

FLORIDA KEYS NATIONAL MARINE SANCTUARY
Water Quality Protection Program Steering Committee
November 13, 2019
Marathon City Chambers

Marathon, FL.

MINUTES

Steering Committee Members Present

Natalie Ellington, US Environmental Protection Agency, Region 4
Jon Iglehart, Florida Department of Environmental Protection (FDEP) (Co-Chair)
Sarah Fangman/Karen Bohnsack, Florida Keys National Marine Sanctuary
Shelly Krueger, Florida Sea Grant/IFAS Extension Monroe County
Gil McRae, FWC Fish and Wildlife Research Institute
Bruce Halle, City of Key Colony Beach
Chris Bergh, Florida Keys Program, The Nature Conservancy
Sandy Walters, Sandra Walters Consultant, Inc.
George Garrett, City of Marathon
Christopher Kavanagh, National Park Service, Everglades National Park (for Pedro Ramos)
Armando Vilaboy, South Florida Water Management District

Special Guest: Cesar Zapata, US Environmental Protection Agency, Region 4

I. Introduction and Opening Remarks

Ms. Natalie Ellington, Ocean and Estuarine Section Chief EPA Region 4 Water Division, called the meeting to order and welcomed everyone. Jon Iglehart, FDEP, and Ms. Ellington are the meeting co-chairs. Co-Chair. Ellington recognized George Garrett, City of Marathon, for use of the Chambers and Nancy Diersing, Florida Keys National Marine Sanctuary for assistance with meeting logistics. She thanked the members of the WQPP management committee for putting together the agenda and members of the public who are in attendance. Public comment will be held in the morning and afternoon. To view the presentations and materials associated with the meeting, visit the steering committee page on the Water Quality Protection Program website http://ocean.floridamarine.org/FKNMS_WQPP/.

Co-Chair Ellington introduced Mr. Cesar Zapata, EPA Region 4 Water Division Deputy Director. Mr. Zapata has 25 years of experience in environmental protection, including in enforcement and engineering. In his current position, he works to implement EPA's water program for the Southeast United States, which includes the Water Quality Protection Program for FKNMS. Mr. Zapata explained he is an avid SCUBA diver who loves the ocean and water is his passion. He has been working with Steve Blackburn for the past several years and during this trip to Florida has taken the opportunity to see some of the projects implemented to improve water quality. The WQPP is a leader in the nation and is unique in that citizens from local governments work in partnership with agencies to seek solutions for improving water quality. This program works and has been making progress since the 1990s. Continuing this work and telling the story of how this program works is very important so that the funding and improvements can continue into the future. He looks forward to a productive meeting today.

Co-Chair Iglehart gave the opening remarks on behalf of FDEP. Secretary Valenstein sends his regrets for not being here today. He is busy with the red tide issue and other water quality matters. The Blue-green Algal Task Force recently provided its recommendations to the Governor. The recommendations are focused on wastewater and stormwater issues and may result in new rules being developed. He

encouraged people to take a flyer on water quality that was provided by NOAA FKNMS and recognized the local FDEP staff who work hard in the Keys.

Steering committee members introduced themselves.

Agenda and Minutes

The agenda was approved with no changes. An amendment was proposed for the minutes from the April 18 meeting by Chris Bergh. On p. 8, the following sentence should read, "Chris Bergh stated that he is hearing reports of sediments being stirred up by *shrimp trawling*. He would like to know the ~~cause~~ *repercussions* of this since it could contribute to degraded water quality." The minutes passed with no objections with the understanding that this correction will be made.

II. Wastewater Project Updates

Monroe County

Mr. Kevin Wilson gave the wastewater update for Monroe County. In the Cudjoe region, about 2/3 of all parcels in the area are fully connected. Each week they receive about 10 permits for connection, which means that at the current rate it will take about 4 years to sewer all of the remaining 2,000 parcels in the Cudjoe region. Hurricane Irma slowed progress down by about 2 years, but things are now starting to move along. All other jurisdictions have about 90% of the parcels connected. The percentage will never be 100% because of new construction.

A question was asked about the functionality of the deep well for the Cudjoe plant. Mr. Wilson stated that the deep well is functioning. Cudjoe is the last area to receive central sewer. There are parcels in the County that are impractical to connect to central sewer; they are required to have a permitted system.

FKAA

Ms. Julie Cheon with Florida Keys Aqueduct Authority gave an update on Cross Key, a small subdivision located at mm 112 on the 18-mile stretch. This community in the Key Largo Wastewater Treatment District (KLWTD), but too far from the plant to be connected. FKAA is in the design phase for a plant to serve this community. Construction is expected to begin in April 2020 and be complete by fall 2020. This project is being made possible using funding from EPA. Co-Chair Iglehart expressed gratitude to the FKAA for taking on this project.

Comments/Discussion

Ms. Cheon confirmed that because of the size of the plant a shallow well will be used for disposal. Chris Bergh expressed that many people have concerns about shallow wells and the impacts they may be having in the Keys. Sandy Walters pointed out that the wastewater will be treated before being disposed and there are concerns about the geological implications of deep wells, too. It was noted, though, that the treatment at this plant will be a BAT, Best Available Treatment, and not AWT. Sandy expressed how important it is that Cudjoe have deep well injection because it is in the vicinity of an uncontrolled landfill and a shallow well could interact with materials in the ground. Shelly Krueger encouraged people to follow the Supreme Court case about underground discharge of treated water in Hawaii that ultimately ends up in the Pacific.

City of Marathon

George Garrett provided an update on the City of Marathon's wastewater system. He began by mentioning that it would be good to discuss the shallow well versus deep well effluent disposal methods. The City of Marathon chose to install shallow wells instead of deep ones and it saved money. The city has some properties that are not connected; these properties have their own systems. To accommodate for growth, Marathon has had to add to their existing plants. In the past several years, they have had to deal with storm issues. He is very happy with their vacuum system because it is a closed system and it can be

shut down and brought back up fairly easily. But, they are still finding breaks and impacts that arose from Hurricane Irma. Marathon has been applying for grants that would allow them to harden their infrastructure in order to be better prepared for future conditions.

Sandy Walters added that she has done some online research and found that many sewer systems leak untreated wastes that can impact nearshore waters. She emphasized the need for appropriate long-term management to keep the systems operating properly over time. George agreed that it is very important to pay attention to how the systems are run and maintained.

Key Largo Wastewater Treatment District (KLWTD)

Mr. Peter Rosasco, general manager of KLWTD, gave the update for KLWTD. He introduced Steve Suggs, the chief engineer for Weiler Engineering, the company that designed some of the wastewater systems in the Keys and three of the district's commissioners, Robby Majeska, Nicolas Rodriguez and Sue Heim. KLWTD treats roughly one third of the Keys to AWT. They use a 3,600foot deep well and all tests so far have shown that they are operating well within the standards. Now they are focusing on operational issues.

In the past few years, KLWTD has been taking steps to use solar power to offset the high costs associated with operating the plant and with chemicals added to the treated effluent. They began with a demonstration project funded by a grant from FDEP. To begin with, the KLWTD installed 347 solar panels on the roof of the plant. Chemical costs were reduced with the use of solar, too, because the solar panels provided shade, which lowered the amount of chemicals needed. The costs and saving associated with Phase 1 of the KLWTD solar project were presented along with three projections of total savings in 2019 and 20 and 40 years from now. Over the course of 20 years, KLWTD will have saved over a million dollars. Phase 2 also received grant funding and has been implemented. The total project savings of phases 1 and 2 is \$209,284 annually and over 3 million at the 20 year projection time frame. This amounts to a reduced energy cost of about 25%.

Note: The solar panels are very hardened and withstand storm conditions. The panels have to meet Florida hurricane code standards.

Mr. Rosasco gave the history on finding the funding for the Cross Key Project, which was taken on by FKAA using EPA money, even though it is a part of KLWTD.

Public Comment

Ms. Jan Edelstein, Cudjoe Property Owners Association

Ms. Edelstein gave public comments using a presentation called Protect Sanctuary Waters: Finish the Wastewater Job Shallow Wells. Ms. Edelstein stated that she appreciates the opportunity to speak. She attended the sanctuary restoration meeting in Key West where people were pointing to population and water quality. Five years ago, she recalls that people on this body were congratulating themselves for having finished sewerage the Keys. And yet today the sanctuary's waters are even worse. The waters where she lives are green now, but used to be blue. Clearly, nutrients are out of balance, which is a violation of one of the FDEP surface water quality standards. But why if we sewerage the Keys? Certainly, there is wash down from the North, but still.

In 1994 Dr. Shinn told us that the Keys subsurface geology means that water injected below the dirt line shows up in sanctuary waters. Most recently in 2015 Cudjoe Regional Study said that the connection between injection and surface waters was close in and immediate. A second study found similar results at Cudjoe Regional. Shallow wells are located up and down the Keys, including in the Cudjoe region. She understands that these will be addressed and is very grateful for that. The owners of the many shallow

wells are not required to monitor for impacts of the discharges from those wells on sanctuary waters. They should be and the steering committee can make that so. Today, she is going to suggest some questions to ask and urge to committee to start on the road to monitoring the shallow well discharges. The first question to ask is, “How many gallons per day are being discharged?” She tried to fill in the chart as to how much water is being discharged, but doesn’t have all of the needed information. Her best guess is that there is about 3 million gallons from Cudjoe.

Ms. Edelstein wants to know the following information for the shallow wells: how much is the maximum monthly capacity, how much is the permitted and how much is actually flowing? What does this mean in terms of nitrogen and phosphorus entering Sanctuary waters? According to the Cudjoe Regional plant permit, they are permitted to put in over 5 tons of Nitrogen and 1400 lbs. of phosphorus each year. (They are not running at full permit yet.) This is better than raw sewage, but it is still fertilizing the water. AWT is better than drinking water standards, but it still produces more nitrogen than is allowed in surface waters because Keys marine life requires an unfertilized environment. It is because of the geology and needs of the surface waters that FDEP adopted a rule that requires operators of shallow wells to provide reasonable assurance that their discharge will not contribute to violations of surface water standards. In addition to nutrients, there are other substances that EPA calls Pollutants of Emerging Concern (pharmaceuticals, hormones, etc.) that are getting into surface waters. She pointed to an image from the Tropical Connections book that shows the effects of hormones on fish (deformities).

Ms. Edelstein would like to see the steering committee design a surface water monitoring program to determine whether or not the shallow wells are having an impact on nearshore waters. This program should not only monitor for nutrients but also for sucralose, a substance that comes out in human wastewater. Sucralose is Splenda and is an indicator of human waste and personal pharmaceuticals (that are not currently being measured). This design should include standards for site specific geology to decide where the monitoring wells should be placed, where the groundwater might be coming up. A trained geologist can look at the geology and vegetation and make some reasonable assumptions that could be tested. The other reason to look at sucralose because it is a good way to distinguish wash down from local sources. This information could help provide information regarding the shallow vs. deepwell issue.

Ms. Edelstein explained that the Key West Resort Utility on Stock Island has a volume of wastewater that is just under the minimum 1 million gallons requirement that would trigger the need for a deepwell. They haven’t done any geological work and this plant could easily be connected to the deepwell in Key West. She added that the shallow wells in Marathon might be used in a study to see what can be learned about this practice. She knows that there is work being done on the canal impacts on nearshore waters. This work could be layered over and located near canals, too.

Comment: Co-chair Iglehart noted that Tropical Connections was produced by the WQPP for outreach purposes and is an excellent book. Outreach is one of the mandates of the WQPP.

Canal Project Updates

III. Florida Department of Economic Opportunity Canal Work Plan Update, Barbara Powell, FDEO. Ms. Powell was not available to give an update.

IV. Canal Management Master Plan Guidance Document

Mr. Greg Corning, Wood engineer, and Mr. Jeremy Paris, Wood wetland scientist, gave an update on the Canal Management Master Plan guidance document, which was funded by EPA (\$100,000). Wood is the environmental engineering consultant for canal restoration in Monroe County, Islamorada and Marathon. The document has two primary tasks. Task 1 was to update the Canal Master Management Plan using more recently obtained information. This information and the FIU data were used to revise the water quality summaries for the canals. Task 2 examined strategies to facilitate counties and other entities with

moving forward with canal restoration. Mr. Paris explained that the current process requires that the canal subcommittee endorse each project. Upon acceptance of this guidance document by the WQPP, it will be the responsibility of municipalities to select the canals and restoration methods. This guidance document is important and is needed because of the number of canals that may require some level of restoration and because it aids entities in taking advantage of funding mechanisms. The document provides lesson learned, guiding principles, a structure for establishing a canal program, and helps streamline the process for restoration and long-term maintenance of the projects. The future involves outreach and coordination with the Department of Economic Opportunity.

Discussion/Comments/Questions

Karen Bohnsack, FKNMS, inquired as to whether the canal subcommittee had reviewed the guidance document in its entirety in recent months. Mr. Corning explained that they consulted the canal subcommittee on what the document should contain and had the committee's approval before going forward with document development. Ms. Bohnsack indicated her support for removing the responsibility of approving each canal project from the WQPP and putting that responsibility on the county or other entity to be the ultimate decider for how things proceed. She believes that this document is intended to be based off of the lessons learned from the demonstration projects and expressed the sanctuary's concerns about the injection well method being included because it has not been tested as part of the demonstration projects. It is the sanctuary's recommendation that the injection well technique be removed from the draft at this time until the necessary information that shows this method is effective and not impacting nearshore waters is available. Mr. Corning agreed to remove that technique from the document and noted that FDEP is currently reviewing an injection well project for a canal in the Village of Islamorada. It was added in as a pilot technology. The injection well technology was considered at Big Pine Key, but the cost was prohibitive to the residents. Ms. Bohnsack noted that she understands this document to be a living one that can be updated from time to time. She asked about the process of finalization of the document and added that the sanctuary has a few more comments that it would like to see addressed. Mr. Corning stated that he will incorporate additional comments into the document at this time.

Sandy Walters provided a comment regarding the Keys Environmental Restoration Fund. She explained that the fund is not a mitigation bank. It is an in-lieu-fee fund. The improvements to the environment are not made ahead of time and then credits sold. The money collected in the fund is used to then do the projects. This is an important distinction and it would be wise to correct the description in the document.

Co-Chair Iglehart added that the document is an outreach tool and wraps up the special study funding that has been the focus of FDEP for the past few years. He agrees that the injection well should not be included at this time, but feels that it is important to go forward with approving the document today as a living document so that opportunities for funding are not lost.

Motion (passed)

Co-Chair Iglehart made a motion to approve the document as a living document minus the injection well technique and with minor edits from the committee being accepted as they are received in the next few weeks.

Discussion on the Motion

Chris Bergh asked whether the canal subcommittee had reviewed and approved the document. Mr. Corning explained that there has not been a follow-up subcommittee meeting since the document draft was completed. Gus Rios added that this document was called for at the last subcommittee meeting. The document was recently sent to the members of the subcommittee for review, but the first step was to bring it here to the steering committee to get input/review and support. DEO is going to play a role in this process and is going to develop an administrative rule that pertains to canal restoration. This document

will be important in guiding rule development. The rule-making part is not within the purview of the subcommittee, but they did oversee canal demonstration projects.

George Garrett added that the DEO input request came from the Governor. Barbara Powell, DEO, is working on that. The local municipalities have to provide input to DEO for an annual report regarding how the work plan for the Keys is being implemented. At this time, just about everything on the list has been addressed. The canal restoration component is now going to be a rule and will become the work program of the county/municipalities. Marathon has received a draft from DEO.

Gil McRae commended the team on their work on canal restoration and getting the information into the guidance document.

Co-Chair Ellington called the question. The motion passed with no objections.

V. Do Canals in the Florida Keys Contribute to Nearshore Water Quality Degradation?

Dr. Kathleen Sullivan Sealy, University of Miami, gave a presentation on a study being done for Monroe County. The study is investigating whether the canals have impacts in terms of changing biodiversity in nearshore waters in the Florida Keys. Strategies were developed to look at canals and non-canals in this two-year study, which began in August 2019. Surface water samples are being collected along with biological sampling to document biodiversity. Samples are being taken at 9 canal sites and 4 non-canal (park) sites. At each site, they use a randomized block design when collecting 15 samples that are spread across three “zones” from shore out to 500 meters. Samples are collected on an outgoing tide. The nutrient levels and other water quality parameters in the canal samples will be compared to non-canal samples. Dr. Sullivan showed some examples of the types of analyses that they are collecting for water quality and the benthos. She also presented actual data from selected canals. Habitat maps are being used and investigators will be refining these maps as they proceed. The benthic analysis involves determining benthic diversity in the different habitats (vegetation coverage, coral coverage, etc.) across the sites and from shoreward out. The presentation provided an overview of how the study will provide information regarding how benthos and water quality are affected adjacent to the study canals.

Questions/Discussion/Comments

Dr. Briceño recommended measuring currents at the time of sampling because it is difficult to tell where the water is coming from. Water could be coming from everywhere; groundwater could be flowing, but not necessarily from the canal.

A member of the audience asked Dr. Sullivan about results from control sites in the study. Dr. Sullivan responded that those data were not shown in the presentation. She added that in general it looks like there may be lower nutrients at those non-canal sites, but there is also variability through time. She should be able to say more as they collect more information over time.

Greg Corning pointed out that canal 28, which is a study site, is located next to canal 29, which was restored. Dr. Sullivan stated that is the reason they moved their grid over to cover the mouth of canal 29 too.

Dr. Sullivan would like to know what people think about the way the data have been presented whether the results are understandable using the dots, etc.

VI. NRCS Marine Debris and Sediment Removal, RESTORE Funding, Restoration Project Status

Ms. Rhonda Haag, Monroe County, gave a presentation on marine debris and sediment removal in canals, which was completed by October 31, 2019. She thanked Adventure Environmental for carrying out the work and Wood Engineering for the monitoring they conducted. In this project, they cleared marine

debris from the most heavily impacted ones for a total of 247 canals. Nine canals underwent sediment removal. The county held a celebration event on October 24 to recognize the project completion. Two additional canals in Islamorada have been approved for sediment removal, which will begin in December. Ms. Haag gave a summary of project metrics to date. The county spent about 65% of the budget clearing all of the canals they received approval (and funding) for. The remaining money was returned to the funding agency, Natural Resource Conservation Service (NCRS). An extension has been applied for to allow the Islamorada canals to be completed. On a related subject, Ms. Haag thanked FDEP for the Stewardship money being used to clear a blocked canal on Big Pine Key.

Ms. Haag gave an update on the RESTORE local funding (\$1.2 million--federal grant). The Nature Conservancy received \$578K, Monroe County received \$478K and Islamorada received \$128K. With the funding received the county will be installing an air curtain in Canal #266 on Big Pine Keys. The air curtain was destroyed during Hurricane Irma. The county is setting up a \$104.00 per month lot fee for canal residents to pay for operations and maintenance. This is the first Municipal Service Benefit Unit (MSBU) under the canal restoration program. After approval at the December Monroe County Board of County Commissioners, Canal #259 on Big Pine Key will be getting a culvert to replace the existing undersized culvert in this canal system. Canals #82, 83 and 84 in Key Largo will be getting various treatments, including air curtains. Canal #83 has already been backfilled. Similar ocean side canals will also probably require air curtains because of the influx of *Sargassum* seaweed in the summer.

Mr. Corning continued the presentation for Marathon and Islamorada. He explained that Wood is consultant to the Village of Islamorada and City of Marathon on canal restoration. For a canal in Islamorada, the Village is looking at using gravity flow that will pump about 700 gallons per minute into the shallow well. A permit to FDEP has been submitted and they expect to receive comments back during the next few weeks. The City of Marathon is moving forward with a culvert/berm break project in canal #257 in Marathon and expect to select a contractor soon. Wood will also be updating the canal ranking document for Islamorada canals. Each of the municipalities and the county has their own document that contains canal rankings and is separate from the Canal Management Master Plan.

Discussion/Comments

Sandy Walters asked about how they account for potential changes in weed wrack patterns that might accompany the addition of air curtains. It was explained that the county is following the regular procedures in obtaining the necessary permits (which do not take into account impacts of diverting the floating wrack to other areas). The county will be working with DEO to evaluate the use of a skimming program to see if this is a better option to address the weed wrack issue that plagues some canals. Ms. Haag stated that they recently received a grant from EPA to look at *Sargassum* master plan that will help with management of the weed wrack.

The county also just received an EPA grant to evaluate the different technologies to potentially reduce the operation and maintenance of air curtains. This will involve working with the permitting agencies to examine new technologies and/or reducing the size of the air curtains, etc. Another task will be coordinating with DEO to evaluate and set up the components of the program that the cities or county would have responsibility for. The last task in this grant is completing the first phase of the *Sargassum* master plan and associated projects.

Jan Edelstein was recognized by the chair. She inquired about the injection well method being proposed for the Islamorada canal. She stated that the subsurface of the island is petrified limestone that connects to surface waters and asked whether any experts have provided feedback on whether this method is expected to have any water quality impacts. Mr. Corning responded that they have only recently submitted the permit application to FDEP. Mr. Pete Frezza, Islamorada, sought advice from Dr. Briceño on this project. Dr. Briceño confirmed he didn't have negative comments regarding impacts to water quality and added

that in the end what is going into the well is the same that will be coming out, so he doesn't see a water quality issue.

Gil McRae inquired about the depth issue that preventing cleaning canals all the way to the bottom. Ms. Haag explained that the grant money that they ultimately obtained for this project had no restrictions on how deep they could go to remove debris.

Note: Chris Bergh explained that the TNC's RESTORE money will be funding coral restoration by Mote Marine Lab, Florida Fish and Wildlife Research Institute and the Coral Restoration Foundation.

Break

New Initiatives and Future WQPP Direction

VII. FDEP Grant update

Mr. Gus Rios, gave an update behalf of the DEP South District Office (SDO). The SDO budget for this fiscal year has \$100,000 available for WQPP projects. The funding received during previous years has been used for canal restoration projects. This year the County has submitted a proposal for installing a box culvert to improve tidal circulation and water quality in Canal 259 located in Doctor's Arm, Big Pine Key. The proposal is currently being reviewed by DEP staff. In addition, the Florida Legislation (Stewardship Act) provided \$6,000,000 this year to be used by local governments in the Florida Keys for water quality improvement projects including wastewater, stormwater and canal restoration projects.

VIII. EPA Grant update

Mr. Steven Blackburn, EPA, gave an update on EPA funding. The South Florida Geographic Initiative received \$2.9M in FY19. The WQPP is part of this initiative. This year, Congress put in an additional \$1.5M that was to be spent on Biscayne Bay, Florida Bay, Caloosahatchee, Charlotte Harbor/Indian River Lagoon and coral health. This money will be used to fund the *Sargassum* study that was discussed earlier today and the three WQPP monitoring programs (water quality, seagrass and coral) and database. EPA also funded three projects related to monitoring and researching coral health, a screening study on Endocrine Disrupting Compounds (EDCs), two water quality monitoring projects (for HABs and pollutants) in Caloosahatchee and three water quality/seagrass monitoring projects in Biscayne Bay.

At this time, EPA does not have a budget for FY20. Congress has proposed \$3.5M, but they don't know what will happen. Florida Bay was a designated priority in FY19, but they didn't receive any proposals focusing on the bay.

Questions/Comments/Discussion

Captain Wickers was recognized by the chair. He asked a question whether when awarding a grant, EPA takes into consideration the fact that Miami and Miami Beach are still dumping raw sewage. It seems that they should be made to clean up before getting grant money. It seems absurd that that raw sewage from a city of two million people is still being dumped and that sewage is being picked up by the currents that bring it down to the Keys. The Keys has tried to do things regarding water quality to help themselves. Miami's sewage is having a tremendous effect on water quality in the Keys and they should have to clean up. Mr. Blackburn explained that EPA does take this kind of thing into consideration, but in this particular situation, this was a Congressional add-on and the money was mandated for this purpose. The grant that was awarded will be looking for the sources of pollution from the land.

KLWTD Commissioner Sue Heim asked what they expected to find in conducting the EDCs study and inquired as to what actions might be done based on that information. Mr. Blackburn stated that once the grant is finalized, he can share it with everyone. This study will sample various areas near corals on the Southeast coast and in the Florida Keys and will add to the information that is available on this subject.

Chris Bergh added that the desktop EDC study will tell us what might be out there. If the source is known and action needs to be taken, the source can be addressed. EDCs could be coming from injection wells, runoff, etc.

Gil McRae asked where to find the grant applications that are receiving the different awards. Steve Blackburn can make them available and is considering posting them on the website. It might also be a good idea to have a special study fact sheet with pertinent information. Cesar Zapata supports the idea of making sure the committee gets copies of the grants that were awarded and the deliverables from grants. Steve added that they have made the deliverables available through the website, but it would be good to have preliminary grant information posted, too. Chris Bergh suggested that the committee, including the co-chairs and marine sanctuary, share this information with others in the community who would not normally be familiar with the WQPP website. This will let people know that millions of dollars are being put toward issues in this area. At the public meetings held by the sanctuary to ask for input on their proposed changes, many comments have been made by the public pointing out that water quality is responsible for recent declines. While this is not entirely correct, good water quality is absolutely essential. Many people don't know what this body and the agencies are doing for water quality and everyone needs to do a better job getting the word out. Karen Bohnsack thanked Chris for that suggestion and reiterated something mentioned by Co-Chair Iglehart, which is the mandate for education/outreach related to these issues. The topic of water quality has certainly come to the forefront with the sanctuary's Restoration Blueprint. The sanctuary has taken note and is internally considering how to address this and will be coming back to this body with some suggestions as to how make the public more aware of the work that is going on.

IX. WQPP Priorities update

Mr. Steve Blackburn, EPA, gave a brief presentation on water quality program priorities. At the last steering committee meeting, the management committee was asked to review the priorities for the program. Steve presented a list of priorities that have been discussed. New priorities were suggested in addition to those identified originally in the Water Quality Action Plan. Steve explained that Gus is in the process of reinvigorating the Technical Advisory Committee (TAC) and that this review is being done so the appropriate expertise can be sought for the TAC, a body that is tasked with providing input on agenda development and funding awards. Steve reviewed the list of priorities and explained that in some cases, the priorities listed are being addressed by agencies, but the items are still listed to give the complete picture. Some of the high priorities were focused on wastewater improvements, education, evaluating the current monitoring program, implementing the canal master plan and researching the effects of Florida Bay on the sanctuary. Some of the newer priorities included preparing for sea level rise, addressing *Sargassum* seaweed in canals and on beaches, holding a science conference, Turkey Point groundwater potential impacts to drinking water and trash free waters.

Questions/Comments/Discussion

In the discussion, members of the steering committee made the following points:

- The priority list is based on the original Water Quality Action Plan, which appeared in the sanctuary's 2007 management plan. Identifying and recommending priority corrective action is the mandate of the WQPP. Water quality was a key part of the legislation that created the sanctuary.
- The sanctuary is updating its management plan as part of the Blueprint Restoration Process. This priority update is expected to prompt an update of the water quality action plan as well.
- The list contains many priorities and should be pared down to a key set of priorities. The WQPP does not have control over many of the actions listed and some actions have already been taken or are being addressed by other entities.

- One option is to consider which items the WQPP wants to be an influencer or consultant on, but not take the lead role.
- A committee could review the list, identify the gaps and pare it down to a key set of priorities. This includes addressing the far-field influences and reaching out to entities regarding impacts to the Keys.
- This issue of having too many priorities has come up in the past, but not really addressed very well. The idea of using a facilitator to identify the main priorities was proposed and the need for more staff support was mentioned.
- In the past, members of the WQPP were involved in creating awareness about what people can do to improve water quality through an awareness campaign. Success stories showing how things have changed with the actions being taken need to be shared through outreach.
- With regards to stormwater, in many cases, it is impossible to put in stormwater treatment because of space issues and the lack of wetland mitigation. So, there is not much mitigation and roads are some of the biggest contributors to stormwater runoff.
- Some of the big issues that need to be addressed so that the reef can rebound include understanding that the Everglades and Keys ecosystems are connected and how to treat stormwater so that the reefs have the water quality needed to rebound as much as possible.
- The suggestion was made for the WQPP to address (through corrective actions) the plume of saltwater adjacent to Florida Power & Light's Turkey Point Plant. It was noted that this plume may be reaching sanctuary waters through the groundwater connection and it also threatens the Keys drinking wells. The Chamber of Commerce of Key West wrote a letter voicing the city's concern for the drinking water.
- Co-Chair Iglehart explained that over the past 25 years monitoring data have been collected and provide information about the system. A number of years ago, the program reduced the monitoring program somewhat and started funding projects such as the canal projects. The idea was to focus on what was within the control of the local community. Programs that focus on monitoring and those that result in local improvements have been maintained over the years. He would like to see a better effort to move the information gleaned from the monitoring into realms where it can be used to better the environment.
- Karen Bohnsack recently joined the FKNMS staff. She is the point person for the sanctuary on regional water quality issues, including Everglades' restoration. The Sanctuary's Restoration Blueprint calls for the sanctuary to better engage with the regional water quality issues, including the South Florida Ecosystem Restoration Task Force. She noted that it is important to better communicate with the decision-makers involved in restoration about how the Keys are downstream and will be affected by actions taken on the mainland.
- For the most part, the near-field problems are being addressed. Far-field impacts are the issue and they involve areas beyond the Everglades such as the Gulf of Mexico. This body is uniquely suited to represent the interest of the Keys to all of the rest of the United States and to address far-field inputs that are causing problems. This includes Everglades' restoration and nutrient management that affects the Gulf of Mexico.

Comments from the audience

Captain Wickers pointed out that when the sanctuary was first created, water quality was the main focus. The community was concerned about water quality in Florida Bay. Around that time people began to see algae blooms. Without clean water, the Keys are just like any other place. The sanctuary seems to have lost its focus since that time. He would like to see this board be the leader for the FKNMS to make more progress in improving water quality.

KLWTD Commissioner Sue Heim stated the Kevin Wilson spoke to the Key Largo Wastewater Treatment District commissioners about stormwater. The main message is that in the future stormwater is

also going to have to be buried because there are very few options on how to deal with it. In regards to priorities, how to better treat stormwater and its impacts on nearshore waters should be considered.

KLWTD Commissioner Robby Majeska stated that he has been on the KLWTD board for 10 years and the county is working on stormwater runoff issues. But, the cost for needed improvements such as raising the road is going to be nearly one billion dollars. One thing that this board can do is improve awareness and education in the community. The brochure (on pumpouts/what boaters can do for water quality) needs to be in every marina, hotel, etc. He advocates having a billboard that lets people know to watch out for our waters. There are 78,000 people who live here and many are doing the wrong thing like throwing fish scraps in canals, etc. Education should be a big priority and will bring more support for the work of this group. Somebody on this board should be in charge of education and money should be put toward it.

In summary, Co-Chair Ellington noted that she heard a proposal about having a facilitator to work through the priorities, along with other discussions held today.

Motion (passed)

Gil McRae made a motion for the management and technical advisory committees to develop a preliminary prioritized list and bring back a proposed list to the steering committee for consideration. The steering committee will then develop a facilitated strategic planning process. Sandy Walters seconded the motion. Co-Chair Ellington called the question and the motion passed unanimously.

Gus Rios commented that the Florida Keys National Marine Sanctuary and Protection Act includes the need for a liaison for the WQPP. The liaison could be the lead for this review.

Chris Bergh added that this task called for in the motion is very similar to the water quality action plan, which needs updating. This action basically amounts to revising the action plan. Co-Chair Iglehart agreed.

Lunch

X. FKNMS Water Quality Priorities

Ms. Sarah Fangman, FKNMS superintendent, gave a presentation on water quality priorities for the Sanctuary. Ms. Fangman stated that the resources of the Keys are under serious threat and the people in this room are aware of those threats, some of which originate outside of the Keys. Water coming down from outside of the sanctuary is definitely affecting sanctuary resources. At the same time, it is also important to address local threats. The Restoration Blueprint strategy contains actions that can be taken to address local threats. This is not to minimize outside threats such as those associated with water quality. During the past few months at the sanctuary's Restoration Blueprint public meetings, they have heard how important education is for the people using the resources. The number of people coming to the Keys is increasing and education would help address these added impacts. Other actions include using mooring buoys and conducting marine debris cleanups, coral restoration and monitoring. Despite the fact that there are regional impacts, these local actions can help protect biodiversity and protect and recover threatened species.

The sanctuary has been presenting the actions contained in the Restoration Blueprint to the communities throughout the Keys at public meetings and other venues and is listening to the public comments. One of the top three issues that the community is bringing to the sanctuary's attention concerns water quality. It is really critical to addressing threats to the resources. The Blueprint contains a goal that calls for the sanctuary to engage more actively with local and regional entities in addressing water quality issues, which involves working better with the WQPP and the South Florida Ecosystem Restoration Task Force. The proposal calls for ways to support existing programs better and identify non-regulatory actions that

can help. The Blueprint also contains a regulatory proposal that affects cruise ship disposal. The proposed regulation would prohibit discharge of any material from a cruise ship except clean cooling waters, clean bilge water, or clean anchor wash water. The current regulation allows the discharge of deck wash down and gray water. Superintendent Fangman would also like to work toward raising the profile of the WQPP. The actions taken by WQPP have helped water quality over the years.

Questions/Comments/Discussion

Sandy Walters stated that from earlier discussions it seems as if this group is considering recreating itself. The WQPP originally focused on wastewater and monitoring. Both are important. Recreating the WQPP to fit into the sanctuary's new image and engage the public in the work still yet to be done is what is needed.

Dr. Briceño stated that after 25 years of monitoring, questions should be asked about the monitoring. Are we monitoring what we should and where we should be? The WQPP water quality monitoring program was not designed to measure pollutants coming to the Keys. In 2011, they incorporated 10 shore stations and can use those data as guidance. Water quality is just about the same as it was 25 years ago. It may have more variability, but the central tendency is the same. Trends such as declining organic carbon are evident in the Keys sampling and elsewhere, too. The 10 years of data close to shore exhibit parameters that are increasing due to human impacts. It's not only the canals contributing to the nearshore waters; stormwater is also playing a role.

Captain Wickers was recognized by the chair. He explained that he has been interested in water quality for many years and has wanted to bring attention to the importance of good water quality. Many of the actions on the list have been taken. Most of the problems are coming from elsewhere and it's time to get involved. The issue that has to be faced now is how to get clean water back in the glades.

XI. Technical Advisory Committee (TAC)

Mr. Gus Rios, FDEP, stated that at the last steering committee meeting, the management committee, which reports to the steering committee, was tasked with reinvigorating the Technical Advisory Council (TAC). Since then, the management committee reviewed a number of issues, including the priorities of the WQPP, how to select TAC members, how to ensure participation, etc. In the FKNMS and Protection Act, the role of the TAC is to "assist with design and prioritization of research, special studies and monitoring programs." The monitoring program goals were reviewed. They include determining sources of pollution, evaluating effectiveness of efforts to reduce pollution and progress toward achieving and maintaining water quality standards. Some of the nearshore issues involve water quality in canals and the impacts of anchorages. A new issue involves the impacts from *Saragassum* seaweed.

Mr. Rios presented a list of disciplines that the TAC should collectively have expertise in. Some needed expertise includes physical oceanography, water quality, hydrogeology, coral reef communities and many others. Mr. Rios reviewed the list of current TAC members. They represent academic institutions, agencies, local governments, etc. For the most part, the appropriate disciplines are represented, but the management committee could use some input on how to select and retain qualified TAC members and would like to see more staffing support. The legislation that created the sanctuary calls for a Florida Keys Liaison officer who shall assist and support the implementation of the program, including administrative and technical support for the steering committee and TAC. Other responsibilities including coordinating the action plans and working with other agencies to improve water quality, making publications available and providing for public review.

Questions/Comments/Discussion

Cesar Zapata, EPA, stated that EPA is having internal discussions to determine how they can best fill the EPA liaison role. EPA does have someone based in Florida but this person hasn't been working with the

marine sanctuary or on this program. Regarding the roles of the TAC members, Mr. Zapata commented that EPA could probably provide technical expertise in water quality and permitting for the tasks of the TAC. Agency managers can consider how that agency's resources could be used in order to better fill in the needs of the WQPP and its goals.

Mr. Rios acknowledged that it would be good to have expertise on discharge permitting and injection wells. He added that if an area of expertise is needed, but not already represented on the TAC, they can reach out to the agencies to find that expertise.

Superintendent Fangman stated that perhaps a mixed model for TAC membership could be employed. This would mean having a number of standing members serve on the TAC to provide continuity and then seeking additional expertise on specific issues as needed. She noted that Dr. Andy Bruckner has been put forward as a member for the TAC on behalf of the FKNMS. She thanked Mr. Zapata for thinking through the role of the WQPP liaison.

The following points were made in the discussion.

- The EPA liaison should be located in the Florida Keys because this person could then readily interact with the community.
- There is great value in establishing a regular meeting pattern and in engaging members of the community as members on the TAC. This would also improve communication in the community.
- Funding for travel would be helpful.
- Keeping TAC members engaged once the TAC is formed is key. It would be easy to make mistakes by overtasking the TAC or not giving the committee enough to consider. It's going to be a challenge to get the TAC to be functional again and to keep it viable.
- Not having that EPA liaison based here in the Keys has slowed down the progress of the program.
- This morning the management committee and TAC were assigned the task of refining the priorities for the steering committee and this will help provide some direction.
- The TAC should be allowed to elect its own leader because leadership is needed and should be done by a willing and competent person.
- Co-Chair Iglehart expressed that it's important to get the TAC going again and they could work on priorities with the management committee.
- A suggestion was made to have the WQPP involve the public and Sanctuary Advisory Council (SAC). Superintendent Fangman offered to gladly facilitate coordination with the SAC.
- Cesar Zapata stated that he would take this information back to EPA management and added that having the meetings for the different committees during the same week helps to improve communication on the different issues.

Motion (passed)

Motion proposed by Co-Chair Iglehart to direct DEP to organize the first meeting (in January) of TAC/Management committee to establish TAC individual roles and preliminary questions for priorities (who else is doing this work, gaps, WQPP component, timeframe, feasibility, etc.). Additional meetings can then follow. Motion was seconded by Gil McRae. Motion passed with no objections.

Topical Issue Spotlights

XI. Turbidity Criterion, Gus Rios, FDEP

Mr. Gus Rios provided a brief overview of the turbidity criterion being developed as part of the FDEP's mandated triennial review of water quality standards. Based on literature reviews, FDEP has concluded that the administrative rule, which contains a 29 NTU standard, is not protective enough for corals and hardbottom communities. The new proposed criterion is narrative in nature and reads as follows:

“Turbidity shall not be increased above background conditions within the Southeast Florida Coral Reef

Ecosystem Conservation Area, Biscayne Bay National Park, Biscayne Bay Aquatic Preserve, and Florida Keys National Marine Sanctuary excluding canals...". The standard will incorporate background turbidity, which will be determined based on specific methods. This standard will be applied to projects that involve beach re-nourishment, dredging and coastal construction. Comments are being accepted on the proposed criterion through November 22 (contact information is in the slide presentation).

Questions/Comments/Discussion

- Dr. Briceño stated that FIU has collected data on turbidity for the past 25 years. Most of the time the NTU is below 2. Gus Rios acknowledged that those data should be in the DEP data network and could be considered when implementing this standard, if it passes.
- Dr. Fourqurean reminded everyone that seagrass is sensitive to turbidity and seagrass should be included.
- Gus Rios clarified that background levels will be site specific within the defined area.
- Sandy Walters pointed out that the way monitoring is currently done in the Keys is through use of a control site that provides the comparison to background levels. Gus pointed out that the Keys have always been more restricted. This rule will apply to the Keys as well as areas outside of the Keys. Co-Chair Iglehart stated that what is being proposed is setting the background level before the work is begun. This approach tends to discourage operations on windy days when turbidity is already higher and is designed to minimize impacts the best way possible.

XII. Stony Coral Tissue Loss Disease (SCRLD): Status and Response Update

Ms. Tori Barker, NOAA Coral Reef Management Fellow, gave an update on SCTL D. She is based in the FKNMS office in Key West and works closely with the Maurizio Martinelli, Coral Disease Response Coordinator (Sea Grant). SCTL D began in 2014 and has spread throughout the Keys (but not the Dry Tortugas) and has now been spotted and confirmed in nine different Caribbean countries. An organizational structure was developed to address the various aspects of the disease and response to it. Recently, some changes were made in the response team structure. For this presentation, the focus is on the work done by the three teams: Reconnaissance and Intervention, Propagation and Epidemiology and Research.

Earlier this year a multi-day technical workshop that focused on research, intervention and coral propagation, was held at the FWC Florida Wildlife Research Institute in St. Petersburg, FL. The workshop was well attended with representatives from over 30 agencies, academic institutions and non-profit organizations. In order to improve communication between the many partners, workshop participants developed four different sub-teams designed to focus on identifying the pathogen, compiling a time series related to the histology, and examining disease transmission, environmental co-factors and coral immune responses/genetics.

Water quality is important because there is anecdotal information to show that a diseased coral has a better chance of recovery if it is placed in clean water. Some changes were made in the intervention methods used and now includes initial field-testing of probiotics, which produce antimicrobial compounds and can be used to treat whole colonies. They are hopeful about the probiotics approach, which has worked well in the lab. A propagation team was formed to assess the coral holding infrastructure, share and develop coral spawning and rearing expertise and focus on the propagation of rescued corals and cryopreservation of coral sperm for gene banking purposes.

The SCTL D response structure has been working closely with the US Coast Guard on ballast water issues. Some areas are exhibiting the disease, but may not be linked to diseased areas via the currents. Thus, ballast water is being examined as a potential carrier of the unknown pathogen. The Coast Guard has issued Best Management Practices to keep ballast water away from coral reefs. This only applies to

US waters, but these practices are also being adopted elsewhere. Many next steps are being taken, including restoration trials in the endemic zone, continuing research on the disease, etc. She acknowledged Rob Ruzicka and team for rescuing an additional 168 coral colonies on a recent cruise to the Marquesas.

XIII. *Sargassum* Status Update

Ms. Shelly Krueger, Florida Sea Grant/Monroe County Extension, gave a presentation on the *Sargassum* influx, which began in 2011. In the Caribbean this phenomenon is being called the golden tide. Two species of this pelagic brown algae are affecting the Keys and Caribbean. This floating seaweed traditionally originates from the Sargasso Sea. The piling up and decomposition of this seaweed causes low dissolved oxygen, fish kills, bad smells and dirty beaches. It also packs into residential canals and smothers sea turtle nests on sandy beaches. *Sargassum* is very important habitat for pelagic species and is considered Essential Fish Habitat. It can have beneficial effects such as preventing beach erosion. There is a new source of *Sargassum* at the equator, which accounts for changes in the pattern of *Sargassum* distribution via the currents. *Sargassum* grows faster with nutrients and under warmer conditions and influxes are hard to predict. Regulations exist in federal waters because it was a fishery until 2003. In state waters, a permit needs to be issued because of the Florida Aquatic Weed Control Act. In August a press release was issued to help inform people about this issue.

Comment: FDEP offered guidance on *Sargassum*, which is regulated as a class 1 solid waste. If homeowners want to remove it from their yards and dispose of it in the trash, that is okay. FDEP recommends mixing it with the beach sand if possible. It cannot be composted because the salt inhibits decomposition. Some beaches have permits to remove it, but not homeowners. In the Caribbean they are looking at different ways to deal with it such as burying it, turning it into biofuel, etc. Other countries have been dealing with it. Miami-Dade County is taking care of hotspots and that costs about \$500K per month. Next year it is estimated that Monroe County will spend \$900K on removing it from beaches. The *Sargassum* reaching the Florida Keys has been carried by currents through the Gulf of Mexico.

XIV. Endocrine Disrupting Chemicals (EDCs) in the Florida Keys: Spatial Distribution/Sampling Effort

Mr. Luke McEachron gave a presentation on EDCs. He works on this project with Renee Duffy in the FWC FWRI Center for Spatial Analysis. They are interested in exploring spatial issues such as the distribution of EDCs, which are chemicals that tend to mimic hormones and can have adverse effects on humans and wildlife. Hundreds of compounds (pharmaceuticals, personal care products, hormones, etc.) are considered EDCs, so it's preferable to sample indicators of human waste such as caffeine and sucralose. One of the things to be concerned about is epigenetic transgenerational inheritance, a phenomenon that affects subsequent generations and can affect human fertility, diseases and human behavior. This phenomenon has been observed in mammals and people. In fish, it can affect sex ratios and can affect larval settlement in *Porites* corals. A report that reviews and evaluates sources, distribution, concentrations and effects of EDCs is being prepared for EPA through the South Florida Geographic Initiative. The project that Mr. McEachron and Ms. Duffy are working on is focused on mapping the distribution of EDCs and creating a central location to track EDC related work. Their geodatabase shows EDC sampling densities throughout the South Florida region. The web map demo can be found at <https://tinyurl.com/tf9b9xd>. The EDC distribution in the Florida Keys is provided as a story map using occurrence data for hormones, personal care products, human waste indicators, etc. The results can be filtered in different ways. Currently, they are working with the data providers to approve the product and welcome comments from scientists, etc. too. The presentation provided some suggestions regarding the lessons learned such as using concentrations, not just presence/absence, because different detection limits exist. The project will be completed in March. After that they will still continue to update the map tool as needed.

Questions/Comments/Discussion

Dr. Fourqurean suggested that water samples could be collected by partners who are already going into the field. If samples are provided, Mr. McEachron explained that there are people willing to analyze these samples. Dr. Briceño added that after Hurricane Irma, Chris Kelble, NOAA AOML, collected water samples while on an extended research cruise to be analyzed for sucralose (Splenda) by the FIU Southeast Environmental Research Center (SERC).

Sandy Walters suggested that the steering committee adopt a resolution asking the Florida Legislature not to ban local ordinances that regulate oxybenzone and similar chemicals. Concerns were expressed regarding this idea, which would require a lengthy discussion to reach a conclusion. As it stands, if the legislature is seeking information, this group can provide it, but the WQPP should probably steer away from making specific recommendations. A different approach could be taken. The local representatives for the Florida Keys and the municipalities lobby on behalf of the communities. Perhaps, the local entities could work together to communicate concerns at events such as Florida Keys Day in Tallahassee.

Co-Chair Iglehart stated that this program should tell its story and he wants to work on the Biennial Report between now and the next meeting. Shelly Krueger offered to help with the report.

Public Comment

No public comment was offered at this time.

Meeting Wrap-Up and Closing Remarks

Ms. Natalie Ellington, USEPA, thanked everyone for a great meeting with informative presentations, dialogue and an exchange of information. She urged everyone to continue being dedicated to this great treasure of the Florida Keys.