STEERING COMMITTEE MEETING
FLORIDA KEYS NATIONAL MARINE SANCTUARY
WATER QUALITY PROTECTION PROGRAM

STEERING COMMITTEE DRAFT MEETING MINUTES

January 20, 2010

Florida Keys Mosquito Control District
Marathon, Florida

Members Present:
Shelley Trulock—Project Manager WQIP, U.S. Army Corps of Engineers
Jim Reynolds—Executive Director, Florida Keys Aqueduct Authority
Ed Fussell—Director, Florida Keys Mosquito Control District
Jon Iglehardt—Director, Florida Department of Environmental Protection South District Regulatory Office, representing Secretary Mike Sole
Richard Harvey—Director, EPA South Florida Office, representing the regional administrator
Ron Sutton—Mayor of Key Colony Beach
Billy Causey—Southeast Regional Director, NOAA's Office of National Marine Sanctuaries
Pete Worthington—Marathon City Council
Charles Causey – Florida Keys Environmental Fund
Bob Johnson—Director of South Florida Natural Resource Center
Charles Brooks—Key Largo Wastewater Treatment District
Gerald Briggs—Bureau of Onsite Sewage Programs Florida Department of Health
Tom Genovese—Florida Keys Service Center Director for South Florida Water Management District, representing Mike Collins
Sandy Walters—Citizen Representative representing maritime interests in the Florida Keys
Steven Blackburn-- EPA, R4 Florida Keys Coordinator
Bruce Popham--Chair of FKNMS Sanctuary Advisory Council
Gil McRae—Director, FWC-Fish and Wildlife Research Institute
Morning Agenda

I. Opening Remarks: Mr. Jon Iglehart - Director, South Florida District, FDEP and Mr. Richard Harvey, Director, EPA, South Florida Office

Mr. Harvey Harvey announced that people from EPA's Science and Ecosystem Support Division (SESD) were involved in the last committee meeting. They will not be involved in the future due to a disagreement with regards to the division of labor and division of resources. This situation may change in the future.

Other people around the room also introduced themselves: Nancy Diersing—FKNMS, Joy Tatgenhorst—FKNMS, Colleen Tagle—FKAA, Susan Hammaker—KLWTD and SAC alternate, Ray Rash—Florida Keys Wastewater Assistance Foundation, Bill Cosgrove—Science and Ecosystem Support Division (SESD), Athens, GA, Gus Rios—Marathon Branch of FDEP South District Office; Mike McGhee—former EPA, now CDM Consulting Engineers; Sean

Morton—Superintendent FKNMS; Marty Waits—KLWTD; Chuck Fishburn—KLWTD; Pat Bradley—EPA Office of Research and Development; Don Ashenburg—Mayor of Islamorada; Miles Mylander—Utility Director, Village of Islamorada; Joe Boyer—FIU, Elizabeth Wood—Monroe County Wastewater Administrator, Zully Hemeyer—City of Marathon, Susie Thomas—City of Marathon, Pete Rosasco—Acting City Manager for Marathon, Rick Marks—federal lobbyist for City of Marathon, George Garrett—City of marathon; _____Julie Cheon—FKAA; Scott Donahue—Associate Science Coordinator FKNMS, Karrie Cairns—FKNMS Communications Coordinator; John Hunt—FWC, Jim Forqurean—FIU, Steve Johnson—FDEP Marathon Office; Rob Ruzicka—FWC, St. Petersburg; Kate ____—FWC; and Richard Keating—Marathon City Council.

A. **Review Agenda**, Richard Harvey

Mr. Harvey thanked Ed Fussell for providing this nice facility and thanked Joy and Nancy for meeting assistance and thanked the Sanctuary Friends Foundation of the Florida Keys for providing the refreshments today. Mr. Harvey reviewed the agenda items and presentations that will be addressed during the day. He explained that in the afternoon after the presentations, he would like to have a discussion about the role of the steering committee and the role of the monitoring programs. He would like feedback from committee on how to best use limited funds to get useful information to help resource managers make informed decisions. There are a lot of data, but he is not sure they are being used by managers to make decisions. If they are not being used, then the programs may be modified to be more effective. They will also plan to have a management committee meeting when Dr. Kruczynski comes back from Pensacola to get maximum information for resource managers. He would also like to know about the relative importance of the monitoring program as compared with special studies. There will be no special studies done by the EPA Ecosystems Division as originally been discussed, but there is still a need for canal studies. The question is how to divide up the resources between monitoring and special studies. Mr. Iglehart added that the legislative session will begin in a few weeks. FDEP is put in for continued funding for special studies. Secretary Sole feels strongly about maintaining monetary support of the committee. He and Gus will briefly discuss where we are in the legislative agenda for the wastewater program in the Keys.

B. Vote to approve minutes. Minutes approved with no objections.

Mr. Harvey entertained a motion to approve the minutes. The minutes were approved without any additions or discussion.

Dr. Causey commented that the minutes are very thorough and he thanked Nancy and Joy for their help with the minutes and the meeting logistics.

II. **Discussion on 2010 Update on 2010 Compliance Deadline for Wastewater Facilities including Package Plants**, Jon Iglehart, Gus Rio

Mr. Iglehart stated that in lieu of proposed legislation, DEP is currently suspending all requirements for permit renewals until session is over. DEP supports the idea of local government responsibility for getting projects done. A letter will be sent shortly from the

secretary's office that will explain the position about package plant permits being suspended. If service is provided, plant owners will be required to hook up. Mr. Gus Rios added that the letter from DEP secretary to owners of plants will provide info on DEP's position. Mr. Harvey added that he suspects that the excellent progress made on wastewater should affect the legislator's actions. Mr. Rios stated that the basic goal is to facilitate the master plan. At this point in time, they need a break so that some plant owners won't have to upgrade twice, instead of just one time. Mr. Iglehart noted that if the legislation doesn't pass or is changed dramatically, then the DEP will return to position that was prior to the session to enter in consent agreements with facilities until they can be provided service. They are still trying to ensure that the package plants don't pay twice. Mr. Rios explained that if the legislation is successful, it will contain language that will extend the wastewater permits after June 30. Right now, the mandate now is July 1, 2010 and renewals cannot be issued after July 1 with present legislation. The permits will be renewed automatically if the legislation passes and people who have permits have to keep them current until June 30. It is somewhat of a difficult administrative issue, but they are working through it.

Ms. Sandy Walters mentioned that she heard a presentation by Secretary Sole at the Florida regional planning council association policy committee meeting. He told them about a rule for water quality standards for Florida. He mentioned that those standards are lower than existing technology of wastewater treatment can meet. With everything that has been done here in the Keys, Ms. Walters found that to be quite a surprise. Mr. Harvey explained that those numbers would not be discharge numbers, but would be numbers for receiving bodies. There is a way to determine compliance within the receiving water. Ms. Walters explained that that distinction was not made clear in the presentation and that she is concerned about how this nutrient criteria effort relates to the TMDL program that has been ongoing in the Keys in recent times. Mr. Harvey explained that the Reasonable Assurance Document (RAD) has been submitted to EPA a few times in lieu of TMDLs being established. At this point, he does not know if the RAD has been approved. There is an open comment period on the RAD right now.

Mr. Gerald Briggs informed everyone that the proposed legislation also addresses the upgrade of onsite systems that will not be connected to central sewer. In the mean time, they are working with FKAA and Monroe County to address those systems.

Dr. Boyer explained that DEP is setting the rules for lakes and freshwater flowing waters right now and that includes canals. They were under a mandate to produce freshwater criteria as part of the settlement of a lawsuit against EPA. EPA is expected to produce nutrient criteria for estuaries and coastal areas by January of next year. DEP will be holding a meeting in Miami to discuss Florida Bay, Biscayne Bay, Southeast Florida region and Florida Keys on March 2 and 3. The west coast will be holding a meeting on March 4th for that west coast (Shelf, Caloosahatchee, etc). DEP is looking for input, but EPA will make the actual recommendation. Freshwater criteria meetings have been taking place throughout the state and Mr. Harvey encourages everyone to participate.

Mr. Iglehart pointed out that there will be different criteria for canals than for other bodies in the nutrient criteria for freshwater. DEP is currently undergoing rule-writing to modify the state's current water classification system, which is based on designated use and has five classes (class

1-potable water, class 2—shellfish waters, class 3—all other surface waters, class 4-agricultural use ditches and class 5—industrial uses (there are no industrial uses in Florida)). The designated uses originally would drop that system and come up with aquatic life and human use criteria, so that the water quality parameters would be based on what type of aquatic life and human use that water body could support. This was also based on a lawsuit. Under this scenario, a water body would be defined and could be moved into different categories depending upon potential for that water body. DEP received a lot of pushback from various groups and are now looking manmade systems as different from natural ones. The plan today is to have class 1 and 2 remain the same. Class 3 will be broken into a subset—"a" and "b". A water body like a drainage canal that could not possibly meet class 3 criteria could be moved into the "b" category based on certain parameters (DO, turbidity, etc.). The maximum potential for aquatic life would be determined for that water body. The proposed rule does not change any current classification, but does allow local governments to petition for a change in classification for specific water bodies like drainage canals that could not meet current criteria. The idea is, in conjunction with stormwater rule, a local government does not have to retrofit every property that drains into that canal. That canal can accept the drainage as it is and then treat it before it gets to the receiving water. Any change up in a system will not allow for any degradation in receiving water. Before the water moves elsewhere, it must meet certain criteria. Mr. Harvey mentioned that everything will have to meet the Clean Water Act and will undergo review by EPA. Mr. Iglehart explained that the environmental groups are supporting this proposal thus far. DEP wants to have this rule passed by March. Mr. Harvey pointed out that there is some flexibility in the act and there are 3a and 3b waters in other states.

Mr. Reynolds noted that there has been talk of a one-penny sale tax in Monroe County to fund wastewater improvements. Legislative approval is required to hold a referendum to the county residents. DEP is supporting this legislation. If that language is added to the legislation, will it affect DEP's support? Mr. Iglehart stated that DEP supports local government's ability to determine how it wants to generate revenue.

Councilman Worthington asked how the proposed legislation would affect the RAD. Mr. Iglehart explained that they are not sure how the RAD would be affected until end of the session when the legislation is known. Mr. Harvey added that the whole concept of RAD, reasonable progress is being made through certain actions and that gives comfort level and reasonable assurance of water quality.

III. Update on stimulus package funding for the Keys, Ms. Shelley Trulock, U.S Army Corps of Engineers/Jacksonville District

Ms. Trulock, Project Manager for the WQIP, gave an update of the money being spent and funding reimbursement to date. The Army Corps, as a federal agency, was given authority to participate in the WQIP through public law 106-554, which set a federal funding limit of $100 million dollars and established a 65% federal cost and 35% non-federal cost. Thus, the total program cost is $153,800,000. Many years ago an intergovernmental task force decided how the $100 million would be distributed amongst the municipalities in the Keys.

Ms. Trulock announced that the program received $25, 408,000 as part of the stimulus money

(American Recovery and Reinvestment Act (ARRA)) funding. It was decided that Marathon, Islamorada, Key West and Key Largo would receive 25% each of this $25 million. They have made progress dispersing this money so far and they will continue to assess the rate of expenditure so that they no money will be left unspent. Some municipalities have spent more than others so far and that is normal. She will be meeting with Key Largo, Key West, Marathon and Islamorada at lunch to discuss the specifics and she invited people to attend if they wish. In order to spend the money, the project partnership agreements that were in place had to be amended for Key Largo, Key West and Marathon by adding additional language and reporting requirements and in some cases, amending the scope. Islamorada is the last one and she expects to have that agreement today. Once executed, Islamorada's ARRA money can be spent. The total provided to the program to date is $35,297,000. So far, $11,973,744.87 has been reimbursed to local municipalities/entities. She showed a quick summary of how the funding has been split in terms of reimbursements. Key Largo received through October 2009 (before ARRA), $1.9 million in non-ARRA and $2.3 million in ARRA, for a total of $4.3 million. As of October 2009, Marathon has been reimbursed 5.7 million for non-ARRA and $618,000 in ARRA for a total of $6.396 million. Islamorada has been reimbursed for $83,613 non-ARRA money. Once the program agreement is executed any time now, they can spend ARRA money Key West received $442,890 in non-ARRA funding through December 2009. Layton was reimbursed fully by non-ARRA funds.

Ms. Trulock stressed that today this effort is a joint one and this approach has been so important for funding and political reasons. It would be best to continue showing this unity. As long as we can show collaboration, she is hopeful that more money can be obtained. The quicker that she receives the invoices, the quicker they can spend the money. If show expenditures, that will posture us for additional money. She continually does checks and balances on the money and has a spending schedule that indicates that the money will be spent out. She can also reallocate funds to another municipality, if for some reason the money cannot be spent by the designated municipality. She has enjoyed working with everyone and will keep everyone posted for the July meeting. She is hoping to have it all spent by then.

Dr. Hammaker asked about the 2011 funding cycle, which comes up about April 1 and asked if it is critical to spend funds by then before asking for more money. She explained that there is no requirement to have the money spent by then, but it makes sense to do so from a common sense standpoint. They do have through September to spend ARRA money, but would be better to spend sooner. It is not spent sooner, it could jeopardize future funding. Municipalities have to spend their own money first to get federal reimbursements. Dr. Causey asked about restrictions on spending in the last quarter of the fiscal year. She can't have every municipality submit invoices at that time and so she will be looking at the entire process. She really needs to have everything in place by July 1st to have that money spent by the deadline in September. That is why the schedules contained in the contracting plans and invoices are so important.

A member of the audience stated that the process is working very well right now and most importantly the four entities are working together to make it a success.

IV. Status of Implementation of Monroe County Wastewater Master Plan and

Waterwater Upgrades by Municipalities and Key Largo Wastewater Treatment District, Ms. Liz Wood, Monroe County, Representatives of Municipalities and Key Largo Wastewater Treatment District

Ms. Wood thanked the committee for letting them present about the progress being made. She has been working for Monroe County since 2005. In 2007, they assessed what needed to be done to become complete. At that time, 38% of the Keys were complete, but by January 2009, 53% of the connections have been made. Over the past 6 months, they have crossed the 50% mark of completed systems, which is due to all of the hard work of the municipalities. Ms. Wood showed a table that she uses to track the progress of all the municipalities throughout the Keys. This table is updated as progress is made and is available on the county's website. Key Largo, Islamorada and Marathon will be providing the status of their programs in more detail.

The good news for the North KL utility Corps is that the construction of the upgrade to AWT is 35% complete. She reviewed the projects undertaken by the county and FKAA. Big Coppitt plant is complete and connections underway. Six hundred of the 1700 EDUs are connected. Duck Key collection system design complete and permitted and will go forward in phases as funding becomes available. The Duck Key plant construction contract is expected to be awarded tomorrow. Cudjoe regional central design is 90% complete and the project could begin soon when funding is completed. They are also working with outdoor resorts to upgrade their plants and have received bids for this work. They are looking to connect some systems to central that might have been onsite for better environmental protection and economic benefits. FKAA has submitted draft Work Plan to utilize EPA decentralized grant funding. There are about 307 systems in the unincorporated county. About 50 are compliant and this money will help subsidize those projects. The information she uses comes from published documents like grant reimbursements, etc. She is tracking the EDUs hooked up and could give EPA a number at any time. When Key Largo's plant comes online in July, the Keys will be 65-75% complete. She will put that information on the website.

Mr. Fishburn gave the report for Key Largo Wastewater Treatment District. He used a slide from Ms. Wood's presentation and a chart on the wall and financial numbers. Construction costs have continued to decline. The project costs have gone from $157 million dollars to $142 million, due to declining construction costs. They are using only 6 of the 13 vacuum stations called for in the original plan. They have been able to install vacuum stations between basins. Basins A through K have roughly about 14,000 EDUs. Basins A and B have been combined and so have basins C and D, E and F, J and K. Basin I has its own station. These measures have saved millions of dollars. The north stations are on easements at the Catholic Church and at Pennekamp, which reduced land acquisition costs. Reduced land costs helped them buy properties in the south for vacuum stations. They own properties for all vacuum stations except J and K and they plan to exercise an option on that property shortly.

Station A-B is under construction and C - D is operational today. Basically, basins A through D are done. They have a $30 million loan from bank that they hope to have the board approve next Friday. They are spending about $7 million per month and expect loan money to be spent by September, along with Army Corps money first. They have one large 2. 3 million gallons per day treatment plant that is 80% complete. It is located off the road in the woods. They are happy

to show it to anyone and are very proud of it. The north components are essentially done. The transmission line for the south is under construction. The costs for this line came in $3 million less than the original estimate. The district is greatly benefiting from current economy. Conceptually, the process was to bid by phase within a basin and that has helped with costs, too. They have four on-the-ground contractors working for constantly and plan to bring on another contractor. The real problem is that the engineering plans are not completely done. If they had drawings done for J and K, they would be building it today. They do have four engineers on the task of designing the components. The plant should be complete in August and they are hoping to start it up partially in April. He will leave copies of handouts for everyone and a report from Marty Waits on finances by basin in detail. The handout is a chart for the entire project with basins.

Mr. Harvey wanted to know if they have all the permits and applications in to DEP. Mr. Rios agreed that there are no issues in that area and thanked Key Largo for the progress reports that they have been sending. He added that it really helps to have them as they move through the permit process. DEP is working on Basin I right now and a lot of the others have been permitted already. Mr. Fishburn complimented DEP on all of the help they have provided with permits, etc. FDOT is doing paving projects throughout the Keys. The district is racing to get the south transmission line in place because FDOT generously agreed to delay their project until the line is finished. Permitting has not been an issue. Mr. Harvey wondered what level of detail was needed to issue a permit. Mr. Rios explained that DEP has standard procedures for collection systems and that is what they are doing mostly right now. The main treatment plan has already been permitted. It required a full application and design report. The deep well injection well was permitted. Now, they are working mainly on collection system permits from the lower region, which require applications. Mr. Harvey inquired as to whether there are any other areas in the Keys that might have permit issues that might represent a hurdle that has to be overcome. Mr. Rios is not aware of any, but they are moving through the process. DEP doesn't have resource issues on this project and has staff in Ft. Myers that will process the applications.

Mr. Jim Reynolds complimented Key Largo on doing a good job, along with Marathon. He asked Mr. Fishburn what the district plans to do with the houses in north on CR 905. Mr. Fishburn explained that they now plan to reach most of those homes (71 homes out of 73 total) with grinder pumps. About 2-3 homes will have onsite systems. He explained that when they first started as a district five years ago, they couldn't worry about those 70 homes and they were essentially on their own. The grinder pumps can pump 4 miles and so they can connect with the transmission line at MM106. The board has agreed to use grinder pumps, but is not sure what the assessments will be, but the costs will be financed over 20 years. Based on estimates drawn up last week, they think it will be about $10 per foot to run the pipe from the grinder pump to the highway. Key Largo has 200 unique properties that have not been assessed and they will hopefully move forward with this task in May. Gilbert's Resort and the Anchorage Condo will be doing their own package plant and operate it themselves. There is a question about Mangrove Marina's up on the stretch. There will definitely be 3 houses will have to definitely be onsite in the 905 area and whether or not the district will maintain these has yet to be determined.

Mr. Fussell asked about the number of deep injection wells. Mr. Fishburn explained that they are planning one deep-well and 2-3 shallow wells. The legislation calls for a second deep well as

backup. They have a special bill to exempt Key Largo from second deep-well requirement and to put in shallow wells as backup.

Mr. Fussell explained that he asked about the wells because they cause problems for the mosquito control district. Mosquitoes breed in them and can even get in the storm drains. One of the species that breeds in wells carried dengue fever. We need to keep things coordinated so that the mosquito people know where to find them. Mr. Fishburn noted that the deep well has a pad at the surface. Mr. Fishburn invited the mosquito people to come and look at the wells and plants to make sure there is not a problem. Now, that the 63 package plants are going to be gone, that should help reduce the mosquito breeding locations. Mr. Harvey pointed out that there will still be holes in the ground and inquired as to how they would be treated. Mr. Rios said that normally they be abandoned by a licensed contractor. It has to be filled with cement and done through a permit. His understanding is that the permitted package plants have to use a licensed operating company who is required to coordinate with mosquito control. He would be glad to work with mosquito control if they need to coordinate more on this issue.

Mr. Fussell explained that last August they controlled the species that carries dengue fever by house to house spraying and were able to contain it in Key West. They had 23 confirmed cases, but there might have been more since not everyone presents with symptoms or sees a doctor. It might be that dengue still exists down in Key West. This is a serious situation because it can have serious impacts on tourism as well as the well being of people. Mr. Rios mentioned that the storm drains in Key West might pose an issue and the mosquito district could coordinate with the utility. Mr. Fussell noted that they were able to contain the outbreak in Key West because they moved extra employees down there and they sprayed house to house because aerial spraying and truck spraying are not effective. The situation is dangerous because the mosquitoes may still be there waiting for warm weather and because they could have easily moved up the keys into Key Largo and eventually Miami, where they are not equipped for a high level of mosquito control. There is another disease that causes serious arthritis and causes a deformity. This disease has moved from India to Italy by one person and now the disease has moved outside of Italy. The mosquito district has hired 8 additional inspectors to handle the domestic inspections. There have hired 4 additional inspectors in Key West, two in Marathon and two in Key Largo. They are also hiring a biologist to conduct pcr (DNA) testing to test mosquitoes for chicken, yellow fever, dengue, and know within a day or two whether it is a carrier. If they can catch the disease in mosquitoes before gets to human population, which could be very helpful. Monroe County has been able to eliminate another species from Japan that has invaded all other counties Florida to Texas. Some people complain about our budget, but it is small compared to the consequences of not doing anything. Mr. Iglehart stated that they should connect with the DEP well program so that they know where all the wells are in the county.

Ms. Susie Thomas informed everyone that Marathon has worked closely with DEP to permit 6 plants and that the response from DEP has been awesome. Ms. Zully Hemeyer gave a brief summary of Marathon's progress. They have seven service sections with 4 under construction. Knight's Key will begin in February and Grassy Key will start mid-year. About 2/3 of the city's collection system has been completed by today. Currently, there are two plants operating and they expect to have a third one on by the end of February. When they are done, they will have a total of 6 wastewater plants. Mr. Pete Rosasco added that plant expected to come online in

February serves the Sombrero area. He explained that Marathon took commandment very seriously and has moved forward with wastewater and with stormwater and repaving of roads in Marathon. The only remaining portion is Grassy Key with more dispersed community. They will use grinder pumps there. By the end of this year, they will have most of the work done and appreciate cooperation from everyone.

A fifteen minute break was taken.

Continuation of Presentation about Status of Wastewater Projects

The representative from Islamorada reported that the North Plantation Key construction is complete and the remaining connections are underway. There will be a total of 1600 EDUs associated with this plant. Middle Plantation Key design is underway and the assessment was levied to complete the design for Upper and Lower Matecumbe Keys. They have come to a tentative agreement with the Key Largo Wastewater Treatment District regarding treating Islamorada's wastewater. Islamorada will run a separate line up to the Key Largo plant to transport wastewater. They are presenting a revised master plan next week to their council. The assessment was challenged in court by some residents and that means that they cannot borrow against the assessment until that is resolved. In the next few months, they expect to have 100% of the design complete. There was a short discussion about matching funds for federal grants. No federal funds can be used as matches for federal grants.

V. Potential Financial Assistance to Low-Income Residents of the Florida Keys for Wastewater Stormwater/Upgrades; Ray Rhash – Florida Keys Wastewater Assistance Foundation and Dr. Susan Hammaker – Key Largo Wastewater Treatment District

Dr. Hammaker began the presentation by thanking everyone for the opportunity to speak. She introduced Liz Wood, Alicia Betancourt University of Florida Monroe County Extension Service, Colleen Tagle, Public Information/Customer Service Florida Keys Aqueduct Authority Ray Rhash Florida Keys Wastewater Assistance Foundation Inc. Dr. Hammaker noted that the challenge is great to comply with the statute. The public component is about $939 million and the private compliance is $240 million. Counter to this monetary requirement, the Keys has a declining resident population, older-fixed income population and generally low wages.

Ms. Wood provided the numbers for typical cost per resident for a new lateral. The estimate was $2800 to $5600. The University of North Carolina Finance Center estimated the cost to be $4100 with a $5000 for other fees, etc. to reach a total cost of about $10,000 per home. This is almost 22 % of the salary of some of the population. The needs assessment estimated that 33% or 7000 homes qualify for housing assistance (with an income of 42K or less) and this is a challenge for the community. This amounts to a $70 million need. There are two Community Block Development Grant Program (CDBG) that they are planning to access for funds. One is the disaster recovery fund and can be used for laterals. The other is the traditional CDBG grant and is competitive based on number of low income households in area. They have been investigating how the scores are developed. Community needs are ranked low for our area and that makes it

hard to rank high on the final scores. They are not sure why the community is ranked relatively low though. They have been working with the staff at CBDG to iron out some of the issues and procure funds. The application for the disaster money will be sent following this meeting and the other application is due in April. To apply for these monies, they must form a task force and have hearings, etc. to follow the rules to secure these grant funds. There are some issues with people already being hooked up in Marathon and Big Coppit before the money is available, but they might be able to help those residents with aspects other than the lateral connection.

Ms. Alicia Bentacourt provided information on other ways to obtain assistance. These include energy efficient block grants, affordable housing funding, grants, social service programs in the county, and mortgage options. She is also available to educate people about their options.

Ms. Colleen Tagle, FKAA, discussed the fact that it there will be renters and owners who will have difficulty paying their water bill. There are income (not asset based) qualifying programs that are available for senior citizens and Disabled American Veterans to help them pay their bills. The FKAA also has some popular programs in conjunction with the Water Management District that helps people retrofit their houses with water-saving devices to save money. Last year, they had a cistern incentive grant to help people convert their septic tanks into cisterns to save water.

Mr. Ray Rhash explained that the Florida Keys Wastewater Assistance Foundation Inc. was established in 2007 as a private non-profit foundation. They have two goals: to provide assistance with wastewater costs to residents with low incomes or disabilities. They have grant requirements and selection criteria for the application process. The application can be downloaded from their website (http://floridakeyswastewater.org/) and then submitted for evaluation. The selection criteria relate to income, disability and assets. They have grant-writers on board to help secure funds.

Dr. Susan Hammaker spoke about the Key Largo Wastewater District's approach to implementing wastewater improvements. The emphasis has been on fairness for all people in terms of the rates charged and assessments. They maintain a specialized database of people in need of assistance from the foundation. They will be presenting a proposal to the board in February that calls for the establishment of CDBG-like criteria for low income and disabled populations. Qualified people would be able to defer their billing and connections fees until funding is available. This program can be copied by other jurisdictions within the County. Dr. Hammaker thanked everyone who took part in this effort and offered to take questions.

Mr. Charles Brooks asked if the cistern program funding was still available. Ms. Tagle responded be stating that the cistern program is closed, but the toilet program is still open. A savings of about $20 per month is anticipated by changing out the toilets. The money is not for the cistern program is typically not available retroactively. Dr. Hammaker acknowledged Mr. Tom Genovese for the low flow facets, etc. Mr. Genovese explained that the district is now piloting motel/hotel program called Water Champ. This program is for non green smaller places. They promote faucet aerators, linen reuse in all guestrooms. Most hotels already have linen towel reuse program, but some don't. At present 15 hotels are participating since last August. People are already noticing the reduction in water use. Thousands of gallons of water have been saved at various hotels in the Keys. The aerators make a big difference in terms of water use. Mr. Harvey

noted that it is important to communicate about the savings with aerators.

In reference to a discussion held earlier, Mr. Harvey noted that the EPA meetings being held around the state for water quality criteria are public input meetings and information about them is posted on the EPA website and registration in advance is necessary. Steve Wolf sent out the announcement from DEP.

VI. Update on FKNMS Book, Dr. Bill Kruczynski – EPA, Region 4

Dr. Kruczynski thanked Mr. Fussell for letting the committee use this wonderful facility. He noted that the book he is compiling is not just a Florida Keys sanctuary book, although it started out that way. Now, it includes monitoring study information covering Charlotte Harbor to the Keys to Martin County. He acknowledged the hard work of Pamela Fletcher from Florida Sea Grant. This book is joint Sea Grant-EPA publication. Ian Press at University of Maryland is also a partner to produce the book. Chris Burkhardt with the University of Maryland has been instrumental in making progress thus far.

Dr. Kruczynski explained that this is third time he has given a briefing on this book. It has been about 2.5 years since the project began. It has taken this long because people have not been writing the articles that they promised to produce in a timely basis. Three chapters are basically complete out a total of 8 chapters. The book will cover 220 topics in about 280 pages. He gave everyone a preview of chapters 2 and 6 and explained about the review process. They hope to complete all of the chapters by April/May and send for a 30 day review period. Then University of Florida can print 2500 copies. Fact pages will be posted on the internet for downloading. After the 2500 free copies are printed, the rest of the printing will be done by University of Maryland to be sold at cost to people. The book will be sent to three external paid reviewers to provide input and provided to members of the WQSC and TAC, Florida Bay PMC and Science Oversight panel etc. for review.

Dr. Krucynski reviewed the book outline for the committee. This book summarizes current knowledge on the south Florida marine ecosystem and is intended for resource managers, decision-makers and interested lay readers and is intended to serve as a sounding board by which the effectiveness of current and future management strategies can be validated. It is a time in history when critical decisions must be made to insure the ecological integrity of the marine ecosystem for future generations and many important decisions are being made on wastewater systems, marine zones, etc. Dr. Krucynski encouraged everyone to look over the chapters and explained the structure of each chapter. He showed examples from the mangrove chapter and discussed some other topics. The book has many illustrated cartoons that explain concepts. Each chapter will conclude with what people can do to make things better and with further reading. The drafts for the book are posted on ftp://ftp.aoml.noaa.gov/ocd/pub/fletcher/WQPP Steering Committee.

Dr. Billy Causey mentioned that the book has a different look to it now and he is pleased with the way it is developing. Mr. Charlie Causey mentioned that the book could be very good for high school and college students. This could be used as the basis for a course in Monroe County. Ms. Sandra Walters added that it might be more on the level of FKCC. They have a burgeoning

program developing in marine science and this could be a fabulous tool for growing the program. Dr. Jim Fourqurean noted that dive shops will want this book. Book sellers will be able to order this book through Amazon.com. Mr. Jim Reynolds noted that this is a very valuable resource and inquired as to whether or not it would be helpful to have the committee send a reminder to delinquent authors. Dr. Kruczynski stated that he will be sending letters himself to the authors who have not provided their articles yet. Dr. Causey stated that this will be a publication to be proud of and will be celebrated. Mr. Bob Johnson noted that some of the missing chapters are key ones and wondered about the back-up plan. Dr. Krucynski stated he can write the chapters if needed. He reminded everyone that all of the agency logos of committee members will be on the cover of the book.

VII. Water Quality Awareness Month, Karrie Carnes, Bridget Litten, Florida Keys National Marine Sanctuary

Ms. Karrie Carnes gave a brief presentation about Water Quality Awareness Month and explained that this month is designed to raise awareness amongst the general public. This is the fourth year that Monroe County has issued a proclamation declaring the importance of water quality during February. If anyone would like to see another municipality put forth such a declaration, then please see Nancy Diersing to get the language for additional proclamations. If a declaration is requested, it is necessary for someone be there to accept proclamation. Another aspect of the program is to have people talk about water quality on live radio shows that air throughout the Keys. The sanctuary has contacts for the different shows. She and Sanctuary superintendent Sean Morton have already been participating in the shows to discuss the proposed rule on marine sanitation devices on vessels. If anyone would like to participate in a radio show, Karrie can provide him/her with talking points and information. She asked that anyone who is interested in radio to please contact her. She gave a big thank you to Nancy Diersing for developing a slide presentation for Monroe County TV, which airs on the public broadcast channel for free. This presentation can be provided to anyone as well and can be amended to add information. She also mentioned the radio PSAs for the stations to use as needed. She is open to additional ideas. A suggestion was made to add low volume toilets and aerators to the slide show.

The question was raised as to whether or not this was a state wide effort with a proclamation from the governor. At this time, it is a local campaign, but SFWMD does do a water conservation month in April and at that time requests proclamations from many municipalities, etc. In the past, the WQAM committee has discussed the option of combining with water conservation month, but has not done so. Mr. Tom Genovese explained that water conservation month is different and has traditionally been in April.

VIII. Data Management Website and CD-ROM, Mr. Chris Anderson, Fish and Wildlife Research Institute

Mr. Chris Anderson stated that he would be brief. His presentation is a continuation of last presentation regarding the data integration of system. They are still continuing to update data within STORET. They will have the 2008 coral data input this quarter. He provided the website. http://ocean.floridamarine.org/fknms_wqpp. This is sort of a one-stop shopping site for data,

metadata, program websites, etc. He also has data themselves that are raw files and ESRI shape files. Last time he presented on the Google Earth files and brought up a presentation with the coral reef data. They have developed a way to present data for all sites, including those that are no longer being sampled. There is a lot of information and they have had to break it up somewhat for this format. He demonstrated zooming into the coral data at different levels. Data are also available on CD roms. It is the same as on the web. Each monitoring program has its own page with a description and reports, etc. The CD and website are updated at the same time.

They are getting about 1000 hits per month on website. Mr. Harvey would like to know which data are being accessed the most. Mr. Anderson can look at each page and see the number of hits on that page. Mr. Harvey explained that they are interested in finding out who is using the monitoring data. Mr. Anderson noted that there is a new set of tools for GIS that is making it easier to work online without the full program. It will now be possible for you to display the raw data and charting and graphing and trends.

Councilman Worthington asked about whether or not there are any water quality devices off of Marathon at this present time. He saw this device under the surface in 40 feet of water in Hawk's channel. Dr. Boyer stated that SEAKEYS has fixed sites and that may have been research taking place by someone outside of the area. Mr. Anderson added that some of his colleague might be deploying flow meters and Dr. Causey mentioned that Tom Lee has had various devices to study the currents over the years.

Lunch (90 minutes)

Afternoon Agenda

IX. South Florida Corals: A Record of Anthropogenic and Climatic Influence,
Kevin Helmle, NOAA

Mr. Kevin Helmle explained that he would be focusing on the anthropogenic influences on corals and there would not be sufficient time to cover climatic influence. He began by showing a cross section of coral showing the annual density bands, which are revealed using X-radiography. Hard corals can be dated from this process and each dark and light band represents one year of growth. Since corals can live for hundreds of years, the density bands provide a long-term chronology and serve as a proxy for environmental conditions.

In the cores that were taken along Florida's southeast coast, anomalous stress bands were seen in 1998-99 in corals from the Florida Keys. This corresponds with the mass bleaching/mortality event at the same time. He also showed a 1970 stress band during a very cold winter. The 1877-78 band coincides with one of the strongest El Nino events. The top 10 El Nino years since 1950 are evident in the Keys coral. These massive bleaching events are not completely

unprecedented, although the frequency may be more now.

Coral stress events are captured in the coral skeleton. The premise of coral scleractinology is that the factors limiting coral growth can be identified. Multiple factors (light, water chemistry, temperature) can affect growth at the same time, including land-based sources of pollution (herbicides, pesticides). Things can be synergistically affecting coral or offsetting other effects.

Mr. Helmle showed an aerial photo of a plume of freshwater flowing out from Port Everglades in Broward County. The plume has water with high turbidity, low salinity and the water quality is questionable. Google earth images from other inlets in Florida also show that it is not uncommon to see pulses of freshwater discharge during the rainy season. NOAA estimated inlet discharge volume in 2007 from Boynton Beach inlet at 200 million gallons per day with a net flow of ¼ billion per day. In the Hollywood area, there are very few long-term canal discharge records, but the New River is one of the longest records.

After 1970, there is a shift in the amount of discharge that is reflected in the coral record of the North New River Canal. Discharge was high from 1940 to 1970, but dropped severely after 1970. If that pattern is compared with coral core from that time period, the coral is dense from 1940 to 1970 during the high discharge years and extension rates are low, too.
From 1970 to 2000, discharge was low and extension rates were high. Basically, each year the coral is laying down same amount of skeleton, but it is putting it in different place depending upon environmental conditions. Sometimes it becomes denser instead of growing longer and sometimes it grows less densely, but extends further. Generally, when discharge is high, extension or growth is low and vice versa. Mr. Rios mentioned that the Clean Water Act passed in 1970 and that may have stopped some dredge and fill, which could have affected growth.

Mr. Helmle provided graphs of rainfall patterns, which has not changed over time although it is variable. However, the amount of water exiting the canals has changed dramatically, dropping after 1970, which points to the fact that this is a managed resource and this is an anthropogenic impact.

These density band patterns can be seen in more than one species (*Montastraea* and *Diploria),* so it is not just affecting one coral. There is a positive correlation of coral extension with salinity, as represented by sea water density (sigma T). Coral cores from Martin County during a similar time period show same stress period of growth.

The big question is what happened in 1970 to have the corals start growing well again. One thing is that Public law 91-282 was enacted and that called for more water to pass through the Everglades and reduced the amount of discharge from canals significantly. This represented a large shift in the volume of water and this stress is not so local since it covers Broward to Martin counties. Prior to the canal system built at the turn of the century, most of this water would have gone to the south and west and not be discharged into the ocean. All corals seen have stress band ending in 1970 or 1971. There is no relationship with light or rainfall itself. This is the longest stress period in the records he has seen throughout the region. They are still trying to isolate what in the freshwater source limited growth. This example shows a very strong correlation between management and coral growth.

Mr. Scott Donahue asked if he used corals from the Lower Keys or Dry Tortugas. Mr. Helmle has looked at corals in the Upper Keys, but they were collected about 15 years ago and so there is an important time period missing. From the corals he has seen, this pattern is not seen in Biscayne National Park or Upper Keys, but growth might be driven by the AMO. There is some isotope work being done on these corals to see how salinity was affected by changes in water management. Dr. Causey mentioned that Harold Hudson cored at Looe Key in 1983 and saw signal in 1906 when Flagler's railway became operational. Dr. Causey added that such studies could be hugely valuable in near future. They have been learning that ocean acidification hotspots are associated with large amount of freshwater with dissolved carbon is entering environment. This may be taking place in Southwest Florida and this would be interesting to look at the density of corals now and track over time. Mr. Helmle stated that his thesis has involved working with ocean acidification. Calcification remained stable over time, but variable with density going up sometimes and down others. Since the coral cores are old, they don't know what has happened during the past 15 years. A question was asked about looking at the fluorescent signals in corals. Research has shown a large drop in fluorescence in Florida Bay around 1914. Mr. Helmle commented that fluorescence is not a well-defined parameter and is hard to quantify. Dr. Fourqurean added that some research has shown that high fluorescence is associated with high dissolved organic carbon, not just low salinity levels.

Mr. Hunt commented that there are a large number of corals that are partially alive in the Keys. He tossed out the idea that maybe doing this kind of work on dead or partially dead corals could be constructive. There are a lot of anthropogenic events that have occurred out there. Mr. Helmle has thought about predicting when these corals died and linking that with known events.

X. Marine and Estuarine Goal Setting for South Florida and its relationship to the Florida Keys Water Quality Protection Program, Dr. Joe Boyer

Dr. Boyer discussed a new project called MARES (Marine and Estuarine Goal Setting for South Florida), which began last year. The project is funded by NOAA for three years and involves 4 different universities, almost all the agencies in the room and several NGOs. He summarized the results of the first meeting. They are tasked to give to NOAA a plan for the future as to how to assess and manage South Florida. They have come up with a corollary to CERP with regards to setting goals and developing ecological models and system indicators. The human dimension was kept out of the CERP models, but is being included in this study.

There are three regions involved (Southeast Coast, Florida Keys, Southwest Coast). A set of indicators will be developed for each region and the whole area. They considered how to merge information from the different fields, especially natural science and social science, which have different vocabularies. They have adopted DPSIR model, modified from the pressure state model. The elements are drivers, response, pressures, impacts and state. They first had to determine the drivers or needs that exert pressures and result in changes in land use and exploitation of resources. The goal of the first meeting was to develop integrated conceptual eco model using DPSIR approach. They are developing a report card that reports whether or not the desired ecological conditions have been met. This will also help uncover gaps in critical

knowledge. Dr. Bob Leeworthy attended this first meeting, which had about 60-70 people. They had other economists and sociologists. It was a very good mixture of people who came together to discuss this model.

Dr. Boyer thanked agency bosses for letting their staff attend the meeting. They do have some limited travel funds for agency people to attend meetings, including people from elsewhere. He showed a schematic of the first cut of the DPSIR model, which has separate sub-models within the greater model. It will be a challenge to put it all together in one model, but are making an effort to advance the science management in the Keys and would appreciate input from managers and scientists to make sure the end result is useful. Mr. Harvey asked about the nature of the final tool that will result from this process. Dr. Boyer stated that the managers are involved in the development of the tool as part of the process and they can sell it to the agency as something that is useful. The agencies involved were asked to provide statements as to the value of the project from the onset, so the agency perspective is actually built-in to the model.

Mr. Charles Causey stated that this project could bear some fruit for managers. He notes that the political climate plays a role in what can be done and it is important to be realistic and know the possible responses and response limits on various issues in advance. Dr. Boyer responded that this approach has been done piecemeal in the past. He points out this green/red stoplight approach used to communicate the status of Everglades restoration projects/goals. It is simple, but can be more complex as needed. In this MARES approach, the values of the ecosystem are considered in the process, including specifically how the ecosystem is being used and by whom. He wants to bring human values and perception into management of the system. It is a big challenge.

Ms. Walters encourages Dr. Boyer to involve South Florida and Southwest Florida regional planning councils into this effort. They have a tremendous repository of human data and are involved in modeling and planning efforts that relate to this project. All regional councils are used to working as parts of other entities. Ms. Walters gladly agreed to provide Dr. Boyer with some names of possible interested persons. Dr. Hammaker added that she has been involved in two areas (focus groups and qualitative research) that address the human dimension and asked if these areas were considered. Dr. Boyer has sought input from the human dimension experts and welcomes her participation of that of other experts. Mr. Bob Johnson added that he thinks very highly of this plan because it adds human values into the approach. In CERP, freshwater restoration was the priority and the estuaries were secondary and this resulted because the human value of the estuaries was not considered in the plan. Afterwards, they had to retrofit things to fix water flows to the estuaries, but that has been expensive. Dr. Causey stated that this MARES process is finally helping to bring in the marine environment and coast into the process. It has been a challenge to remind people about the importance of the coast in the total restoration. He would like to see this topic on the agenda for the South Florida Ecosystem Task Force.

XI. Monitoring Data Discussion; How Are Resource Agencies / Programs Using the Data Collected by the WQPP, Mr. Richard Harvey, EPA

Mr. Harvey explained that the next two agenda items feed into each other and added that a very useful monitoring program has been in place in the Key for the nearly in 15 years. He feels that

it is most important to understand whether or not resource managers are using the data generated from these programs when making the day to day decisions. It is good that that the data website is receiving numerous hits, but a lot of money is being spent for the various monitoring programs—water quality stations, shelf monitoring (that has helped answer questions like explaining the blackwater event), coral condition and seagrass. This year EPA has 1.4 million dollars and this year's program is fully funded, but they will have to seek funds for the future. In his mind, the question is whether the monitoring program should be conducted in the future as it has been in the past or whether it needs to be modified. Additionally, he asked if there was a need or opportunity to enhance data collection and possibly use fewer sentinel locations and a probabilistic sampling scheme. The same questions should be asked of the coral and seagrass programs. Should the coral program be enhanced or expanded so that at national meetings, the condition of the resource can be conveyed with authority? Results from all of these programs feed into the sanctuary's condition report, which summarizes status of the current resource and helps managers make decisions.

With approval from the committee, Mr. Harvey would like to call a meeting of the management committee in the Keys after Dr. Kruczynski comes back in March. One purpose of this meeting will be to seek input from people who manage the resource, including aquatic preserve people who co-manage the sanctuary with NOAA. EPA will continue to have a limited amount of money and has been the primary funding agency over the years. Since it is unlikely that huge increases will be available in the future, it is imperative to get maximum information out of the program and make certain that the resource managers are getting the information they need. They also recognize the need to conduct special studies. The canals need to be addressed and they may not meet class standards. If all of the money is spent on the monitoring, there will be little or no money left special studies. He is seeking a balance between conducting long-term monitoring program and addressing the other needs that arise. The management committee can provide guidance and direction.

Some steering committee members have expressed an interest in becoming more action-oriented and involved in guiding the program. Dr. Causey agreed that it would be good to get to work on the canals. To address the first question posed by Mr. Harvey, Dr. Causey added that the monitoring is now at point where it is providing some incredible information. So much more is known now and new information has been gathered through these monitoring efforts even in these past few years. The CREMP (coral) data show that there have not been any major declines in live coral since the bleaching event in 1997-98. The CREMP stations were always vulnerable because they are fixed stations, but over the long term, these fixed stations have really been able to tell the story. And today, the program is even better because they are sampling more sites in better condition habitats. Water quality in the sanctuary has been about the same for a while. Thus, the driver for the coral decline in 1998 was probably not linked to nutrients reaching the reef. As new projects come online (from the Everglades restoration, wastewater etc.), the monitoring effort will detect changes in the system to which managers can respond. Managers need the long-term monitoring to know how the system is being affected, so that they can adjust as needed.

Mr. Harvey agrees with the long-term monitoring, but asks if there is a more efficient way to get the same information. Dr. Causey added that the experts and management committee can address

that question and pointed out that the sanctuary has changed its messaging about the decline of coral based on the trends that have been detected from the programs. In addition, Bob Glazer and his fellow conch scientists have changed their thinking about how to deal with conch recovery based on the results of the water quality study. Scientifically and management driven data are hugely valuable. He is a firm believer in special studies and wants lots of them. They could consider getting back to the questions for special studies being generated by the monitoring programs. Dr. Kruczynski agreed with Dr. Causey. Mr. Harvey stated that there may be some sites and places that they might want to expand. He doesn't want to reduce information, but to make it more efficient. Is this the best place to spend 50% of the budget in a time of limited funds?

Mr. Bruce Popham stated that is he is always a proponent for getting more done with less money, but he is concerned because they have this historical data and are right now at the crux of a lot of things happening. If changes are made now, it might call into question these data and that is a risk. The sanctuary is going to be looking at zoning and management and have discussed overlaying the coral, seagrass and water quality data and using the results to better manage the sanctuary, maybe even create new zones. This information is critical in this process of better management of the sanctuary. One of the sanctuary's (sanctuary advisory council SAC) standing working groups deals with ecological restoration and they have used this information to move forward with local initiatives like coral nurseries and other projects that are making a positive difference locally.

Mr. Harvey stated that he would like to see more examples of how the data are actually being used. The reports to the governor and cabinet do not really go into a great deal of detail about the data and what they mean. Mr. Popham emphasized that they need to do a better job of explaining the importance of the studies. Mr. Harvey has no problem if what is being done is what is needed most, but cautions that very little, if any, resources will be available for other things. Mr. Charles Causey commented on a slightly different approach. He understands that this program is bearing fruit at this time, but at the same time, could consider stringing out some aspects of monitoring so that funding can be freed up for special studies. He feels that they should be called special projects, instead of special studies. He wants them to be more than studies, but actual projects that result in water quality improvements locally. He read from the minutes from the last minutes regarding mosquito spray study and how it will assess the effects on the sanctuary. In such an instance, this special project could team with the mosquito control district and split costs. Similar private-public partnerships work in other areas. In addition, not every canal needs to be studied to understand the water quality in Keys canals. It is known that they are too deep, have no circulation and muck in the bottom. He has three aerators in his boat basin and now has angelfish and even new plants. The canal hasn't even been dredged yet. He suggested creating a partnership with local neighborhoods to pay half for improvements. This could be done all the way through the Keys and this could improve the nearshore water quality. He has seen great improvements with aerators and feels that they have enough information to make some improvements. They could track the changes after such a project to see if how well it worked. Even individuals could contribute to these smaller projects.

Mr. Popham added that this sanctuary has become a sentinel site for others. This sanctuary has the longest history of science of any sanctuary and that is incredible valuable as global climate

change and everglades restoration continues. Mr. Gil McRae wants to reiterate a lot of what has been said. The design of a monitoring program has to match up with effects or signal in the environment. When the CREMP was set up, it was important to establish fixed sites and look at them over the long term. Since water quality improvements are being undertaken, CREMP wants to be ready to detect that signal. They need to look at the CREMP design to see if it will detect the signal needed, but he doesn't think that they can afford to lose the fixed long-term sites. They have to find a way to do both. In terms of water quality, 500k is a bargain. As someone who has funded a lot of water quality projects over many scales, 500k for Dr. Boyer's program is a bargain for what is provided. He is not sure that right people are being contacted to assess use of the data. At the institute, they use the water quality data in fisheries work and to inform the seagrass monitoring work funded by RECOVER. These data are already a strong link between WQPP and RECOVER (CERP program), but the committee is not hearing about this connection. He would like to task the management committee with taking a look at all three programs and evaluate how they are set up relative to the type of change they propose to detect. If needed, reevaluate the design and obtain recommendations. He would like to see the design detect changes due to wastewater improvements and firm up the link with RECOVER,

Ms. Walters is pleased to hear this discussion and agrees with much of what she has heard. She studied in California, which has a phenomenal database for coastal waters. This database was used to detect changes from outfalls into the LA basin and distinguish these changes from natural ones. She recalls when it was easier for a biologist to receive money to study in the South Pacific than in the Keys. Luckily, things have changed in that area since the sanctuary and EPA started this program. Rather than apologizing for not getting enough use out of this information, we should use this as an example of what Florida needs everywhere. She thinks it is important to reevaluate the goals and she agrees with Mr. Popham that the statistical validity needs to continue. She is not a statistician, but it could be that there are more stations than needed. It would not be good to change the parameters so that the comparisons with the old data were not longer possible. It is important to maintain continuity in terms of the data. She suggested that it might be possible to involve the local people/volunteers in programs, including possibly collecting data similar to what is being done with the lakes through the Unviersity of Florida. The sanctuary has a fabulous reputation for working with people at the reef, but could also work closer to shore and possibly expand the database without significant increases in costs. Such a program could serve to increase awareness of the issues and support for the WQPP, etc. There is a need for more awareness about water quality practices. Ms. Walters explained that she will be discussing the reasons people should not throw their fish carcasses into the canals, etc. on a local radio program as part of Water Quality Awareness Month. She agrees with Bruce that the first thing is to do is to document how the data are being used. Mr. Harvey asked that the people attending this upcoming management committee meeting need to bring that information to the meeting.

Mr. Bob Johnson explained that all of this information (seagrass, water quality, coral) are incredibly valuable to the National Park Service. He sees management as a partnership. The boundaries of the parks and sanctuary are adjacent in many places and the same researchers working in all areas. He would not like to see that linkage end. A review is always good and all of these programs have statisticians that can help identify where reductions can take place. They can detect any redundancy, but the monitoring has to be there. At this point in time, projects are

coming online slowly and the changes are taking place slowly. Hence, the need for long-term databases that can detect the gradual changes. His choice is to fund the long-term monitoring first and then, if possible, the special studies. Mr. Harvey asked for an example of how the water quality data are used. Mr. Johnson responded that they use it to track events like algal blooms from one area to another and see how they move throughout the sanctuary, bay, etc. with the currents. He explained that all programs work together to provide the information.

Mr. Popham worked with NPS on seagrass cover and scarring and that has resulted in the placement of no-motor zones in the back country. That measure came about because of the work measuring seagrass and is a perfect example of how those data are creating action within the national park. He added that when he goes back to the advisory council, he does want to be able say what the committee does to make water quality better. He agrees with Mr. Causey on that point. He would like to discuss what needs to be done at these meetings, like possibly using some of the dirt from the sewage projects to fill canals, etc. Mr. Causey added that he is involved with the park and is on a committee partially funded by private donations. The private sector money funded channel marking and they have made recommendations about no motor zones. He wants to see special projects that involve the locals and private sector for funding, too. He would like to see projects identified and then seek funding for them.

Mr. Iglehart commented that every time this question of monitoring comes up, the result seems to be the loss of money for the program. He feels that it is important for the committee to have a document that expresses the importance and significance of these programs to his principals. He represents an agency head that will be replaced in the future and a document of this sort could help educate the new person in that position. He loves the idea of changing special studies to projects because projects are concrete.

Dr. Hammaker would like to segue on Mr. Iglehart and Mr. Causey. It seems that there is a desire to become more of activist in nature. Using the information and getting that out to the public for funding purposes or forming partnerships is essential. Education and outreach is one of the committees on the sanctuary advisory committee and education can be a challenge. She uses 30 second bites to convey information and makes sure everyone repeats it back. She makes it into a game of sorts. If there could a little bit of money for education and outreach or bring in some activist partners, which would help. Dr. Kruczynski's book will help do that and others are taking the information and conveying it elsewhere. She uses the information that she hears.

Superintendent Sean Morton added that from the mangers perspective the sanctuary is using these data as we speak. There is a proposed regulation restricting discharge in federal waters and public meetings are being held to solicit comment. The justification for this proposed regulator change came from long monitoring results. Although the proposal does seem to be supported locally, it takes these data to back up this action and to track any changes in the future. This information is included in the Environmental Assessment for the proposed action. This is an example of a specific management action that has resulted from the monitoring results. Mr. Popham noted that, in fact, the original recommendation to eliminate discharge was made by the steering committee. Mr. Harvey added that they have requested this feedback, but have not received it in the past. He noted that Mr. Iglehart made a good point about the fact that monitoring is not very popular to fund. Superintendent Morton added that the program is part of

the sanctuary's founding legislation and that he would look to the Technical Advisory Committee (TAC) to answer the question whether science is doing the job needed. He suggests reactivating the TAC for science questions and asking the managers about their needs as well.

Dr. Boyer agreed that a strong technical advisory committee will be more useful than just the management committee. The management committee should not be answering the science questions. Mr. Harvey noted that some steering committee members after the last meeting stated that they don't just want to hear data. He is looking for feedback from the steering committee. How does the committee want to see the money spent—special studies/projects, etc? The governor and cabinet report doesn't go into detail about the water quality condition.
Mr. Iglehart explained that four years ago when the money was lost from the water management district, they had been allowing the people conducting the monitoring to determine its value and not an outside entity. Dr. Boyer explained that there was an independent assessment of the program. He thinks a good approach would be to have the management group should review and come up with how data are being used and that will provide a stronger defense for continuing monitoring.

Mr. Harvey explained that right now EPA receives money south Florida geographic initiative. They then have to justify to the executive management team why the money is needed in the Keys as opposed to other projects. If we have a document or can better convey the message of how data are needed to manage this resource, which will help. Superintendent Morton again spoke from the managers' perspective. The sanctuary is about to release condition report that might be of use in this respect. It ties water quality section that justifies the need for this kind of monitoring and ties water quality to other indicators of health. The draft will be open to review from public, steering committee. Mr. Harvey added that this is great because he has been asking for months for such information. Mr. Popham explained that the condition report can be the basis for updating the sanctuary's management plan. This could also help identify special projects. There used to be a list of items that could be done to improve water quality. They could brainstorm on what could be done and become more active in improving the water and challenge the communities to become engaged in such projects. Maybe that the next meeting, some time should be spent at the beginning of the meeting discussing what can we do now to improve water. Dr. Kruczynski stated that they had done something similar in the past prior to the beginning of the meeting. There was a report card in the past and there is a water quality action plan. Councilman Worthington agrees that monitoring is important, but wondered if they need the frequency that is in place right now. They could then put some money toward outreach. Dr. Kruczynski pointed out that the steering committee should not be making that decision. The recommendation needs to come from a technical background and he agrees with Dr. Boyer that this should be vetted with the monitoring folks and the TAC. The recommendation then comes back to the steering committee for review. Mr. Harvey thinks the resource managers need to be involved. He added that they should be able to be done by the next steering committee meeting.

Mr. Iglehart thinks that there are two parts. The TAC needs to review for value of monitoring for monitoring itself. Then the management committee or similar group needs to review monitoring for management purposes and what that monitoring is providing to agencies. Mr. Harvey asked if the steering committee was comfortable with that approach. There was agreement. Mr. McRae added that he thinks it is important to have that the management committee person represents the

whole agency, not individuals and that will take some background homework. These data are being used and that information needs to be captured. Mr. Rios wanted to emphasize that there is already a management action plan. They have accomplished a lot, including the elimination of cesspools. This discussion is very useful. The management committee look at the priority as managers and the TAC would review the best to accomplish this goal with the best experimental design. He agrees with Mr. Popham about the management plan and thinks that it should be examined to see how it needs to be revised. Mr. Iglehart added that this needs to be done for two reasons. One involves identifying priorities and the second is that it allows them to spend our money. Right now, they have 100K that goes away in July if not spent. With such a list, they could identify a project more easily.

Mr. Harvey would like to find out if fill material from sewer is clean and whether it could be used to fill in deep canals. Councilman Worthington stated that some of the dirt has asphalt and can be separated out. The high school is using it to fill borrow pit for track field. He and others looked at canals in 1980s as a way of improving water quality. It would take a massive amount of fill to backfill canals. Mr. Causey stated that the management team could start looking at possible canal projects, estimate cost and split with community homeowners association. Something like this could be implemented as a special study project. This would draw a tremendous amount of press and attention. Mr. Harvey mentioned filling some of the canals on Big Pine Key. Marathon is almost done and the fill is available. Marathon is providing the fill to various entities.

Mr. Harvey plans to proceed with general RFP for seagrass, water quality, coral and will leave fairly general and open so that they can be flexible. They will send the RFP out so that can obligate money by this summer. Mr. Harvey explained that they have money for this year, but are going forward with an RFP for 2011-12. There is a competition for this money from others in the region. Mr. Steve Blackburn emphasized that with so many years of data and so much money spent, it would be really good to have a white paper of sorts to summarize how the data are being used and what has been learned. In the funding scheme, his group is only one of two ecosystems that didn't receive an increase in funding this year, which means our message is not getting out well enough. Ms. Pat Bradley added that it is really important to tell the story and document things well. There are many improvements that could be included. Mr. Blackburn will take the lead on that paper. Some of this information will be captured in Dr. Kruczynski's book, but not all of it. Thus far, Mr. Blackburn has used reports, etc. to piece together the information. Mr. Rios feels it is really important to convey to the lay person as will be done with Dr. Kruczynski's book. He also thinks bio-indicators could be very important and showing changes that might be taking place and would allow for better interpretation of water quality conditions.

Mr. Causey added that with the funds going down, it would seem to him that such all of the users of the data should have one paragraph stating how they use the data and could be part of the white paper. That way, the white paper would not just be a plea from EPA, but from other agencies, too. This approach would be more compelling and make a better case. If we can find a better way to cap why the program needs more funds, it might be helpful. Mr. Harvey explained that part of the problem is that they have been trying to find metrics to document successes that we have had, but it is has been difficult. The Keys has failed to meet the goal of reducing phosphorus concentrations and improving the percentage of live coral. It is hard to justify

getting more money when the metrics don't show improvement. He added that people need to respond to emails that request information on how data are being used. Dr. Kruczynski stated that maybe other programs are doing a better job selling their programs. Perhaps, it is time to take the world class monitoring show to Washington, D.C. Mr. Harvey explained that Chesapeake Bay involves many states and has political support because of it. Mr. Popham pointed out that it might be helpful to answer why it is important to that guy in Iowa to maintain this ecosystem and how can we make the rest of America care about us. We have 3 million come down our highway. How do we touch those people and make them care?

Councilman Worthington pointed out that the feds should care. Ninety-six % of Monroe is in federal (or state, county) ownership. He has seen an improvement in funding since they have taken that message to Washington. Private ownership in the Keys is rare. Dr. Causey noted that this sanctuary is a sentinel sight for the changes that will be taking place. Flower Banks National Marine Sanctuary, offshore by 100 miles, healthiest place and is a gem. In contrast, we have everything affecting us down here. Even though the Keys are so important for South Florida restoration, they sometimes have been left out of the plans. Forty percent of the water from North American drains into the Gulf and almost all of that water comes past the Florida Keys. Mr. Iglehart added that our points have to be clear, concise and non-contradictory. Mr. Harvey summarized things by stating that Mr. Blackburn take lead on white paper, the TAC will be reactivated and EPA will go forward with a generic RFP. Mr. Johnson mentioned that science communication is a real art and it is important that a professional take time to package the information so that the document is appealing in appearance and conveys the information, too.

XII. Water Quality Steering Committee Discussion Regarding Future Direction,
Mr. Richard Harvey, EPA

The future direction topic was discussed as part of the discussion above (item XI).

XIII. Public Comments

Mr. Harvey called for public comment. One member (Mike) of the audience explained that he worked here several years ago and is amazed by what has been accomplished since that time and people should be proud of these accomplishments.

Superintendent Morton announced that sanctuary is in middle of finalizing last piece of discharge legislation. At that time, this sanctuary will become most protected sanctuary in system. The work being done here has led to improvements elsewhere in California and led to new sanctuaries and greater protections in other areas. In fact, the FKNMS is the first to have a WQPP and the first SAC. Monterey Bay NMS just implemented a WQPP at that sanctuary. He announced the public hearing in marathon tomorrow night. Mr. Johnson added that he and Dr. Causey were involved in integrating across agencies and creating a network of parks, sanctuaries, and refuges. This has been done here and now is being done elsewhere. It is the science program that does the integration.

XIV. Discuss Next Steps, Propose Date for Next Steering Committee Meeting, Closing Remarks, Steering Committee Co-Chairs and Others

Mr. Harvey stated that it had been a productive meeting. He will send out possible dates for next meeting in July. Mr. Iglehart has expressed interest in having a two-day meeting. Until now, wastewater has dominated the agenda, but maybe an afternoon session can be used for updates on wastewater projects and then focus on other things (like the white paper on research findings) on the next day. This will set the tone for the next few years. Ms. Walters asked to not have the meeting scheduled on July 20-23. Dr. Kruczynski stated that they might want to think about stormwater and doing a stormwater project somewhat in the Keys in the future. He also mentioned getting more involved with the mooring buoy program. Mr. Popham mentioned that FWC has an enforcement program for discharging wastewater in state waters. Dr. Causey announced that he just received information from Cory Waters at Mote that there is a low level red tide north of the Keys. The date of July 14th was discussed, but they want to make sure that Commissioner Nugent can attend next time and that date might conflict with a known commission date. They tentatively selected the 14th and some time thereabouts (half day Tuesday, full day Wednesday).

Mr. Causey added that he has been working with the Marine Port Advisory committee and mooring buoys have been a topic of interest recently.

XV. Meeting is adjourned.