbody has been identified as impaired, FDEP must determine what percent reduction is needed to meet standards in a TMDL document. Once a TMDL has been adopted, efforts are needed in the watershed to restore the waterbody. Both the state and federal governments have TMDL programs, and FDEP has been working closely with EPA Region 4 in Atlanta and EPA Headquarters because mercury is a global issue. EPA must approve FDEP's TMDL and then the TMDL becomes the expectation for the waterbody.

In 1999, the Consent Decree included 102 freshwater and estuarine waterbodies as impaired for mercury in fish tissue. The state then spent \$9 million to gather data, conduct global atmospheric modeling, and evaluate the chemistry of mercury in waterbodies to develop the mercury TMDL. The TMDL represents

the total loading capacity of mercury that can go into the waterbodies. The TMDL includes a wasteload allocation (WLA) to wastewater point sources that have pipes, which discharge into the waterbodies. The wastewater facilities have only minimal mercury concentrations. The TMDL also includes a load allocation (LA) for the nonpoint source loading, which is mostly atmospheric deposition of mercury. The atmospheric deposition will need to be addressed through the Clean Air Act. While all the states have fish consumption advisories based on mercury in fish, about half of the states have verified mercury impairments and some have adopted TMDLs, including a Northeast Regional Mercury TMDL for several states. There are more than 1,100 waterbody segments that are currently impaired for mercury in Florida. FDEP contracted for modeling work to identify emissions from stacks from different facilities. Many facilities in Florida have already upgraded to reduce mercury emissions. The problem is the mercury goes into the atmosphere and spreads. Approximately two-thirds of the mercury is from Asia. Approximately 99% of mercury in Florida waters is from atmospheric deposition from both natural and anthropogenic emissions. Natural emissions cannot be reduced, so additional reductions will be needed from anthropogenic sources. From literature values, 30% of the mercury is from natural sources and 70% is from anthropogenic sources; therefore, for each 1% of reduction needed, 1.43% reduction from anthropogenic sources will be required. Burning fossil fuel (mainly coal) is the largest anthropogenic source. Between 1990 and 2002, the major sources of mercury emissions in the United States have decreased. FDEP conducted intensive monitoring at four Supersites in the state, located in Jacksonville, Pensacola, Tampa, and Davie. FDEP also contracted for global monitoring at grid sizes of 4 km, 12 km, and 36 km. The highest mercury deposition was found on the southeast coast and near Tampa.

The focus of the TMDL is on reducing mercury in high-level predators, which should be protective of all fish. FDEP used a database of largemouth bass, which are an indicator species, from across the state and a “market basket” approach to evaluate fish species that people are eating to determine the TMDL. FDEP determined that an 86% reduction in mercury is needed to protect sensitive populations using the market basket approach, and an 85% reduction in mercury is needed to protect the general population using largemouth bass. The latest version of TMDL report was posted to the FDEP website on September 21. FDEP has held two rounds of public meetings on the TMDL across the state and EPA has completed their technical review. FDEP will need to adopt the TMDL rule language and then submit it to the Florida legislature before sending it to EPA for approval (probably next June).

John stated that the graph of mercury emissions in the United States showed that coal fired utilities were constant through 2002, and he asked if emissions from this source would be lower now. Jan responded that starting in 2009, these emissions would be decreasing. The Florida utilities made the decision to start upgrading their facilities, which has made a big difference in mercury emissions. John asked if the TMDL names individual sources or only categories of sources. Jan responded that the TMDL is general and includes an 86% reduction for the LA sources. The wastewater facilities will need to monitor for mercury when their permit is up for renewal. If any mercury is found, they will have to make reductions, but wastewater facilities are a very small portion of the mercury loading. Ed Cordova noted that FDEP has not only been working closely with EPA, but also with the regulatory community. This TMDL is a significant achievement that should be applauded.

Lucy asked if more detail could be provided on the local sources in Jacksonville and the state that were identified from the Supersite data. Jan responded that one and a half to two years of data were collected at each site and Vince Seibold (COJ) was critical in getting the site in Jacksonville. The sites measured deposition and other meteorological data. Intensive samples sites were also added around each Supersite to determine the drop off in deposition away from the Supersite. These data were plotted and these plots can be found in the TMDL document appendices. Lucy asked if FDEP has been able to relate the deposition to local sources. Jan responded that they have not done this yet. FDEP’s next task will be to use the data, 4 km grid modeling, and mechanisms that change mercury into methyl mercury to better understand the impacts from local sources.

Foundation Science on Mercury in Fish Tissue

Ted Lange stated that the Florida Fish and Wildlife Conservation Commission (FWC)/Fish and Wildlife Research Institute (FWRI) has multiple programs related to mercury. They collect sport fish from across the state and these data are used by the Florida Department of Health (FDOH) to issue advisories, FDEP in the mercury TMDL, FDEP on the long term trends of mercury in fish tissue, and the South Florida Water Management District (SFWMD) for the Everglades Construction Project. Data are available from 1985 through 2011 at 152 sites in the SJRWMD, which includes 6,557 fish. Historically, there were high mercury concentrations in the predator fish species. The EPA water quality criterion for the protection of human health for methyl mercury in fish tissue is 0.30 mg/kg and about 66% of the sites in the SJRWMD exceeded the EPA criterion in largemouth bass. Every state has at least one advisory for contaminants in fish tissue and 80% of the fish advisories are due to mercury. FDOH creates a booklet with all advisories and fish consumption guidelines for the general and sensitive populations. This booklet is not easy to manage for anglers because it lists each waterbody separately so they are working on providing a more consolidated document. For freshwater fisheries, the Florida Fish Advisory Workgroup, composed of members from FDOH, FDEP, FWC, and Florida Department of Agriculture and Consumer Services (FDACS), have developed a brochure, "Freshwater Fish Facts," which provides statewide advice for commonly consumed species of freshwater fish.

Mercury in fish tissue is a major impairment throughout the state, which is why a statewide TMDL is needed. The Mercury Deposition Network provides wet deposition data. Ted noted that it was good that FDEP also considered dry deposition in the TMDL. The Everglades site has a higher rate of wet deposition than other parts of the state. The non-Everglades largemouth bass data from 1983 through 2009 were plotted and the concentration in fish tissue varies annually with median concentrations that typically exceed the EPA methyl mercury criterion. The deposition of mercury is relatively uniform across the state; however, there is a lot of variability in the amount of mercury in fish tissue. For this reason, FWC has been studying what causes this variability in the expression of mercury in fish. There are two assumptions that FWC uses in regards to mercury bioaccumulation in fish. The first is that variations in fish mercury are a function of biogeochemical variables because there is not a strong relationship between mercury deposition (as indicated by surface water total mercury concentrations) and mercury in fish tissue so other factors must be involved. The second assumption is that changes in fish mercury are going to be a direct response to changes in deposition; therefore, if there is a decrease in mercury deposition, there will be a decrease in mercury in fish tissue.

In the late 1980s/early 1990s, FWC started to look at what drives mercury accumulation in fish. They used data for multiple parameters from 53 lakes in this study. However, many of the lakes had low chlorophyll-a and alkalinity, so there was not a good spread in the data. Results for this study indicated that lake trophic state (chlorophyll-a) and ionic strength (alkalinity) influenced mercury bioaccumulation in fish. In a follow up study during 2000-2002, FWC conducted another study on 80 lakes, which involved more intricate modeling than the last study. Results of this study were similar and set the stage for setting up the sample program for the statewide mercury TMDL. In the modeling, they found that dissolved organic carbon (DOC) is important for the transport of mercury. Lake trophic state, pH, and alkalinity are also important factors. The goals of the mercury TMDL were to predict the statewide distribution of mercury concentrations in largemouth bass, predict responses in freshwater fish to changes in atmospheric deposition of mercury, and better understand what factors control mercury bioaccumulation in fish. FWC identified potential sites using FDEP's status and monitoring network, which is a probabilistic statewide sampling program. They used historic information on variables that drive mercury accumulation in fish including pH, color (DOC), and chlorophyll-a in lakes, and nitrate in streams. The streams and lakes were placed in the appropriate cells in the 5 x 5 x 5 matrix and then they were randomly sampled. Samples were collected for mercury in largemouth bass, water chemistry, aqueous mercury, and sediment constituents (lakes only) to help identify potential sources. There were

1,475 available stream segments that represented 88 of the 125 cells. The counts of different combinations (such as pH and nitrate) were placed in each cell. Some of the cells are blank because those combinations did not occur. They also used information for 133 lakes that represented 62 cells. From this study, they did not find a pattern in mercury in fish tissue across the state, although there were slightly higher levels in Panhandle rivers.

Modeling was also done on a regional basis for the TMDL. Three models were used for the lakes, which found that alkalinity and chlorophyll-a were the biggest determinants in the variation of mercury in fish tissue. These were followed by urban runoff disturbance, atmospheric deposition, and sulfate, in order of importance. For streams, they found that pH is by far the most important variable for bioaccumulation followed by dissolved oxygen (DO) percent saturation, conductivity, total Kjeldahl nitrogen (TKN), sulfate, and total phosphorus. The streams analysis uses breakpoints. For pH, the breakpoints indicate where there is and is not a groundwater influence. Additional study is needed to better understand the characteristics. Lucy asked if the lakes parameters modeling shows that there is a greater relationship of urban runoff disturbance and mercury in largemouth bass than atmospheric deposition and mercury in fish. Ted responded that alkalinity is the most important and then the rest of the factors were listed in decreasing order. The atmospheric deposition parameter is really more of a seepage lake versus drainage lake factor.

Ted noted that the TMDL also evaluated at small versus large streams, and the data were plotted for the statewide distribution of mercury in largemouth bass. At the 0.31 mg/kg criterion, 73% of the rivers and 88% of the streams exceeded this level. This supports the fact that the TMDL is needed and reductions are necessary. The large lakes seem to be the least sensitive to mercury, followed by rivers, small lakes, and streams (most sensitive). Ted stated that he plotted data for mercury in largemouth bass for every station that is part of the St. Johns River main stem and its tributaries. There is very little variability in mercury in largemouth bass along the length of the St. Johns River from Lake Blue Cypress to near the Shands Bridge with estimated mercury concentrations in 15" largemouth bass ranging between 0.2 and 0.4 mg/kg. However, there is more variability in the tributaries. Julington Creek, Black Creek, Sampson Creek, and Haw Creek have the highest concentrations of mercury in largemouth bass. This difference does not seem to be due to the pH of the creeks.

Gerry asked how color was measured in this study. Ted stated that they used DOC as a proxy for color in the statistical stratification process. Jan added that they also had some color data from the data providers across the state. Gerry asked if the tributaries with higher mercury in fish tissue could be due to the color of those tributaries. Ted stated that he only had time to look at the pH data and he has not looked at the other water quality parameters for these tributaries. Tiffany Busby asked what the relationship is between chlorophyll and TKN with mercury in fish tissue. Ted responded that this relationship was first observed in the 1980s in Swedish lakes. Higher trophic lakes have biodilution because there is a lot of biomass in a productive lake, which results in more diluted mercury because the food web is diverse. Fish grow faster in productive lakes so they do not accumulate as much mercury. There are also chemical factors, such as pH and the availability of calcium, which can either inhibit or enhance uptake of mercury through the gills depending on the concentration.

Jan stated that for women of childbearing age and young children there are a lot of benefits from eating fish so they are not trying to scare people away from healthy eating. There are a lot of fish that are safe to eat, and the goal is to bring down the mercury levels in other species so they are safer to eat more often. Gerry asked if higher conductivity systems are less affected by mercury. Ted responded that conductivity is important in low pH streams and this indicates if the streams are affected by groundwater. Pat asked what the inference was related to sulfate. Ted responded that sulfate-reducing bacteria are the primary source of methyl mercury. If there is too much sulfide in the system, it starts to inhibit methylation. Gerry asked if there are maps of Florida that show areas that might be high in potential methylation. Jan

responded that this is the next step. FDEP has the modeling at the 4 km grid and the factors that affect methylation, so this information needs to be combined to identify locations.

JEA Mercury Reduction Projects and Challenges

Ed Cordova stated that JEA is the largest municipally-owned utility in Florida and 7th largest in the United States. JEA provides water, sewer, and electric and owns 14 wastewater treatment facilities (WWTFs) and 5 electric power plants. FDEP is up against deadlines in developing the mercury TMDL based on the Consent Decree that EPA has to meet. If FDEP does not adopt or complete the TMDL, then EPA will have to promulgate the mercury TMDL. EPA TMDLs are typically more stringent than the state's TMDLs, and this may be due to the fact that FDEP knows that state's waters better. Florida sources are a very small portion of the mercury load to the waterbodies so it is challenging to develop an appropriate TMDL for the state.

There are not many data on mercury from the WWTFs in the state because most of the facilities do not have mercury monitoring included in their permits. There is some monitoring for mercury from WWTFs; however, this is not part of the routine monitoring so it is not included in FDEP's database. Domestic WWTFs contribute about 8 lbs/yr of mercury, which is about 0.08% of the total mercury loading in Florida. Most of the industrial sources have moved away from using mercury so the remaining sources are more diverse and diffuse. The mercury sources include dentists, hospitals, and schools. There are industrial pretreatment permits for larger sources; however, it would be too difficult to permit each dentist office. The focus on controlling mercury from these sources should be on implementing appropriate best management practices (BMPs) for disposal of mercury. When the mercury TMDL development began, FDEP and the utilities agreed that domestic wastewater is a *de minimus* source of mercury. However, the amount of mercury loading resulting from domestic wastewater effluent was unknown. The Florida Water Environment Association (FWEA) and FDEP worked together to compile available data on mercury from WWTFs. They determined that all domestic and industrial wastewater sources contribute about 50 lbs/yr of mercury. This number was used to revise the wastewater allocation in the TMDL. At permit renewal, all WWTFs will have to conduct clean sampling to determine if they have mercury in the effluent. If there is no mercury in the wastewater, the facility will not have to anything. If there is mercury in the wastewater, the facility will have to implement waste minimization practices, which require BMP implementation.

JEA has two steam electric/solid fuel facilities, two combustion facilities that burn natural gas (not a source of mercury), convention gas/oil fueled boiler (also burns natural gas), and some limited renewable sources of energy. JEA signed a purchase power agreement with a nuclear plant that will be built in Georgia, and JEA has a solar facility in Baldwin. Mercury is an issue in plants that use solid fuel, which include JEA's Northside Generating Station and St. Johns River Power Park. The Northside Generating Station was changed to solid fuel in 2001 by adding two circulating fluidized bed (CFB) units. In these units, solid fuel is pulverized and mixed with limestone and air that comes up through the bed. This process allows for better combustion at lower temperatures so the plant emits lower levels of most parameters. These were the first utility scale CFBs but the units are becoming more prevalent. The Northside Generating Station uses Pet Coke as the fuel, which is a petroleum refining byproduct and that is low in mercury. The changes to this facility resulted in about a 90% reduction in mercury, so the plant is already in compliance with the TMDL.

The St. Johns River Power Park was constructed with a scrubber and precipitator, which were installed mainly for sulfate and particulate control. In addition, JEA added selective catalytic reduction (SCR) to address nitrogen oxide emissions. These technologies are not specifically designed to reduce mercury emissions; however, together they do remove about 90% of the mercury. The source of the coal also affects how much mercury is present. JEA currently uses coal from South America, which has low mercury content. The emission controls are mostly wet systems that generate liquid waste that must be

treated by chemical waste treatment systems (CWTS). JEA is currently working to figure out how to address mercury in the CWTS, and EPA is in the process of updating the guidelines for these systems. JEA will likely have to build a new CWTS or significantly upgrade the current one because it was not designed to treat mercury to the current standards.

The Clean Air Act requirements are ahead of the TMDL and the act is the proper instrument to address the TMDL. EPA is developing new mercury rules that will require the use of best available technologies to address mercury. Currently, the precipitator/scrubber/SCR is the best technology widely implemented but additional removal can be gained by adding powered activated carbon. The new EPA rule is expected to require a 90% removal in mercury, which meets the TMDL. However, most plants in Florida have already upgraded their systems, although a few uncontrolled plants remain that will have to upgrade or shut down. The Northside Generating Station should be able to meet to the new EPA rules. The St. Johns River Power Park may also be able to meet the new rules as long as JEA continues to use coal with a low mercury content. If they switch to another source for the coal, they may need to add the powered activated carbon. In FDEP's mercury TMDL, it states that additional reductions will not be required from coal fired plants since EPA's rules will require a 90% reduction, which achieves the goals of the mercury TMDL. JEA is well positioned to meet the new rules because they have some of the most extensively controlled plants in the United States and they have already invested \$600 million in emissions controls.

Tiffany asked what upgrades will be needed on the wastewater side. Ed responded that upgrades to the WWTFs would not be needed; however, source control through BMPs may need to be implemented. JEA will likely need a new CWTS at the St. Johns River Power Park to meet the rules. This system is reaching the end of its design life and it was not built to achieve these additional standards. The best approach may be to build a new facility. Eric Summa asked what the source is of mercury in schools. Ed responded that schools were added to the list based on EPA feedback on using the BMP approach. The mercury is most likely from chemistry laboratories. Katie Roark added that the EPA website mentions thermometers, barometers, lights, and improper storage and mishandling as sources of mercury in schools.

Lucy stated that she reviewed the toxics release inventory data and saw that JEA had a decline in mercury emissions over last 10 years. She attributed this reduction to the new rules that were coming but she asked if the downturn in the economy also affected annual emissions. Ed responded that it has affected emissions to a certain extent. A lot of the reductions are due to the fact that coal prices have remained high and the price of natural gas has gone down, so JEA is using natural gas at several of its plants. In addition, because coal is so expensive, they have been shutting down the coal plants for periods of time and using the natural gas facilities instead. Eric stated that it was interesting to learn that JEA is the 7th largest utility, and he asked if they have a maximum energy output they can compare to the mercury emissions to see how JEA is doing to compared to other utilities in the state. Ed responded that he does not have all that data and the air specialist position at JEA is currently open so it will be awhile before that data can be compiled. JEA is the 7th largest municipally owned facility but it should be noted that most electric utilities are regional or private utilities and, therefore, not municipally owned. John asked what proportion of the total demand is supplied by solar power. Ed responded that it is very small because the solar facility has a capacity of three megawatts (MW). There are two, 300 MW units at the power park and the other facilities are also about 300 MW. The three MW is the capacity of the solar plant but it is not fully used because of cloudy days and lack of light at night. Solar facilities currently make more sense in other parts of the country where it is not as humid as Florida.

Technical Updates and Announcements

Environmental Events Coordination

John stated that there is an ad hoc agreement with the agencies that monitor the LSJR to coordinate on major events in the river such as fish mortalities and algal blooms. There have not been any major events

on the river this year. John recognized Betsy Deuerling (COJ) for providing river briefs to the Environmental Events group.

John stated that after the LSJR TMDL was completed, the SJRWMD looked at other areas of the district that needed evaluation. Currently, more effort is going into monitoring the Middle St. Johns River (MSJR), Upper Ocklawaha River, and Upper St. Johns River. Derek Busby stated that the SJRWMD Governing Board is working to prioritize the District's efforts to focus where their reduced resources should be applied. The District was previously organized by basin but is now organized by groundwater resources, water supply, and surface water programs. There are initiatives under the surface water programs, which includes a combined LSJR and MSJR initiative. There is also a springs initiative, which has been more of a focus recently, to address not only the declining flows but also the increase in loads coming from the springs. The Governing Board is trying to be strategic in prioritizing projects going forward because the District's revenues have been critically capped and will not increase as property values increase. The SJRWMD is currently using savings from past years, which should help over the next five years. Tiffany stated that the TAC was fortunate because John was able to obtain funding for the TAC facilitation for this fiscal year.

U.S. Army Corps of Engineers

Mike Hollingsworth thanked everyone who has been providing thoughts for the Jacksonville Harbor deepening supplemental environmental impact statement (SEIS). The work that the SJRWMD did for the TMDL and water supply impact study (WSIS) has been key to the harbor deepening study. The Corps is meeting with agencies on Monday to discuss the very preliminary results of modeling efforts. On October 25, there will be a public meeting at the cruise terminal at 7:00 PM to discuss only the modeling results. The initial draft SEIS is due in April 2013 and the final SEIS will be completed in April 2014. Additional resources from inside and outside the Corps are being used to meet this timeline, and these additional resources will also help to cut back on some of the review needed by Corps Headquarters. The project depth will not be known until January. They are currently running hypothetical simulations based on several proposed depths. Separate public meetings will be held on the blasting plan and these will occur around March, after the project depth has been determined. Additional public and agency meetings will be held on the draft and final SEIS and then the Corps will go for authorization and funding. It will be 2015 or 2016 before the dredging might begin.

The dredging for the Mayport deepening has been completed, and the Corps submitted the final reports to FDEP and EPA on the offshore disposal site. They learned some good lessons about the logistics of dredging in the St. Johns River, which will help with the harbor deepening project. The Corps has not received approval from headquarters on the final ecosystem restoration report for Big Fishweir Creek. Once the report is approved, the Corps can ask for funding and go to final design and permitting. The Corps is still finalizing the ecosystem restoration report for Hogan Creek because there are significant contamination issues. Mike will send the report to the TAC once it becomes publicly available. The Corps has the report finalized for removing the training wall in the Intracoastal Waterway and they are waiting on a permit from FDEP. They will need to receive authorization and funding for the project but the design is about 60% complete. The bathymetry shows some deep scouring holes from shoreline erosion, which should be addressed by removal of the training wall. The project will return more natural hydrological flow, restore some wetlands, and provide navigational benefits to the port.

Lucy asked if the Corps would have to blast if the shallowest depth were selected for the harbor deepening. Mike responded that blasting might not be needed if there is an economic benefit to going to a shallower depth. The type of dredger used may also preclude some blasting; however, the Corps has to plan for the worst case. Blasting techniques have improved over the last 10-15 years. Eric added that the Corps is very conservative with their studies, and they try to put out a bid so that anyone who has the capabilities to do the job can apply. Some companies have the technology where they do not need to blast

but some of the smaller companies may need to blast. Therefore, they are developing a blasting plan to protect the resources and surrounding properties in case it is needed. Derek asked if the scope of work could require certain technologies to reduce the amount of blasting needed. Mike responded that they could write the specifications to focus the technology but they cannot constrain it so that only one company qualifies.

Fisheries Independent Monitoring

Russ Brodie stated that the fisheries monitoring has been continuing. FWC has been doing offshore work, which has been taking a lot of staff time. The fieldwork portion of this effort will be completed next week and then they have to process the data. They are working on the SJRWMD end of the year report for the expansion sampling from Doctors Lake to Palatka. This report will be ready in the next month or so and Russ will also provide it to the TAC.

Other Member Updates

Vince Seibold stated that COJ is working on the low impact development (LID) manual and the first draft will be ready in January. If anyone wants to participate in the meetings, they can contact Vince. The City Council has approved a joint EPA and COJ LID project at the Kennedy Community Center in the urban core, and this project will include a living wall, rain barrels, and educational display. The Sustainability Resource Center is fundraising right now, and the city is talking with them about doing a pre- and post-study on the LID practices they will be adding to their building. COJ is also working with FDEP on a septic tank model to help with the city's plan for septic tank phase out, which has been on hold waiting for this study. This could be a potential future presentation at a TAC meeting. There are two proposed artificial reefs in the river that are under discussion and material will be needed to create these reefs. There is a project planned to create a living shoreline at the zoo, and Jacksonville University and Terry Parker High School will monitor the shoreline to see what plants become established. A boardwalk will also be built for education purposes. The Environmental Protection Board (EPB) has approved funding for this project, and Lucy is a new member of the EPB.

Derek asked if the septic tank work that is on hold because of the study is in addition to the work currently ongoing in Lincoln Villas. Vince responded that the Lincoln Villas work is almost done and was used as a test case where the city paid for the sewer connection. COJ and JEA went door to door to 44 homes and they got about 39 people to connect. There were a few homes where they could not find the owner and one home where the owner asked them to leave. This was a test of the response rate although the rate could change based on the socioeconomics of the area. The city needs to phase out about 16,000 tanks for the BMAP, and each connection is about \$20,000. Some areas have existing sewer so the cost will be less.

Tiffany stated that the BMAP for Lakes Harney and Monroe was adopted by FDEP in September.

Next Meeting Date

The next meeting will be held in January or February 2013 and will be hosted by the SJRWMD. John stated that a potential topic for this meeting would be the harbor dredging. Mike added that the meeting could include a WSIS update and how this information was used in the harbor deepening study.

Adjourn

The meeting was adjourned at 2:07 PM.