

**FLORIDA KEYS NATIONAL MARINE SANCTUARY  
WATER QUALITY PROTECTION PROGRAM**

**STEERING COMMITTEE MEETING**

**July 24, 2008**

**Marathon Fire/Rescue Station 14 - Meeting Room  
8900 Overseas Highway, MM 52.5, Marathon, Florida**

**MINUTES**

Members Present:

Gary Bauman – Chairman, Key Largo Wastewater Treatment District  
Pete Worthington – Mayor, City of Marathon  
Billy Causey – Southeast Regional Director, NOAA’s Office of National Marine Sanctuaries  
George Neugent—Monroe County Commissioner  
Bruce Popham – Chairman, FKNMS Sanctuary Advisory Council  
Don Hubbs-- Florida Keys Aqueduct Authority, sitting in for Jim Reynolds  
Cecelia Weaver – South Florida Water Management District, sitting in for Mike Collins  
Shelly Trulock – South Florida Restoration Branch, U.S. Army Corps of Engineers/Jacksonville District, sitting in for Colonel Grosskruger  
Charles Causey – Florida Keys Environmental Fund  
Sandy Walters – SWC, Inc., representing maritime interests of the Florida Keys  
Rusty Stevens – City of Key Colony Beach, sitting in for a new member Mayor Ron Sutton  
Anne Morkill – US Fish and Wildlife Service, Florida Keys National Wildlife Refuges

**I. Opening Remarks:** Mr. Jon Iglehart - Director, South Florida District, Florida Department of Environmental Protection and Mr. Richard Harvey - Director, South Florida Office, U.S. Environmental Protection Agency, Region 4

Mr. Iglehart called the meeting to order. He welcomed everyone and introduced himself and his co-chair Richard Harvey from EPA. Mr. Harvey greeted everyone. Committee members introduced themselves.

Mr. Iglehart noted that a quorum is present. He thanked Mayor Pete Worthington and Clyde Burnett of the City of Marathon for hosting this meeting and allowing us to use this nice facility and the fire station facility staff Clara, Pat and Adam. He also thanked Commander Dave Score, Superintendent of the FKNMS, for providing support and offered a special thanks to Nancy Diersing and Ivy Kelley of the Sanctuary for taping the meeting, taking notes and providing coffee and snacks.

Mr. Iglehart stated that speaker cards are available at the sign in desk for anyone wanting to speak during the public comment period, Agenda Item 11 at 2:45. Speaker cards should be turned into to Fred McManus or Bill Krucynski; speakers are limited to 5 minutes each.

Mr. Iglehart thanked Representative Saunders for taking the time to speak. He noted that the review of the agenda was being set aside temporarily because of Representative Saunders' busy schedule.

**A. Florida Legislative Update on State Funding to Support Wastewater and Storm Water Infrastructure in the Florida Keys:**  
Representative Ron Saunders - Florida House of Representatives

Representative Saunders expressed his pleasure at being before the committee again and thanked the committee for their work on water quality in the Keys. He gave a brief update on funding for the State mandate, which has been in place since 1999, and yet the Keys may not meet the 2010 deadline, primarily because of lack of funding from State and federal governments. The amount of funding received in one year was \$20 million thanks to his predecessor, Ken Sorenson. The total amount received from the State was \$48.8 million dollars. That sounds like a lot of money, but these systems are costly. Representative Saunders has held several summits with the key players from throughout the Keys with the goal of presenting a unified front to the state legislature when requesting funding for wastewater improvements. Many of the key players are here today –Monroe County, municipalities, Key Largo Wastewater District, Aqueduct Authority, etc.

Thanks to the team effort they were successful in amending Bill No. 1552 to get authorization for State bonds (not local) prepaid by the State for \$200 million, with \$50 million per year over a four years. They will be treated as separate bond issues. The State will not be required to appropriate \$50 million out of next year's budget. The State will only need to appropriate funds to cover the debt service for the first year of the bonds over the next 20-30 years, depending upon the life of the bonds. They will partner with FDEP, who will have oversight of the \$50 million dollars.

Representative Saunders will be holding another wastewater summit August 13, 2008 in Marathon at the Government Center at 5:30 P.M. The purpose of this summit is to bring the interested parties back together. He has asked each entity for a two-year request— how to spend \$50 million from year one and the second \$50 million from year two. Representative Saunders pointed out that there are advantages to having a two-year plan and that different entities are farther along in the process and may be able to better use the first year funds. He added that the Keys will have a better chance of getting the debt service appropriated if they present a plan and a united front. He noted that Ms. Wood was working to pull the plans together. Communication and cooperation between the entities will be helpful in getting the legislature to approve the debt service for the \$50

million. Representative Saunders welcomed the partnership with FDEP and all the other agencies to try to get this done.

Mr. Iglehart commended Representative Ron Saunders for his leadership in getting this bonding issue passed. Even though the passage of the bond looked bleak, Representative Saunders was successful because he had a good agenda and persevered to secure these funds. Mr. Iglehart noted that his agency (FDEP) has the utmost respect for this accomplishment. There was a round of applause.

Representative Saunders pointed out that this was a bi-partisan effort. Representative Mayfield, Chair of the Natural Resource and Environmental Protection Council, was his partner on this effort. He thanked Secretary Mike Sole and Jon Iglehart for working closely with him on this endeavor. He noted that Secretary Sole's support gave credibility to the project. Dr. Causey added that the Florida Ocean Council and Florida Ocean Alliance met in Tallahassee on the same day that the bond issue was being addressed and they saw the leadership exhibited by Representative Saunders on this bond issue. Representative Saunders added that Monroe County and others had lobbyists that worked together really made it easier to secure the funds, instead of fighting for the same funds.

Mr. Iglehart asked if there were any questions, but there were none at this time. Representative Saunders stated that he would be staying for a few presentations in case any questions arose.

#### **B. Review Agenda: Jon Iglehart**

Mr. Iglehart noted that a presentation on the status of TMDL/RAD for the Florida Keys will not be given today, but a handout has been provided in place of that presentation.

Jon Iglehart noted that no changes were suggested to the agenda.

#### **C. Discussion and Approval of Minutes: Jon Iglehart - Steering Committee Vote**

There was no discussion about the minutes. A motion and second were made to approve the minutes. It was carried by all.

## **II. Update on the Development of the Comprehensive Report Summarizing the State of Knowledge on the South Florida Marine Ecosystem: Dr. Bill Kruczynski - U.S. EPA, Region 4**

Dr. Kruczynski provided a brief update on the proposals submitted for the \$100,000 for special studies, which was passed by the committee the last time it met. The RFP for these funds targeted the Southeast Florida Coral Reef Initiative, which covers the reefs on the mainland up to Martin County. There were two proposals submitted for that money. The review process was shortened due to the low number of submittals. The proposal that

will receive the funds will be announced soon.

Dr. Kruczynski received a copy of a pre-publication copy summarizing the changes in coral reefs of the Florida Keys from 1996 to 2003. The main message is that the bleaching of 1997-98 stressed corals greatly and they have not recovered from that period of bleaching. He also pointed out that there is a new technical book called Coral Reefs in the United States.

Dr. Kruczynski introduced his partner in developing the ecosystem book, Pamela Fletcher. She is with Florida Sea Grant and is stationed at the NOAA Atmospheric Oceanic Meteorological Laboratory (AOML) on Virginia Key. He explained that they thought it was good idea to produce a chapter to show what the final product will look like. This chapter is about Florida spiny lobsters based on the work done over the years by scientists in Marathon (FWC Florida Wildlife Research Institute). Academic institutions also participated in writing some pages. They are still on schedule to have the book printed next March or April. This publication has an executive summary describing the purpose of the book and this chapter has recommendations at the end to show what recommendations might entail.

They may print the book without using print house and it might be for sale. If that does come about, the Sanctuary Friends Foundation of the Florida Keys will be the organization that collects the royalties and make those monies available for research in the future.

There might be issues with the fact that Dr. Kruczynski is salaried and how that meshes with selling the book for profit. Dr. Kruczynski might need some help and advice with these details.

Mr. Harvey added that as long as the group is comfortable with the way the proceeds are spent, then it could be possible. They will not make a decision today. The question was posed as to whether they want to recover costs or make a profit and the answer is both.

The book that is a model for this one is from Australia. Ms. Fletcher pointed out that the Australian book was part of a healthy waterways campaign and now they have additional books with the profits being tagged for educational efforts. Commissioner Neugent added that the Sanctuary Friends is a non-profit for scientific research and education/outreach and works closely with the Sanctuary. They have already distributed close to half million dollars on various projects. Anyone who wants to become a member can get in touch with George Neugent.

Mr. Harvey stated that the goal is to get the profits back into the local community, but how that is done needs to be examined further. Dr. Causey added that many federal employees work on chapters that are published in books for profit. It could be done through the Friends. Mr. Harvey added that there is a need to look into it because there could be other groups interested in the book.

Dr. Kruczynski may possibly go to the government printing office and ask what it will cost. The drawings were done by University of Maryland, who also worked on the Australia publications. They were very cooperative and he wants to continue to work with them. He added that there are concerns as to whether or not the book is too large as it stands; they still have to work out the details. Ms. Walters stated that she is really impressed with the draft, but be careful not to make the type smaller since it is already quite small. She is looking forward to catching up by reading this chapter.

Dr. Kruczynski reminded everyone that each chapter is a series of fact pages on topics that are 1-2 pages each. There may be a total of 12 chapters. One will be a chapter on species of special importance-stone crabs, sea turtles, etc. Ms. Weaver echoed Ms. Walters comments on the product and asked about a final timeline. The book is expected to be completed by the end of next year.

Dr. Causey presented a correction for the minutes In the past few years new *Acropora palmata* colonies have been found at Flower Garden Banks, not in the southeast coast. This correction can be made to page 28 of the minutes.

**III. Status of Implementation of Monroe County Wastewater Master Plan and Wastewater Upgrades by Municipalities and Key Largo Wastewater Treatment District:** Ms. Liz Wood - Monroe County, Representatives of Municipalities and Key Largo Wastewater Treatment District

There were some technical difficulties with the presentation equipment, so Mr. Chuck Fishburn, General Manager of Key Largo Wastewater Treatment District, stepped in to give an update on Key Largo's plan. Using a map of Key Largo, he provided a summary of Key Largo's wastewater plan. The project is divided into 11 basins. Key Largo Trailer Village and Key Largo Park are online and running, meeting AWT standards. The engineering for Basins A,B,C and D has been done. Basins E-F and G-H are under contract. They plan to have the remaining basins I,J, K to an engineering firm by the end of the summer. Then the entire project will be under contract by the end of the year. The bids for the remaining wastewater treatment plant are due soon. They could use some help from FDEP in the future. They are trying to avoid another deepwater well. The deep well bid is out and is due in mid-August. They have to make a decision as to whether or not to have a second deepwater well by December. The transmission line in the north has been done for months. Basin A is being awarded in two separate contracts. They are over on the treatment plant costs, but under on costs for the collection system. Basin D is under contract. Phase III is using the Army Corp money, so is Phase I, which hopefully is tied to the PCA signing in August. Basin B had 20 bidders; prices are way down. They plan to award and then give change orders as needed. The idea is to have 4 contractors, pick up another one next month. Basin C should go out in August. Locations of vacuum stations were shown on a map. The State Park and Catholic Church allowed vacuum systems to be located on their properties. Basin G-H was awarded to an engineer. Every package plant in Key Largo has been assessed and there is a commitment to have service to central sewer before 2010. That transmission line is 60% engineered. He thanked FKAA for allowing them to use their 36 inch decommissioned

water main and that saved money. KLWTD has done two rate studies. Assessments are from \$4700 to \$5400, which means everyone paid essentially the same fee in the district. The rest is financed at 2.5 % over 20 years. They have a \$50 million commitment from federal revolving funds of the \$75 that they need, which is half of the total of \$150 million. They are \$45 million short and there are ways to borrow this money. Spending has greatly picked up with the construction of plants. They have a chart that shows that they will be a few months short of meeting the 2010 deadline. Hopefully, if they get enough contractors, they have a shot of making the 2010 deadline. The current plan meets AWT. Commissioner Neugent thanked Mr. Fishburn and his staff for moving forward on this project. Chuck thanked the board members.

Ms. Wood provided a summary of the wastewater upgrades in the municipalities. She stated that she was honored to put together the packet of information to go to Tallahassee to describe the awful predicament of the Florida Keys. They have updated the numbers to reflect the entire Keys, from Key Largo to Key West. Because of the initial efforts of Key West, City of Layton, the Keys are about 40% compliant with AWT standards. About 2500 (about 5% of remaining projects) were moved in the last six months to the connection phase. Between January and December, they went from 30% to 20% projects in the planning phase and another 10% moved to design phase. This is due to efforts in Key West and Key Largo. They had time to review the master plan and recommended that they combine all of the service areas from Lower Sugarloaf to Big Pine Key. That will mean saving \$11 million in capital costs and \$26 million over the cost of the project. That was not identified in the master plan so it will require special permits. Her intention was to show the progress since November, but she is working without the benefit of her slides. To recap, about 20% of 50,000 connections are in planning phase, 30% in design, 11% in construction and about 40% in connection phase. Key Colony Beach, Key West, Layton, and Stock Island are complete. The Village of Islamorada is moving 300 EDUs into design. Key Largo is moving about 3000 and the lower keys is moving about 600 into design phase. She commented that it has been great working with everyone and thanked Cindy Lawson for her help last year. Ms. Wood projects that next year that there will be another 10% in design and 5% in connection phase. Islamorada is making huge strides to get engineering and funding in place.

Ms. Wood described a tool on the Monroe County website where there are links to the utilities responsible for each area of the map is provided.

Mr. Miles Mylander presented for the Village of Islamorada. He recognized the new Village Manager, Mr. Ken Fields and new finance director, Ms. Cindy Lawson and Mr. Chris Sante who was recently appointed to the water quality board. They have a master plan of five plants on four islands with one plant in place on North Plantation Key. That plant is in the middle of a residential community and will serve the two schools in the area. This plant picks up about 449 homeowners there. A settlement agreement will go before the Village Council in August and after that they can bring another 700 homes on line within 3-5 months. This project has four phases, with A and B phases coming on right away. There is a remote pump station and that will allow them to bring the rest of the homes on line. He takes pride in that plant; it meets the standards and is like

swimming pool. Some people have visited that plant since the invitation offered at the last meeting. They are working getting a 300,000 gallon plant on south end of Plantation Key. They have selected some sites that might work. They are going to build another plant on Windley Key at the state park and this will cover 130,000 gallons per day. They are also looking at several sites for a 500,000 to 600,000 gallon plant on Upper Matecumbe, the largest island. They have a \$5 million dollar EPA grant for the lower portion of Upper Matecumbe. That project is 75% funded. They have established a steering committee and presented their conceptual design to them last week. They are moving forward with selecting the technology; they have a pilot project to look at new technologies. They think the footprint will be relatively small. They have an RFQ for engineering that is due next week. They plan to hire 5-7 engineering firms and then hire a funding manager to oversee whole project. They will put before the Village an assessment for all homeowners at \$30 per month to raise the money (\$60 million) needed. There are 65 package plant owners in Islamorada; they have a group called Keys Clean. If the owners of package plants have to pay twice, it will bust some of them. They have met with the package plant owners and with FDEP. They will be meeting with FDEP again tomorrow and are trying to work out a deal with them to help these folks.

Ms. Susie Thomas, Director of Community Services, City of Marathon, spoke for the City. They have seven service areas and are about 40% complete in two service areas. One area is going to bid next month and one being awarded next month. They will come very close to meeting 2010 mandate. It may not be June 30<sup>th</sup>, more like November 30<sup>th</sup>. They will be 80-90% in compliance by the 2010 mandate. The design is complete and the bids are coming in lower than expected. Finding locations for plants has been tough. She is very excited about our progress.

Ms. Wood introduced Mr. Hubbs, who is assistant director of FKAA engineering. He has been spearheading the effort to cut costs for collection systems. She acknowledged how helpful he has been to the County engineering staff. Mr. Hubbs, who is filling in for Mr. Jim Reynolds, addressed the committee. The Little Venice facility is scheduled to be turned over to City of Marathon by October 2008. Conch Key, Bay Point and Layton are connected. Big Coppitt is the big construction project now and is on track to be complete by the end of this year with connections starting early next year. They may bring Key Haven and the Navy in on that project. The Duck Key design is done and waiting funding. The regional effort that Ms. Wood mentioned is the Cudjoe system that serves from Lower Sugarloaf to Big Pine. It was served by three facilities in the master plan, but we want to merge into one and are meeting with FDEP about that topic. The challenge will be to cross Niles Channel.

Ms. Wood explained a spreadsheet detailing facilities at Ocean Reef in north Key Largo. Their treatment system currently meets secondary standards. Mr. Jeff Olson, Ocean Reef Utility, explained the plans for upgrading to AWT. The plans for AWT will be complete this month. They have been in touch with FDEP for application permit. They will advertise for bids in September. The estimate for is 14 months and that will allow them to meet the deadline. The total construction cost is \$12 million.

Ms. Wood was asked about the cost per EDU for Monroe County. She responded by stating that it is expensive so it will need to be subsidized. Commissioner George Neugent added that Layton and Big Coppit are gravity projects instead of vacuum and that is a much more expensive system than vacuum systems used in Key Largo. He added that they have very high costs because of rural areas like Shark Key, which was a \$2 million dollar addition, almost \$50,000 per EDU. The lower Keys are much less dense and harder to bring into compliance. The gravity system is more expensive to put in, but it has a lower operating and maintenance cost, though. Ms. Wood added that the Commission has asked them to do this in the most cost efficient way possible. As times get closer costs can be trimmed. Dr. Billy Causey commented that with the gravity systems there is a greater risk because of sea level rise. It won't take much of a rise before those systems won't work well. Gravity may not be the best way to go.

Representative Saunders asked Ms. Wood what she thinks will be done by 2010 and how much more time will be needed for those that are not done. Ms. Wood stated that 50% of what is left will be in construction. Everything will be out of planning and into design and probably have all the plans and specs ready to go. That is based on Islamorada stepping up the past few months and getting their projects ready to go into design. As for the ones that are not complete by July 2010, she will have to look that more closely. They will have to develop lists for the FDOH as to which areas will require upgrades as opposed to connections to central service areas. A phased approach could be used, pulling in the hotspots first, followed by the cold spots that have been determined to be cost effective to connect. The third phase could be those areas that have major planning issues between developers and such. This last 5-15% could be addressed a couple years down the road because the compliance will take seven to ten years. There will be issues with people having to get plumbing service and paying taxes.

Commissioner George Neugent agrees that the momentum is gaining, but the Lower Keys is running out of money and therefore they are struggling with how to fund that area down to Big Coppitt, especially since their infrastructure money is committed to 2018 and they find themselves in a financial dilemma. He has concerns about areas that are not even in the planning stage at this time. These areas include: Big Pine, No Name Key, Ramrod, the Torches, Sugarloaf, etc. This is about 5,000 EDUs. Ms. Wood stated that a contract is in place to examine the most cost effective way to address these areas.

Mr. Harvey asked Representative Saunders and Ms. Wood if they are successful in getting the \$200 million bond how much more money would be needed to finish the job?

Ms. Wood is thinking that they will need a loan for \$150 million. She will have to obtain a signed covenant to budget that money through the County Commissioners. They will not be able to go to lenders with a promise from the State for future money. The cash has to be available up front, regardless of what happens from the State perspective. For them to come into compliance, they need a budget plan that sort of ignores additional assistance. The deficit is \$340 million and the Duck Key collection system went up 7% because of a \$1 million dollar shortfall. She tried to vocalize the need for more funds upfront for this project before the cost went up.

Mr. Fishburn pointed out that the assessments are larger in Key Largo and Marathon. Maybe the assessments in other areas need to be \$8,000. Now, they are looking at North Key Largo and that might have an \$8300 assessment. Commissioner Neugent stated that the assessment numbers seem not to be carefully thought out and the subsidy is not there to make up the difference. The KLWTD tried to comply with \$4500 that was supposed to be affordable, but now they are going up. They have assessed the rest of the island because some of the residents are concerned that their assessments will be greater than the \$5200 being paid at this time. That is part of the reason that they will be assessing everyone next year.

Mr. Chris Sante asked Commissioner Neugent about Shark Key costing \$50,000 per EDU. At a time when everyone is struggling with cheaper EDUs, around \$11,000, he just wanted to make sure that everyone understands that it is a lot cheaper for them to put in an ATU rather than to hook them up. He questioned why they would ask the State or anyone else for money to fund that project. It doesn't make sense. Ms. Wood explained that they were asked to assist with this by Representative Saunders. They evaluated Shark Key. There is another community that is similarly sized and situated in Big Coppitt Key. It is tier 1 and no further development will take place there. This community is also costing about \$50,000 per EDU. The master plan said to include it in the Big Coppitt system: it is only 5% of the service area.

Commissioner Neugent stated that Mr. Sante's argument holds water. In his opinion, he doesn't think the State will allow them to spend that money at \$50,000 per EDU. People in No Name and some other remote areas are concerned. He thinks they made a mistake assessing them only \$4700. They should have made them pay more initially. They may have to go back and charge a higher assessment fee. Ms. Wood asked them to consider math and numbers; this is only 10% of the project being at that higher cost. They are doing a financial analysis to see what is being covered by the assessment, etc. They want to know what people are covering for other people financially. To change this master plan, they will have to go back to FDCA to get permission to change the plans.

Mr. Charlie Causey added that we keep talking about EDU hook up cost. He pointed out that people don't take into consideration the real costs, which are more like \$22,000 when everything is included. Grants can help get a lower cost estimate, but that doesn't include the total cost. The question is in the later projects in the Lower Keys, what should be done when there is no grant money left and no infrastructure tax money. In the interim before the State money is there, what can be done about the Lower Keys, Islamorada, Marathon, etc.? Marathon's numbers are wonderful, but he questions as to whether they can do this for \$12,000, including hookups. If the grant money is not there and the projects can be funded through the State Revolving Fund for 4%, the monthly cost for the resident will be \$150 per month. People have to come to grips with what this is really going to cost and come up with a creative way to fund these projects. If the cost is part of the project, it is part of the EDU cost.

Mr. Pete Worthington spoke on behalf of Marathon. They set the assessment at \$6500 per

household. To get to this number, they included future grant money that amounts to \$11 million. Marathon is committed to funding 50% of the cost of the infrastructure and that amounts to \$12 million. If the grant money doesn't come through, then that will be taken care of by operation and maintenance surcharges. Marathon is also doing storm water and road overlays at the same time. That is not included in other projects in the County. If the resident prepays it, it amounts to about \$5700, but if not, it will be a monthly assessment of about \$42 per month for 20 years (\$510 per year). There will also be a sewer bill and operation and maintenance charges if additional grant monies are not obtained. There will be an impact on Marathon residents. Marathon got ahead of the game. They set up a municipal service taxing district in 2003 to raise money and have engineering and contracts in place. They are still dependent upon \$11-12 million in future grants to offset the operation and maintenance charge. Without grant money, it could be as much as \$120-150 total per month. He mentioned Chris Sante's question as to whether the County could have spend \$22,000 on aerobic systems instead of spending \$50,000 per EDU. They have similar areas in Marathon. They already have \$10 million in committed grants, but they still need more from Tallahassee.

#### **IV. Review and Discuss the Issue of Whether Package Plant Owners in the Florida Keys Might Pay Twice to be in Compliance with SL 99-395:**

Mr. Jon Iglehart and Mr. Gus Rios - Florida Department of Environmental Protection

Mr. Gus Rios referred to a handout that he provided. He was asked to summarize the FDEP procedures that will need to be implemented to help the package plant owners in the Keys meet the 2010 deadline. The intent of the regulation was not to have the owners to have to build plants that then would have to be abandoned shortly thereafter. The law was put into place in 1999. The plan was to allow 10 years for everyone to comply with these limits by July 1, 2010. The Wastewater Master Plan for Monroe County was finished in 2000 and that defines the cold spot areas. Unfortunately, the 2010 deadline may not be met by some package plant owners in some areas. Before Chapter 99-395, package plants had secondary treatment, which involves meeting certain BOD standards and removing the suspended solids. Disinfection is also required and is done mostly through chlorine, although ultraviolet is also being for disinfection at some facilities. In June 1999, the new law requires additional treatment levels of the effluent all wastewater systems in the Keys.

The large facilities are defined as those that exceed 100,000 gallons per day and they have to meet AWT level. As an annual average, they have to meet 5 mg/l of BOD; 5 mg/l suspended solids and 3mg/l of total nitrogen and 1 mg/l of total phosphorus. The smaller facilities, less than 100,000 per day, and the onsite systems have to meet an intermediate level that is much more stringent than secondary level. The limits are 10 mg/L for BOD, suspended solids and total nitrogen. Total phosphorus is the same as the higher level, 1mg/l. There are a total of 240 package plants and the vast majority of them are smaller than 100,000 gallons. The large municipal plants with design capacity equal to or exceeding a million gallons per day have to meet the deep injection well requirements and must be cased to a minimum of 2,000 feet below the surface. Smaller facilities are required to have Class V injection wells with a minimum of total depth of 90

feet and cased to a minimum of 60 feet.

The Monroe County June 2000 Wastewater Master Plan defines the areas that will receive central systems and local governments are currently building systems, but not all these areas will be in compliance by 2010. There are local ordinances that will require facilities to connect to central facilities, but there is also the 2010 deadline requirement. Plant owners have asked "What happens if the central sewers are not ready and they can't hook up before 2010?" FDEP can not change the law or extend the deadline. They can use consent orders, an instrument to bring people into compliance. Everyone will have that opportunity to enter into a consent order if they do not meet the deadline for the reasons described.

The Village of Islamorada has approached FDEP on behalf of the owners of package plants in order to develop an agreement with a date certain for the connection that can be used in the consent order. They have been discussing this with their legal department and there are some conditions that must be met. The agreement must have a timeline and be legally binding and there may be consequences if the agreement is not met. The other consideration is to not have an economic advantage for non-compliance. To offset this, they are considering having the package owners in Islamorada to pay connection fee in advance of July 2010. Mayor Pete Worthington, City of Marathon, pointed out that if the plant owners have to pay the hookup fee up front, they won't be able to finance the cost of the hookup over time, like other people have the opportunity to do. They might have to borrow money at the current interest rates. Mr. Rios noted that was a good point. One thing that has been discussed is the idea of putting the connection fees into an escrow so that they could be used by local governments for sewer upgrades. The options still need to be discussed and examined.

Mr. Iglehart explained that FDEP is talking about entering a consent order, an out-of-court enforcement settlement. Rather than having the plant owners upgrade the system and then have to pay for a hookup later, FDEP is considering committing the upgrade or hookup funds for the sewer program and put that into an escrow account where FDEP, Monroe County, etc. can determine how those funds are spent. For the consent order, FDEP will need a definite timeline for when that system will be connected. They will also need to know that the plant meets current, existing standards and is not abandoned in the months prior to being connected. There also may be pollution fines for those who exceed the standards. This would be to help offset that extra pollution once the law is passed and they are still in the thinking stages. By December, FDEP should have a firm blueprint that outlines this better. Mr. Gary Bauman pointed out that some restaurants will be put out of business. They operate very close to the edge in terms of finances. Mr. Iglehart responded that that is not the intent, but the law has been in effect for nine years. People need to work collectively to get there as quickly as possible. FDEP will work with all business owners as best as they can to make sure that no one is put out of business. Mr. Rios added that the real issue they are addressing with this approach is meant to keep people from paying twice. People want to comply, but don't want to pay twice. Commissioner Neugent pointed out with all due respect, there is plenty of blame to go around as to why things are not further along. Time was wasted on arguing and

money was wasted, too. Unfortunately, it will be a burden; but people need to pay better attention to their elected officials and what they are doing.

Ms. Sandra Walters stated that she has heard a lot of positive things in this meeting today. She represents property owners who have been in conversations with local governments for years and have been reassured that this will be addressed. To penalize the property owner when they are stepping forward to comply, even to charge them pollution fees or extra fees in any way, doesn't seem fair, especially when there has not been a policy in place to address this issue and when people were given assurances. She feels uncomfortable penalizing the individual property owner when it is not their fault that the system is not ready for them to utilize. When businesses have to shut down, the people who are paying the fees to fund the system are lost. There could be a giant ripple effect, including losing affordable housing. The finances related to this topic need to be very carefully done. Everyone wants this to happen, but no one wants to have to leave the community because of this change.

Mr. Popham explained that the problem is with the up front costs and of not being able to take advantage of the low-cost financing plans that allow for payment over the years. Mr. Rios thanked him for his input. Mr. Iglehart explained that this suggestion was brought up to FDEP by plant owners who had to pay for upgrading and asked if they could give the money to the county for that purpose. Until now, FDEP has not been working with long-term payment strategy in mind; but now that idea can be considered and this is a good issue that has been brought up today. FDEP doesn't necessarily have to have the money up front. Mr. Popham explained that he can't put a new building on his property because he would have to install an aerobic system and then disconnect it later when central is available. He emphasized that the choice of putting this on their tax bill should be given to the package plant owners and that everyone should have same opportunity.

Mr. Ken Fields, City Manager for the Village of Islamorada explained that he has been approached by package owners on the issue of potentially being double charged for their wastewater upgrades. First, they will have to upgrade their plants to meet the 2010 deadline and then will be required by the Village to abandon the upgraded plant to connect to the municipal central shortly after 2010.

Mr. Fields explained that the cost for upgrading a plant in existence is expensive. The engineering would cost \$25,000-\$30,000 and then it would cost hundreds of thousands to get the plant up to the standards. It will be cheaper in the long run to connect with the Village than to upgrade plants. Hopefully, there will be a long-term savings. The Village will be meeting with FDEP tomorrow to work through the details of developing a consent order to address this problem. Mr. Fields has heard people say that they will be put out of business, but he adds this is a quality life issue and this cost of living is a reality across the Keys. He looks forward to meeting with FDEP and working through this issue.

Mr. Chris Bull, City of Marathon Vice-Mayor, provided the City of Marathon's perspective. The city signed a Reasonable Assurance document (RAD) that says they will provide central sewers for everyone in Marathon. They also said that everyone must

hook-up, whether they have a package plant or not. Therefore, he feels that fDEP should not be penalizing people within the city limits because people want to do the right thing, but may not be able to do so. He added that the consent order is a great vehicle as a stop-gap measure for the package plant owners working toward compliance, but it is going too far to levee a fee on them at 2010 and half when they can't hook-up. It is different if they choose not to connect after the system is available. There should be no additional costs added to those owners in Marathon and most of the other entities because the cities will be providing wastewater service as soon as they can.

## **V. Status of Federal Funding to Support Wastewater and Storm Water**

**Infrastructure in the Florida Keys:** Ms. Shelley Trulock - U.S. Army Corps of Engineers/Jacksonville District

Ms. Trulock introduced herself as the project manager for the Florida Keys Water Quality Improvement Program and passed out a handout to the Steering Committee members that contained her presentation slides.

Public law 106554, passed in December 2001, authorized the Corp to spend up to \$100 million dollars to help out the locals with wastewater and storm water projects. The cost is shared, 65% with federal, 35 % with nonfederal (Keys municipalities). The 35% equates to \$53.8 million, so that the total program is approximately \$153 million. When we last met in January 2008, they had recently executed cooperative agreements with 3 municipalities—Key Largo, Key Colony Beach and Key West. In August, they will be executing two additional agreements—on amendment for Key Largo and one for Islamorada. These agreements are very close to being ready to sign. Key Largo's amendment has already been approved. Marathon and Layton did construction prior to the executing of the PCAs. They were able to change the wording in the WRDA to allow for the Corps to give credit for work done before the execution of the PCA. She will be getting guidance from headquarters regarding how to work with the new language. Once she gets guidance, expected very soon, she will send the Marathon and Layton agreements to the ASA office, where they will be reviewed and approved. The QCQA (quality control) Plan will outline in detail the responsibilities of the municipalities and of the federal government and provide a list of things that have to be included in the project in order for the invoices to be paid. This should be finalized next week. She is hoping by August 28, they will pass that along at the signing ceremony. From 2002 to 2008, Congress appropriated \$9.175 million and the Corps has received to date \$8.790 million. A portion of that has been spent on NEPA, but there is a large chunk that can go back to the locals. Once the PCAs are finished, then this money can be disseminated. Ms. Trulock showed the allocations per municipality. Once the QCQA plans are done and she starts reimbursing invoices, \$200k has already been allocated for Key Colony Beach, which is what they were told they would receive. Layton will receive \$800k, making them 100 % whole. Key West is about 25% allocated, which translates to \$2.3 million. Islamorada has been allocated \$1 million, which 3.34% of the total coming to them. Marathon has been allocated \$1.5 million which is about 5% and Key Largo has been

allocated \$1 million, which is about 3.34 % of the total. At the last PDT meeting, they made the decision regarding future allocations for the four entities that are not complete. Any future allocations will be split 25% each to the last four remaining entities and as each becomes whole, the percentage will change for the remaining entities. This makes it fair for each municipality. There will be a PCA signing ceremony on August 28, probably at the Islamorada Fire Station. At that time, Key Largo's amendment and Islamorada's agreement will be ready and hopefully Layton and Marathon will be ready, too. She will follow-up with the QCQA plan next week and have packages ready for signing. In the House mark up, they are in there for \$2.5 million right now. She asked for questions from the committee, but there were none. Dr. Causey asked her to thank the Colonel, who is very busy with South Florida issues. Ms. Trulock added that this issue has the attention of the Secretary of the Army for the Corps.

Dr. Causey asked if he could say one more thing. He stated that this was not a political announcement, but he want to announce that Congresswoman Ros-Lehtinen is currently testifying before Congress in support of the reauthorization of the National Marine Sanctuaries Act, which includes some huge changes in the system. There is also another act that affects Thunder Bay National Marine Sanctuary. He added that the Congresswoman has been a champion of the Sanctuary and tries hard during lean budget times to get money for the Sanctuary. Ms. Trulock mentioned that her office stays in contact with Congresswoman Ros-Lehtinen.

**VI. Report on Environmental Finance Assistance to Communities and Local Governments of the Florida Keys for Wastewater/Storm Water Infrastructure Upgrades:** Mr. Jeff Hughes/Mr. Andrew Westbrook - UNC Environmental Finance Center and Dr. Susan Hammaker - Florida Keys Wastewater Assistance Foundation, Inc.

Mr. Jeff Hughes explained that in spite of his center's name, they do not have pots of money. Instead, his organization works with communities on setting up capital plans, testing out different scenarios for getting large chunks of money and paying them back. In the Keys, they started out working with the County to look at the big picture cash flow issues. There are some good financial/cash flow models and expertise out there, so they shifted from the higher level to looking more at the customer and the financial impact on the customer, specifically, how and when are they going to pay. The center has recently partnered with a new organization that has also focused on the customer aspect and they will be speaking to you briefly about what they are doing. The center has been putting together quantifiable assessment of income in different areas of the Keys and put together a needs assessment by community showing income levels. This was matched up to assess the impacts of the wastewater improvements plus the lateral to hook up to the central system. They have found those costs to be about \$1500 to \$5000 to cover collapsing the septic system, plumbing, regulatory fees, etc. There is a work session this evening to examine options for individual customer assistance. A lot of their work in the past has been in moving subsidies into systems, but in the future, their work will be subsidizing

households rather than systems. He has been attending these meetings for a few years and feels that the approach has been to try to obtain money for the units to bring down the cost for everyone and that has been the approach used by most communities. However, that approach has been abandoned in more recent times and replaced by efforts to find the money for lower income and get money to those households. This topic will be discussed in more detail tonight.

Dr. Susan Hammaker, current Chair Person of the Florida Keys Wastewater Assistance Foundation, otherwise known as the “good water people”, addressed the Steering Committee. She explained that Sandy Walters is current Vice-chair. They felt that a nonbiased voice of unity was needed to engage all involved parties—property owners, businesses and policy makers. This is a nonprofit 501-C3 organization that has the goal of educating across boundaries that the “we are the Keys and the Keys are the key to Florida Bay water quality restoration.” They are generating various forms of resources from the private sector especially for lateral connections, with special focus helping the low income population. She gave a low tech 30 second presentation about the foundation and how it is part of the sewer solution to restore land and water. She provided the organization’s contact information and explained that they will have a website soon.

Dr. Hammaker explained that Mr. Chris Sante, Vice-Chair, is in charge of the first project that deals with financial assistance. He is an affordable housing builder in the Islamorada area. Mr. Sante explained that the reason that he is helping with this foundation is that he does have affordable housing and has supported it through the Village. He stated that the hookup fee and assessments are a burden for people who are already having a hard time staying in the Keys. This foundation came up with the good water people idea and plan to assist people by acting as a clearing house. They have looked in CBG grants and have started their own program and have received 100k through rural water. To meet the criteria of the loan, they must raise 25% of the total. So far, they have received a pledge of \$1k from Key Largo Wastewater Treatment and 9k to assist with these hookups. Right now, they have 30 applicants for the \$100k loan at 4% and they are checking each applicant to make sure that the financial need is really there. To raise the matching funds, they will be approaching people to help financially. All money stays here. The FKAA is also helping with this project and will attach a small mortgage and credit line to property to collect the monthly fee for the foundation to pay back the loan. They expect to work not just the Upper Keys and want to help throughout the Keys and to act as a clearing house for grants, loans, and information. They have been successful when asking for donations in the community. Plumbers have offered assistance for hookups and some materials may be donated, too. They are trying to work together with the cities and the county to get money and assistance for people who need it. Municipalities can refer people to them for assistance so this might take the burden off the municipalities, too. They are a volunteer organization, so they are not making at money for doing this work. They can work with people, especially those on fixed incomes seniors, low income, single parents, etc. Owning a house is the criteria to qualify. They may consider landlords in the future, but not at this point. They can assist people will filling out grants, etc. The website is [www.goodwaterpeople.org](http://www.goodwaterpeople.org).

This website will be professionalized by two businesses. The current website was produced by high school students.

Commissioner Neugent stated that some people are property rich, but not cash rich and that money can be recaptured at the time of the sale of the home. Right now, the aqueduct will be putting a fee on water bill since we need revenue to pay back the loan. They are using that loan to leverage for future grants.

Ms. Weaver commended them for their tremendous progress in such a short time. Mr. Sante explained that Chris Bull may be working with us soon. Dr. Causey wants to echo that congratulations and he sees Suzy everywhere educating people about this topic. She is quite an ambassador. Dr. Hammaker added that the foundation now has a goodwater miniature tugboat, which is being commissioned by commander of the Coast Guard Auxiliary, and will be positioned near businesses to raise money from personal donations for this important cause.

**VII. Update on the Total Maximum Daily Load (TMDL) Reasonable Assurance Process for the Florida Keys:** Scott McClelland - CDM, Inc. and/or  
Mr. Eric Livingston - Florida Department of Environmental Protection

As announced at the beginning of the meeting, this presentation will not be given today. A summary handout was provided to the committee members.

**VIII. Report on Water Quality Awareness Month (February 2008):**

Ms. Karrie Carnes - Communications Coordinator, Florida Keys National Marine Sanctuary

Dr. Causey stated that Nancy Diersing, Florida Keys NMS Educator, has been involved with the Water Quality Awareness Month in past years. He then introduced the new communications coordinator for the Florida Keys National Marine Sanctuary, Karrie Cairns. Karrie has a wide amount of experience in public affairs and comes to the Sanctuary from D.C. She is a diver and has already fallen in love with the Keys. She is based in Dave Score's office in Key West. Ms. Diersing gave a summary of what was done to recognize Water Quality Awareness Month 2008. She explained that the WQAM is an awareness campaign that involves press releases that discuss the importance of water quality in the Keys. It is based on the water quality communications plan, which was developed with hard work of people at the table and others pulled into the effort. She summarized the various actions taken by members of the communications team to highlight the month. These included live appearances on radio programs, a slide presentation about water quality that aired on the Monroe County public access television station and an updated version of the FAQ about Water Quality in the Florida Keys. Proclamations were issued in recognition of the month were issued by many municipalities in the Keys: Key Colony Beach, Monroe County Board of County

Commissioners, Village of Islamorada, Marathon, Key West, and City of Layton.

Ms. Cairns explained that there will be another water quality awareness month in February 2009. She extended an invitation to anyone who is interested in working with her on the next WQAM. She and Nancy will be happy to discuss any ideas. Maybe the team can build on previous efforts and then reach out to new media avenues. She ended with stating that it is great to be here and put names and faces together. Dr. Causey added that Karrie is the point of contact for any issues related to the Florida Keys National Marine Sanctuary.

Dr. Causey asked if he could make an announcement. He explained that the FKNMS is once again moving forward in the area of regulatory actions. The number one priority is to extend the no discharge rule into federal waters. As you recall, the Sanctuary worked with Governor Bush to declare State waters a no-discharge zone, which covers 60% of Sanctuary waters. Dave Score is leading that effort to implement regulatory changes. If the WQSC could support this effort by vote or resolution, that would be very helpful. Commissioner Neugent made a motion to support the regulatory changes. The motion reads: "The WQSC supports the Sanctuary's efforts, and consistent with those views of the Sanctuary Advisory Council, to establish a no discharge zone in the federal waters of the Florida Keys National Marine Sanctuary." The motion was seconded by Bruce Popham. Mr. Iglehart called for discussion on the motion. There was no discussion. The motion passed unanimously.

Commissioner Neugent asked for a few minutes to talk about something that came up at the most recent Florida Association of Counties Meeting. At the meeting, an engineer from Jacksonville pointed out in conjunction with the TMDL presentation that they are looking at prevention as opposed to remedying the problem of nutrients. They are looking at about \$1 billion cure, but pointed out the importance of prevention with respect to nutrients and have passed ordinances forbidding the sale of certain products. Commissioner Neugent looked to see what was available in Monroe County. Right now, Monroe County is still selling malathion, which states on its label that it causes harm to marine life. He will probably pull these ordinances for the county, but the municipalities should know that they too will be faced with these issues. Prevention is a lot easier than getting it out of the water after the fact. The next train coming down the track is storm water and he wanted to bring this in front the committee where most of the municipalities are present.

Commissioner Neugent also added that he is trying to get an emergency resolution on the budget agenda for Monday that reaffirms the county's position against offshore drilling around Florida. The County has already taken a position. Maybe the municipalities could consider proposing and/or reaffirming their resolutions against offshore drilling.

## **IX. Lunch**

Mr. Iglehart called the meeting to order after lunch. He recognized that Scott Zimmerman was now in attendance at the meeting and Josh Peele was now sitting in for Sandra

Walters.

**X. Annual Reports on the Comprehensive Monitoring Program and Data Management Program for the Florida Keys National Marine Sanctuary:**  
Project Principal Investigators

**A. Water Quality: Dr. Joe Boyer, Florida International University**  
**1. Sanctuary-wide**

Dr. Boyer provided an update on 2007, a year that showed some anomalies in terms of water quality. The objectives of the project are to assess the status, trends, regional integration and external influences of Keys and surrounding areas. He showed a map of the sampling stations and pointed out the EPA stations and those funded by the South Florida Water Management District. He noted that in the most recent contract with SFWMD, the shelf stations were eliminated. This started in October 2007. There won't be any more information from the shelf coming through this project. Dr. Boyer appreciates that the Sanctuary Advisory Council and EPA for writing letters of support, but the funding is not available.

The sampling protocol involves 154 fixed stations from Key Largo to the Dry Tortugas. They sample every quarter and tie those data in with the monthly data from the District to get a bigger picture. They profile the water column by sampling for salinity, temperature, density, light extinction, turbidity, chlorophyll fluorescence, and dissolved oxygen. A bottom grab sample is also obtained for the suite of nutrients. Every time he gives a talk he mentions that inshore sites in the Keys show elevated inorganic nitrogen and that large elevation is not seen in the Dry Tortugas. This is noted in the RAD in the TMDL process.

During 2007, the Tortugas and the shelf area exhibited salinities that were lower than normal seawater. This was unusual. He pointed out that they have no way of knowing what is influencing the Sanctuary from the north since they stopped sampling the shelf sites.

Dr. Boyer compared the data from 2007 to the long-term medians (since 1995) for all of the reef tract sites. There was a high level of ammonium nitrate relative to long term averages. They also saw much lower organic carbon. There is a long-term trend of declining organic carbon in the whole region. Phosphorus, chlorophyll, salinity values are fairly consistent. Oxygen is lower over the reef tract in the first two quarters; they have seen that in the past, too.

The four quarters in 2007 show higher than normal levels of ammonium, until the last quarter where it dropped down to a more normal situation. Florida Bay is really elevated, especially the eastern region. The last quarter seems to have dropped back down to a more normal situation. This is a pattern that they saw in 2006. Dr. Billy Causey commented that the ammonium may correspond to the low salinity water on the shelf. Dr. Boyer pointed out that they have seen some different water masses in the past few

years, since the hurricane season of 2005. From the last quarter results, it appears that conditions may be returning to normal. In spite of the high levels of nitrogen, they have not seen elevated chlorophylls at the reef, but they have seen cyanobacterial blooms in Florida Bay. Sometimes, the bloom came through the Keys. He thinks they are seeing different water masses. Unfortunately, there is not a good regional circulation model that would help in determining the origin of the different water masses. The high ammonium levels may have been the result of upwelling on the ocean side. In the past, water from upwelling events has been high in ammonia; although he thinks what they are sampling is mostly coming from the shelf. In general, the cyanobacterial blooms started in the Bay and then drifted out according to the water currents and winds.

Dr. Causey asked about what effect he expected to see from the large amount of sediments stirred up in Hurricane Wilma. He would expect this to have an effect, but not such a lasting one. When hurricane Georges came through, they saw a spike in ammonia in Florida Bay, but it was gone the next month. He doesn't think that the reef tract would be affected as much as shallow waters where there are organic muds. When ammonia is seen, that is a "fresh" product from the breakdown of organic materials and is usually a benthic product.

EPA has strategic targets designed to meet the goal of overall water quality. Numeric targets were set for chlorophyll and light attenuation for the reef tract sites and for dissolved inorganic nitrogen and total phosphorus for all the sites. This year there was a 36% exceedance for chlorophyll; 18 % exceedance for light extinction. That is about the same as it was when the target was set. However, the exceedances are much higher for ammonia and phosphate, in the 55-58% range. They are definitely not meeting those targets as set by the 2005 baseline.

## **2. Little Venice:** Dr. Joe Boyer – Florida International University

Dr. Boyer reported on the results from the Little Venice Project. Phase I sampling was done prior to the building of the central sewage plant; Phase II is the post-treatment sampling period. The 91<sup>st</sup> street canal has not been remediated yet, so it is used as a reference. They sampled the mouths and heads of the canals for fecal coliforms. There has been some improvement in the heads of the canals as compared with the mouths, which is a good sign because they were most impacted. There has been some improvement in the control canals, but not nearly as much as seen in the remediated area.

For enterococci, they have seen two control canals get worse, but most of the canals have gotten better. The canals are very individual and it is hard to find equivalents for comparison purposes. They didn't detect hard exceedances for nitrogen and phosphorous, but they do see them for D.O. However, D.O. has shown improvement, from 57% exceedances in Phase I as compared with 53% for this year in Phase II. The bottom of the canals has really improved, from 67% to exceedances in Phase I and 58% in Phase II. Total nitrogen went from 55% in Phase I to 30%. They have seen improvements in oxygen and total nitrogen. Enough time has past so that they may be

starting to see the effects of improved sewage treatment. A question was asked about compliance and enforcement actions. There is 96% compliance at this point; only two people have not been connected. Dr. Boyer doesn't have the latest information on that, but thinks that the live-aboard vessels may be having an effect.

Dr. Causey inquired as to the cost of the shelf monitoring. Dr. Boyer answered that this sampling costs about \$150k. Ms. Cecelia Weaver pointed out that NOAA covers that area, but Dr. Causey added that NOAA is no longer doing that sampling. Dr. Causey pointed out that having data from this area is extremely important to monitor the effects of changes associated with Everglades restoration in the timing, distribution, quantity and quality of water on the sanctuary. With that gap in sampling sites, there is a big question mark. Enough money is being put into this system so that is adaptable enough to make changes if things go the wrong way. He would like to see the funds restored some way. Dr. Boyer pointed out that they tried with letters of support. He was not working with the Board of the SFWMD, but with the Environmental Resource Assessment department (ERA), which cut the funding after determining that this project was non-critical and non-mission driven monitoring. This was not in the CERP monitoring area and those areas that were not critical to CERP were eliminated.

Dr. Causey pointed out that when these same data were used to show that big sugar didn't cause the "blackwater event" by polluting the Shark River Slough; these data were considered mission critical at that time. He realizes that sometimes one group is not always communicating with another. These data are mission critical and he is not criticizing anyone here. Ms. Weaver said that they can bring it to the attention of Mike Collins again.

Mayor Worthington asked how anyone can know whether or not the inputs seen in Keys waters are from the Mississippi, other areas or nearshore sources. The Keys are being asked to meet certain criteria as stated in the RAD, but now there are elevated numbers in Keys WBIDs and without the shelf data, there will be no way of determining if it came from a far-field source. The Keys could get blamed for something coming from a Louisiana hurricane, for example. Dr. Boyer pointed out that the RAD did acknowledge that there are many far-field sources in Keys waters.

Mr. Scott Zimmerman asked a question about the Florida Bay algal bloom based on a presentation that Dr. Boyer gave for the Tropical Audubon Society. At this presentation, Dr. Boyer pointed out that the current Florida Bay blooms are being seeded by death and decomposition of local marine organisms, aided by higher temperatures and salinities. With the potential for hurricanes to increase, is there any hope for technology to contain this cycle?

Dr. Boyer has had some talks with the National Park. The idea of putting sponges out to clean up the bloom has been discussed. They also need to look at the fine scale temporal patterns. The bloom organisms live for only a few weeks, but the blooms last for long periods of time because they are continually turning over. They have discussed doing some real time instantaneous nutrient measurements during short periods of time.

Dr. Boyer thinks that remote sensing could be very helpful. It takes time and money to set up, but is a great idea because it can give an idea of circulation patterns. CDR Score asked if any comparisons of Dr. Boyer's data were made with the SEAKEYS data to see if there is a correlation of temperature with the blooms. This comparison has not been done at this time.

Dr. Boyer thinks that remote sensing could be very helpful. It takes time and money to set up, but is a great idea because it can give an idea of circulation patterns. CDR Score asked if any comparisons of Boyer's data were made with the SEAKEYS data. This comparison has not been done at this time. Mayor Worthington asked whether any correlations were noted between the bloom and high water temperatures were noted. Divers have told him that when the currents are running out of the bay, they typically feel temperatures that are very warm on the bottom. There appears to be a blanket of warm water on the bottom in excess of 93 to 94 degrees at times. Dr. Boyer responded saying that this is possible and is a good argument for putting more real time sensors out in the field that take data at short intervals. Dr. Fourqurean mentioned that at the 30 seagrass sites that are the same as water quality sites, temperature is being recorded every 10 minutes.

**B. Coral Reef:** Mr. Mike Callahan/Mr. Rob Ruzicka - Fish and Wildlife Research Institute

Mr. Rob Ruzicka introduced himself. He has been with the program for 2-3 months and has been catching up on the wealth of data that have been collected. He will capture both long-term elements and then recent events, too. CREMP monitoring stations are spread throughout the Sanctuary (Upper, Middle and Lower Keys regions) and in the DTNP.

For each site, they typically have two to four stations that run parallel to one another along the reef. Within each one of these stations, they run three separate transects. They shoot video along these three transect lines and within station they conduct species inventory. They also run belt transects for target species benthic surveys.

The species inventory captures information about species richness, coral disease and *Diadema* abundance. The digital video transects are used determine estimates for coral cover and benthic community composition. Originally, this project sampled 160 stations at 40 sites across the Keys. A power analysis revealed that they could reduce the sampling stations without invalidating the statistical analysis of the data.

In 2007, they reduced number of stations and in some cases, the number of sites. There are four habitats: hardbottom (inshore), patch reefs, offshore shallow and offshore deep, which are typically paired with one another.

Mr. Ruzicka discussed the results from 2007 and 2008 based on data from 103 stations. The station species inventory shows the number of species gained or lost within a station. Typically, from 1996 to 2001, there was a mean loss of one species per station sanctuary-

wide. From 1996 to 2007, there is an average of three species lost per station sanctuary-wide. About 76% of the 103 stations have decreased in species richness. These losses resulted from the significant decreases in 13 of 43 species they have documented in the sanctuary.

If these data are examined by region, between 2006 and 2007, there are slight increases in species richness documented in each region. Some of the losses that have been seen in species richness might be related to regional differences. The largest decrease occurred in the Sambos, both in the east and west sites. These two sites have a mean loss of 10.5 and 8 species, respectively.

If these data are examined by habitat, the same pattern is apparent. There is a slight increase from 2006 to 2007 in species richness, with the greatest richness at the patch reefs and in the Dry Tortugas stations. Many of the smaller cryptic corals are driving species richness. The biggest driver of these trends is *Favia fragrum*, a small, golf ball-sized coral, which declined 60% across stations. The star coral and the acroporid species are also drivers of species richness. This project also documented declines in *Acropora cervicornis* and *Acropora palmata*.

The project also measured stony coral cover Sanctuary-wide from 1996 to 2007. For the first three years of the project there was a major reduction of coral cover in the Sanctuary, due to thermal stress and El Nino events. However, between 1999 and 2003, there were no significant declines. A significant decline occurred between 2003 and 2004 and then again after the recent hurricanes of 2005. A slight increase was noted between 2006 and 2007, but it is not known yet whether or not this is a significant increase.

A question was asked about the cause of the 1998-99 declines. These were the result of thermal stress that caused bleaching and mortality throughout the Caribbean, not just in the Keys. Dr. Causey added that 1997 was a severe bleaching event and conditions did not alleviate, even during the winter of 1998. The water never cooled and the corals bleached again in the summer of 1998, followed by the stress of Hurricane Georges in the fall. Mr. Ruzicka added that sometimes the effects of the hurricane are not seen in these data until the following year.

By region, these data showed declines in coral cover Sanctuary-wide from 1999-2006. Between 2005 and 2006, there are significant declines. However, there are small increases in cover in the upper Keys and Dry Tortugas between 2006 and 2007. A question was asked about the strong decline noted in the Tortugas from 2002 to 2003 and 2005-2006 and the relation to hurricanes. Mr. Ruzicka commented during 2002-2004, there were some significant disease events that affected the Tortugas area more than other regions.

By habitat type, from 1999 through 2006, at all sites, there were declines at all habitat types, but the loss of coral cover is not as significant at the patch reefs as in other habitat types. Fifty-nine percent of patch reef stations demonstrated no change in coral cover between 1996 and 2006.

From 1996 through 2007, stony coral cover loss throughout the Sanctuary was driven by the loss of *Montastrea annularis*. Other top 4 stony species have not declined as strongly, but have remained relatively consistent in terms of coral cover during the same time period. Most of the Tortugas stations have shown a similar pattern, except for one station that shows more dramatic declines. This station consists mostly of *A. cervicornis*, which has experienced significant losses and accounts for the decline observed.

When examining the species declines in coral cover over time by region, the decline of *M. annularis* is greatest in the Lower Keys and there is no significant change in the Upper Keys since 1999. *M. annularis* has almost always remained low in the Middle Keys. On patch reef sites, *M. annularis* has remained near 6% since 2000. However, offshore deep and shallow sites indicate continual gradual decline.

When examining acroporid cover by region from 1996 through 2007, *A. cervicornis* is historically low throughout the sanctuary. In 1996 when the study began, *A. palmata* was much higher, but fell off after 1999 as a result of disease. It has now remained at relatively stable low levels since then. In Tortugas, between 2002 and 2004, multiple disease and thermal stress events, lost lots of *A. cervicornis*.

The CREMP team also examined the presence or absence of disease at the stations. The presence of disease was greatest between 1999 and 2003. After 2003, disease levels are beginning to decline at spatial levels. Tortugas acts differently from sanctuary. It is very difficult to determine the lethality of the disease based on the way that these data are collected. Therefore, it is not always possible to predict the cause and effects and ramifications of disease.

The long-spined urchin, *Diadema antillarum*, was struck by a disease in 1983 that caused widespread mortality throughout the Caribbean. CREMP surveys show that this species has not returned to pre-1983 levels, although there was an interesting increase in abundance of urchins in the Tortugas after 2005. Historic reports indicate that prior to the disease event *Diadema* were not as abundant in the Keys were as in other areas of the Caribbean. The current *Diadema* densities observed were similar to those reported by Chiappone, only slightly less. Mr. Ruzicka hopes that gives everyone a pretty good idea of what is going on in the Keys and the Tortugas in terms of coral cover and mortality.

In 2001, CREMP began conducting targeted benthic fauna surveys that included assessing clionid sponges. Clionids were selected because their proliferation has been linked to poor water quality. *M. annularis* and *A. palmata* are two corals that are included in the targeted benthic fauna surveys, along with a large sponge, *Xestospongia muta*, a primary biomass contributor that is also susceptible to bleaching and disease similar to corals. For *M. annularis*, the size, percent live cover and disease is recorded for 20 colonies at each station.

There has been a significant decline in clionid area after 2001 due “blackwater” algal bloom in Florida Bay and then it increases to 2001 levels. The primary driver for

clionids is hard-bottom reefs and clionids are very susceptible to blackwater events.

CREMP has been fate-tracking 150 individuals of *M. annularis* located across the Sanctuary. They were able to relocate 80% of them from 2007 to 2008. Only 18 of them were diseased or bleached in 2007. Of those, the majority showed no signs of disease or regained their zooxanthellae when relocated in 2008. For *X. muta* fate-tracking from 2007 to 2008, they had good fate tracking and showed recruitment taking place at some station.

Fate tracking for *A. palmata* took place from 2005 through 2007 under Dr. Porter. Dr. Porter reported that most of the individuals marked in 2005 were not there the following year due to Hurricane Wilma, so those individuals were lost from the study. He did find that the six original colonies at Grecian and Rock Key have persisted throughout study and have separated out into additional fragments. Dr. Causey added that he videoed new recruits on the backside of Looe Key in June 2005. They crumbled with the 2006 hurricanes, but they're coming back now. Some were even thrown back to the seagrass and have reestablished.

Mr. Gus Rios commented about a study that examines the relation of white pox disease outbreaks in acroporids to wastewater. Dr. Porter added that they have some results pending in that area, but they are being peer-reviewed at this time and will be released soon. He did mention, though, that in Key West where advanced wastewater has already been in place, the colonies of acroporids showed no signs of white pox.

The CREMP has installed long-term 24 temperature data-loggers, two for each habitat type. There are historical data for some sites and they will be looking at that, too.

The Sanctuary and the WQPP have requested that they install new patch reef sites this summer. They have identified 49 sites across the Sanctuary. They have examined each of the patch reef sites to see if they fit the criteria of CREMP. In September/October, they will install them. With these new patch reefs, they will work collaboratively with The Nature Conservancy to do bleaching work within the stations. Normally, TNC samples during the height of the bleaching, but not a few months later when the effects of the bleaching are felt. They will pull the stations together and try this as a pilot study that involves quarterly sampling to assess the effects of bleaching.

Dr. Porter has looked at the correlation between water quality and CREMP data in the past. From this, he was able to make some inferences between coral cover and water quality. In some cases, this has been very effective in identifying trends, but some of the stations are far apart and that makes it difficult. CREMP is now conducting a spatial integration of water quality data to help bolster this analysis under the direction of University of Florida statisticians.

They had two manuscripts published in 2008; one has been passed out by Dr. Kruczynski this morning. The second one is from FIT that has used CREMP functional and water quality data. He thanked everyone for paying attention.

Mr. Bob Doren asked what it would take to have more sites in the Dry Tortugas? Mr. Ruzicka answered that they now have about 10 sites, some of which are National Park sites that are not being reported here at this time.

**C. Seagrass:** Dr. Jim Fourqurean - Florida International University

Dr. Jim Fourqurean began by pointing out that the FKNMS is first and foremost a seagrass sanctuary. There are seagrasses on 90% of the bottom. The greater south Florida area has about 18,000 square kilometers of seagrass and is the largest documented seagrass bed in the world.

The primary goal of the monitoring program is to document the status of the seagrass and how this community may change. The parameters measured in the field are based on models of how the seagrass ecosystem behaves in respect to the driving variable that they were set up to assess--the exact potential affects of anthropogenic stressors.

This project is gathering useful information for resource managers *before* there has been any loss of seagrass beds. There has been no loss of seagrass cover since 1995 (except in the canals and nearshore), but the seagrass beds have changed tremendously across the system.

As part of the project, they collect information about species cover, abundance, and composition by swimming along and looking at the bottom cover. The project also examines nutrient availability and uses stable isotopic analyses. Dr. Boyer collects water quality parameters at each of the sites and that allows them to tie back to the dynamics of what is being observed in the seagrass ecosystem. They are also collecting temperature data at each site mentioned earlier today.

Dr. Fourqurean showed a model (dominance-eutrophication gradient model) that shows how species dominance changes with increasing or decreasing nutrient availability in the aquatic environment. The key concept is that slower growing species are more abundant in low nutrient environments, while fast-growing species are more abundant in high nutrient environments. In soft bottom benthos, slow-growing seagrasses like turtle grass are most dominant when nutrients are low. Conversely, when nutrients are high, fast-growing species of seagrass are most abundant. As nutrients continue to increase, fast-growing seagrasses are replaced by macroalgae, and then by microalgae.

The first thing that happens in south Florida with an increase in nutrients is an increase in turtle grass densities. Thus, an increase in *Thalassia* abundance means an increase in nutrients. With even more nutrients, a shift takes place—turtle grass disappears and *Halodule* (shoal grass) and *Syringodium* (manatee grass) dominate. This project collects data from the field and then looks for increases in *Thalassia* abundance and/or shifts in the relative abundance of faster growing *Halodule* or *Syringodium*, which indicates an increase in nutrient availability to the plants.

The second model shows the nitrogen to phosphorus ratio for *Thalassia*, which can be

measured from the tissues of the leaves. The model shows two environments—one high in phosphorus, but low in nitrogen and the other high in nitrogen, but low in phosphorus. When nitrogen and phosphorus are both present close to a certain ratio, it can mean changes in the seagrass community. A ratio of 30:1 in the N:P ratio is considered to be the point at which turtle grass is likely to be replaced by faster growing seagrass species. Any changes in the tissue concentrations that are closer to the 30:1 NP ratio indicate increasing nutrient availability and eutrophication. Florida Bay is phosphorus limited and the ratio is about 60 and the reef is nitrogen limited and the ratio is about 20.

This project also measures stable isotopes in plant tissues. Carbon 13 and Carbon 12 are both stable and not radioactive, but one is heavier than the other. They are reacted upon differently by photosynthetic enzymes. Thus, when plants are exposed to increased nutrient load or increased shading (low light and turbidity), plants become isotopically lighter in stable carbon. These trends in stable carbon isotopes can be examined to determine whether or not nutrients are increasing in the water. The not-so-explicit model of ecosystem behavior, which involves nitrogen isotopes, is more difficult to use as a sewage indicator. Nutrient pollution causes some kind of change in the isotopes of nitrogen, but the changes may differ depending upon the source of the nitrogen.

The seagrass monitoring project has different levels of monitoring. They sample 30 sites four times per year and then sample about 300 sites once a year and then revisit them once every seven years.

Dr. Fourqurean showed a map containing those sites that have exhibited shifts in species composition that are indicative of higher nutrient concentrations. At each site, they measure species composition, mark down relative abundance of different species. Some sites show increases in *Thalassia* and fast growing species, while others do not. The contribution that *Thalassia* makes to the total biomass in relation to other plants can be examined over time, indicating whether or not *Thalassia* was increasing or decreasing in abundance relative to the other benthic species at that site. A change in *Thalassia* relative abundance took place at 13 out of 30 monitoring sites.

The sites that are changing are those with higher nutrient abundance, so that with higher nutrient water column levels, there is a greater rate of change through time. Florida Bay is nitrogen limited, while the ocean side is phosphorus limited. Somewhere in the middle of Hawk Channel, there is a shift from P limited to N limited. There are a number of sites that started as nitrogen limited, but have gone up toward 30 and a number of sites that are phosphorus limited that have approached 30. This suggests that there is an increase in the availability of nutrients.

This year, unlike previous years, some sites have shown a decrease in nutrients, but these are primarily sites that were denuded by hurricanes and as plants become reestablished, nutrient availability is lower.

The nitrogen isotope data do not show the heavy isotope that suggests sewage tank effluent is affecting seagrass composition along the Florida Keys. These data do not show the spatial fingerprint of heavy nitrogen isotope that is expected from sewage sources,

which is interesting. But, remember, the area close to shore is a phosphorus-limited, not nitrogen-limited, environment. In the carbon isotope data, there are a number of sites that show decreases in carbon isotopes, indicating a decline in light levels. These data show changes toward increasing nutrient availability, but no seagrass beds have been lost because of these factors yet.

When examining the changes in heavy nitrogen over time, a number of sites showed increases while other sites showed decreases.

Dr. Fourqurean summarized these data in a site-specific indicator chart that shows whether changes have taken place in the following indexes from 1995 to 2007: N:P ratio, Species Composition Index, Carbon and Nitrogen isotopes. Dr. Fourqurean reviewed the findings for each of the geographic regions for the Florida Keys (Upper Keys ocean side, Middle Keys ocean side, Lower Keys oceanside, Bayside Middle Keys, Bayside Lower Keys). There are many changes that are consistent with increased nutrient availability to seagrass beds, but there have been no losses of seagrass beds because of these factors yet.

Dr. Fourqurean was asked to distill the data in time and space into two numbers that track the status of seagrasses Sanctuary-wide based on their conceptual models. One is called the SCI, Species Composition Index, which is a measure of the relative abundance of *Thalassia* averaged across their 30 sampling sites. This means that the higher the SCI number is, the higher the relative abundance of *Thalassia* and therefore the lower the nutrient availability. The Elemental Indicator (EI) shows the deviation from the Redfield ratio of 30.

The baseline SCI, calculated from data collected between 1995-2005, was  $0.48 \pm 0.04$ . The average cover of *Thalassia* was 48%, with a .094 standard deviation. The EI or average deviation from the Redfield ratio was  $8.28 \pm 1.47$ . Any decrease in SCI indicates declining water quality. In 2006, they reported a slightly higher than average SCI, but in 2007, the SCI was lower, but values for both years were within the 10 years confidence interval. However, Dr. Fourqurean feels for the first time that if this trend continues for another 10 years with no change, the values will begin to drop below confidence band. The EIs for 2006 and 2007 were within the 10 year average, but there was a decline (not statistically significant) between 2006 and 2007, suggesting a shift toward being light limited, instead of nutrient limited.

Dr. Fourqurean explained the random sampling method they use, which involves sampling at a random site within each hexagon once per year. From these data, they produce graphs showing the relative abundance of the four seagrass species across the Florida Keys. At this time, he was not able to report the full analysis from the pair-wise comparison made between the same sites sampled seven years apart. This should be available next year. Dr. Causey asked if they could pick up any smothering of seagrass beds from Hurricane Wilma. Dr. Fourqurean thinks that they should be able to, but storm damage is dependent upon wind direction and other factors.

All of the indicators from this program are pointing toward broad-scale changes that indicate that seagrass beds have more nutrients now than in 1995. But, is the cause of

these changes related to anthropogenic sources at the regional and/or local level? They are also observing changes in the benthos that are not being picked up in the water column. The benthos appears to be more sensitive to nutrient loading than the water column.

In summary, the region has experience rapid population growth, which may be having deleterious effects on seagrass communities. Changes are occurring in the seagrass beds that are consistent with increased nutrient availability, but these changes are not observed in the water column. The changes are relatively subtle, and they have not observed the loss of seagrass beds in this regional and decadal scale program, so there is still time to act before beds are lost. Many different factors can influence the indicators that are independent of the main management concern, which is anthropogenic nutrient enrichment. There is a congruence of patterns among independent indicators, which increases confidence in the observations.

Dr. Fourqurean also summarized the many accomplishments of this program. Data are available to anyone upon request and are posted with the reports on [www.fiu.edu/~seagrass](http://www.fiu.edu/~seagrass) and on the FWRI site.

Dr. Kruczynski commented that one of the two proposals that EPA is considering as a continuation of a previously funded mesocosm project that examined whether there were any differences in how plants absorb nitrogen 15 and 14. This was a pilot project funded for \$40k by this program and is being considered for funding as a full-scale project. The final report was sent to Chris Anderson, FWRI, for posting on the WQPP data website as a special study report.

Dr. Kruczynski also mentioned that that Dr. Boyer has been reporting high inorganic nitrogen values on the bayside of Big Pine Key for years. Dr. Kruczynski inquired as to whether there was any signal in the seagrass beds responding to this nitrogen? Dr. Fourqurean responded that in shallow water, there is more nitrogen in the water column in a phosphorus limited environment because it is not taken up by the microalgae and because of benthic-water column fluxes. He is not surprised to see these high nitrogen values. Nitrogen is not being used because there is no phosphorus.

**D. Data Management:** Mr. Chris Anderson – Florida Fish and Wildlife Research Institute

Mr. Anderson reported the highlights and pointed out where more information can be obtained. One of his main tasks is to collect these data from the projects and send it to Storet, an EPA national database that contains mostly water quality data and some biological data. This is a requirement under federal law. They are also sending the data to FDEP where it is being used to calculate TMDLs. FWRI works with FDEP to edit/reformat the data so that they may be used to calculate TMDLs. FWRI has adopted FDEP's Storet input model (SIM), which has built-in checks for data accuracy. EPA will not be using Storet after September 2009. Instead, they will be using WQX, which allows for more web editing and easier uploading. FWRI will adopt WQX as FDEP

begins to use it instead of Storet. FDEP is the major user of information in the State and will take the lead on developing the tools for the WQX . These data are also available to the National Database warehouse, so that anyone can search for them. FWRI has developed a website ([http://ocean.floridamarine.org/fknms\\_wqpp](http://ocean.floridamarine.org/fknms_wqpp)) and CD rom containing the WQPP data in raw (Excel) format. The website contains links to GIS shape files. It is not possible to store all raw data from every project, but people can be directed to the individual project's website for that information. They are also beginning to use Google Earth to help visualize the data, but there are some challenges because many data points are associated with each site.

The Data Archive stores the raw and synthesized data from the WQPP monitoring programs in a waterproof, fire proof safe so that they are backed up in case of loss due to hurricanes, etc.

FWRI is also working on other projects in the Keys that are somewhat related to water quality. The Institute was identified by the legislature to provide GIS support for DEP's Bureau of Emergency Management in 1991, which includes developing Digital Area Contingency Plans (DACP). The idea is to keep oil spills away from natural resources. This has been identified as a major undertaking. They have been working with the US Coast Guard, the sanctuary, and the Bureau of Emergency response in the Sector Key West. Mr. Anderson also mentioned that FWRI has developed boating and angling guides for the Middle, Lower and Upper Keys, based on GIS data and other important information. This is an educational tool for the boater and could be used in an educational setting and/or as an information source in the event of a disaster that might affect the natural resources.

Dr. Causey asked if FWRI has been working with the FDEP staff from the Florida Ocean Council on database management. One of the first Ocean Council projects funded was a data management system and he and Dr. Ogden have pointed them to the FWRI data management. Mr. Anderson does not recall speaking to anyone about that topic, but they may be going through data management in Tallahassee.

## **XI. Public Comments**

A call for public comments was made by Chair person Jon Iglehart, but no comments were made by the public.

## **XII. Propose Date for Next Steering Committee Conference Call/Meeting: Steering Committee and Management Committee**

After a short discussion, the last week in January was proposed as a possible date for the next meeting. Mr. Iglehart agreed and stated that agenda items should be sent to Mr. McManus. If a conference call is needed before the next meeting, please let Mr. McManus know and he can make those arrangements. Dr. Causey stated that he and George Neugent were already talking about having Dr. John Proni, NOAA/AOML in

Miami and Dr. Harold Wanless as speakers at the next meeting to cover sewage outfalls, etc, and sea level rise, respectively. Mr. Iglehart agrees that climate change should be on the agenda for the next meeting.

Mr. Iglehart called for comments from the WQPP members. Mr. Harvey stated that he would like Ms. Weaver to get money for shelf monitoring because this is a significant loss of very important mission-critical data. Ms. Weaver stated that she will pass along that comment, but pointed out that water management might not consider the work mission-critical, although she sees it that way herself. She said that she just learned from Dr. Causey that NOAA has also cut that program, so perhaps they could put together some proposal. She did not realize that NOAA's funding was cut, too, and that is a huge chunk. Dr. Causey added that it would be a real shame with all the money spent on restoration, if we could not determine whether it worked or not. This shelf monitoring is an essential part of management of the system.

Mr. Iglehart added that there is even more to it since that information might help to mitigate for climate change and by focusing on climate change that might open it up to funding from new sources that are expected to become available in the future. Dr. Causey added that Dave was alluding to this idea earlier when he mentioned about examining the *in situ* monitoring data in relation to the satellite imagery. There are amazing things that can be learned. This is all part of the big picture that is being put together for the area.

Mr. Harvey added that these data are also important to help tease out far-field sources and that makes it very important to the Keys. Mr. Popham mentioned that the Sanctuary Advisory Council (SAC) looked for money for this project, but without success. Tighter budgets are the primary reason for the loss of this program and also contributed to NOAA's reduction in sampling that area. Dr. Causey explained that NOAA originally received the money through restoration funds and then there was an internal merging in NOAA and the program was dropped by this new part of NOAA because they didn't fund monitoring programs. In recent years, the Sanctuary has had difficulty obtaining funding for monitoring. He pointed out that Kacky Andrews recently became in charge of NOAA's Coral Conservation Program. Dr. Causey wants the CRCP to understand that monitoring is critical to managers and is taking a request to have this project included in the Coral Conservation Program. Funding for monitoring is not very easy to obtain since monitoring is not usually funded from outside sources like National Science Foundation.

Ms. Weaver pointed out that \$2.56 million from the District was provided to local governments for storm water improvement projects in 2008. There is also a placeholder for \$2 million in FY09. The agency is focusing on projects on the ground and not on monitoring.

Ms. Anne Morkill stated that there might be some opportunities for funding through the Florida Keys National Wildlife Refuges. The Keys refuges are one of the refuge complexes that have marine waters. She does have some money under a coral reef initiative and would like to strategize on ways to get money on ground with existing programs, instead of starting with their own programs. She has money available that has

to be obligated by the next fiscal year and then other monies will be going to salaries in the future.

Mr. Harvey thanked everyone who came today, especially those who prepared presentations, and he looks forward to seeing everyone again soon. Mr. Iglehart thanked everyone again.

### **XIII. Closing Remarks: Steering Committee Co-Chairs and Others**

Mr. Harvey thanked everyone who came today, especially those who prepared presentations, and he looks forward to seeing everyone again soon. Mr. Iglehart thanked everyone again.

### **XIV. Adjourn**

The meeting was adjourned.