

**Approved Workshop Minutes**  
**Working Group and Science Coordination Group**  
**Crowne Plaza Hotel**  
**West Palm Beach, FL**  
**May 4, 2011**

**Welcome, Workshop Goals, Guidelines and Introductions**

Dan Kimball called the joint workshop to order at 9:01 am. Dan noted the purpose of the workshop was to follow up on the themes that were discussed at the February Task Force meeting and focus on decision making, the use of science and improving stakeholder engagement. The agenda (Encl. 1) was provided and Dan noted they had an aggressive schedule with an opportunity for some presentations and goodbyes for Paul Souza who is heading off to Washington, DC and Greg May who is retiring to Louisiana.

Susan Markley said she is hoping they will talk about how successful they are in incorporating these concepts and philosophies and the extent to which they are working or not while being mindful of all the realities their agencies are now facing. She encouraged everyone to participate.

<b>In Attendance:</b>	May 4	
<b>Working Group (WG) Members</b>		Alternates
Dan Kimball - Chair - NPS - ENP & Dry Tortugas	√	
Greg Knecht - Vice Chair - FL Dept of Environmental	√	
Ken Ammon – South Florida Water Management	√	Tom Teets
Billy Causey – NOAA, FL Keys Nat'l Marine Sanctuary	-	
Chuck Collins – Florida Fish and Wildlife Conservation Commission	√	
Sheri Coven – Department of Community Affairs	-	
Roman Gastesi – Local Government	-	
George Hadley – U.S. Dept of Transportation	-	
Veronica Harrell-James – U.S. Attorney's Office	√	
Eric Hughes – U.S. Environmental Protection Agency	√	
Vacant – Office of the Governor of Florida		
Keith Neves - Bureau of Indian Affairs	-	
Fred Noble - FL Dept. of Transportation		
COL Pantano - U.S. Army Corps of Engineers	√	Stu Appelbaum
Bonnie Ponwith – NOAA, National Marine Fisheries		
Terry Rice - Miccosukee Tribe of Indians of FL		
Barry Rosen - United States Geological Survey	√	
W. Ray Scott - FL Dept of Agriculture and Consumer	√	
Paul Souza – U.S. Fish and Wildlife Service	√	
Craig Tepper – Seminole Tribe of Florida		
Kenneth Todd - Palm Beach County Water Resources		
Vacant - Broward County Department of Natural		
Vacant – U.S. Department of Agriculture		

Greg May – Special Advisor	√	
<b>Science Coordination Group (SCG) Members</b>		
Susan Markley – Acting Chair – Miami Dade County	√	
Vacant – Vice Chair – Science Coordination Group		
Calvin Arnold - U.S. Department of Agriculture, ARS	√	
John Baldwin – Florida Atlantic University	√	
Lisa Beever – Charlotte Harbor National Estuary	-	
Ronnie Best - United States Geological Survey	-	Stephanie Romanach
Joan Browder - NOAA, National Marine Fisheries		
James Erskine - Miccosukee Tribe of Indians of FL	√	
Susan Gray - South Florida Water Management	√	
Todd Hopkins - U.S. Fish and Wildlife Service	√	
Chris Kelble - NOAA, AOML	√	
Chad Kennedy - FL Dept of Environmental Protection	√	
Dan Kimball - NPS - ENP & Dry Tortugas	√	Bob Johnson
Cherise Maples - Seminole Tribe of Florida		
Gil McRae – Florida Fish and Wildlife Conservation	√	
Bill Reck - U.S. Department of Agriculture	√	
Dan Scheidt – U.S. Environmental Protection Agency		
David Tipple - U.S. Army Corps of Engineers	-	Kelly Keefe

**Workshop Overview**

Greg May provided a presentation (Encl. 2) and noted that the National Research Council (NRC) released its third report on CERP implementation last year and made a number of observations that are relevant to this workshop. Follow-up meetings were held by the Task Force in October and by the Working Group (WG) and Science Coordination Group (SCG) in December. The Task Force held a workshop in February and identified two themes (decision making and decision support systems) to improve the use of science in decision making and stakeholder engagement. The WG and SCG were asked to develop coordination actions for these two themes. Following the February Task Force workshop they had a series of phone calls and e-mail exchanges with volunteers who helped shape the issues under these two themes. He acknowledged it was a collective effort to try and put together a framework for today’s discussion. He reminded the group that the purpose of the workshop is to identify coordination actions in support of the decision making and decision support system themes.

**Decision Making**

Greg May noted that under the decision making they had owning the questions, stakeholder engagement, and open and transparent decision making. The Task Force acknowledged that decision makers must own the questions but the questions must be developed with the scientific and technical community. The Synthesis of Everglades Research and Ecosystem Services (SERES) project developed a set of key questions based on input from science managers, decision makers and the public. Those questions will be used as a starting point for developing a set of questions for the Task Force.

For stakeholder engagement, the NRC reported that an effective stakeholder process can improve the quality of the restoration effort and credibility of decisions. If done poorly it can become a distraction. The NRC suggested that best process regimes for stakeholder engagement be identified and incorporated as appropriate. The Task Force FACA exemption can contribute to an effective stakeholder process since it allows them to leverage the expertise found in the non-governmental communities. The NRC report discussed the need to have an open and transparent decision making process. Allyn Childress will provide a best process regime for Structured Decision Making (SDM) that Obey introduced at the February Task Force workshop. Two stand alone presentations will be provided by Steve Kopecky and Ken Ammon on the Corps' and SFWMD's use of science in their decision making processes. They will then identify the kinds of things that would be helpful in terms of improving decision making in south Florida. It is also important to communicate how and why a decision was made. If stakeholders are involved from the very beginning then the communication at the end is simple because people have jointly arrived at the decisions that are made. Finally, the NRC states that CERP has the foundations for the Adaptive Management Plan and recommended they turn theory into practice. They know they need to move forward because of the continued decline in the Everglades and adaptive management and dealing with risk and uncertainty are an important part of the decision making process.

### ***Decision Support Systems***

Stephanie Romanach reported that she along with Obey co-chaired the Decision Support Team and had about 20 people who volunteered and contributed information. They addressed faster modeling capabilities, integrated modeling and multi-criteria decision making tools. The faster modeling capabilities were broken into two categories (inputs and running the models) with inputs being the slowest part to running the models. They have started to develop a 'CERP Standard' for the modeling community and are hoping everyone will follow this standard so that they are all doing the same thing and are all able to use each other's tools. They should also be removing unnecessary complexity in the models which could help reduce run time. They have made a lot of progress in the last two years and have developed a standard data formatting system and are in the process of developing standard model development and review protocols based on work other people have done around the world. There are ecological models that link to hydrologic models that are in the development and review process. They have developed tools that have helped with visualization and can be used in a workshop setting. Everview is one where people can see the outputs clearly. They really need standards to achieve interagency coordination and she said they are doing a better job these days. They also need clear documentation of the models and the tools so others are able to understand what they did. They need to make sure they are setting up a collaborative framework for model integration. Open modeling framework allows everyone to see the science, thoughts and decisions that went into the model. It is available to everyone and allows for continual improvement. This is effective for works in progress not just final products. For the multi criteria decision analysis, Chris Kelble and Andy LoSchiavo will explain what NOAA and the Corps are doing. This allows you to integrate a lot of variables that go into decision making such as indicators, ecosystem performance and cost. It allows you to integrate risk and uncertainty. The tool can be used for the entire Everglades region or a specific area of interest. She summarized by saying that they

really need continual dialogue between decision makers and scientists to get the right questions answered. Open and transparent processes are necessary both in decision making and development of supporting tools. Decision making and tool development need to be coordinated efforts.

## **The Synthesis of Everglades Research and Ecosystem Services (SERES) Questions Overview**

Bob Johnson noted the SERES projects have been presented to the WG and SCG twice over the last year. He provided a simple definition for 'synthesis' - providing useful scientific information to assist decision makers and inform the public. This project has a lot of different facets and one of the key facets was finding out what the major questions that managers and scientists are thinking about that are needed to inform the implementation of Everglades restoration initiatives. The handout (Encl. 3a) shows the seven broad questions that went into the interview process with the appendices having all the different questions discussed.

Steve Davis provided a Powerpoint (Encl. 3b) noting SERES is a CESI sponsored two year effort. It is a synthesis of Everglades science and ecosystem services and is a synthesis for managers based on the key science management questions. It is managed by the science department of the Everglades Foundation but they have a core team from across the county. They are currently nearing the end of Phase 1. The idea was to develop a document with an exhaustive list of key science management questions. They reached out to many and conducted interviews and asked what they needed to know about Everglades restoration and what are they the key science issues that managers are facing. They found a common theme among many of the questions and organized them by themes and distilled them down to a few core questions that were repeated. Project website at: <http://everglades-seres.org/>

He reviewed the seven key science management questions. Based on the questions they divided themselves into working groups to attack these issues in a group format. They conducted an exhaustive review of the literature related to each of the questions and developed white papers. It also involved identifying science gaps and tools needed. It was more than just a review of the science and was also a review of tools and discussion of information needs. The document (Encl. 3b) is a living document and they are still accepting comments and feedback on the work they have done to this point. They will post the document on the website soon. They are at the end of Phase 1 of the project and the methodology should address the key science management questions so they are going back to the questions and ensuring their analyses are addressing those collectively. They need to consider the economic benefits related to ecosystem services per the revised Principles and Guidelines from CEQ and include both quantifiable and non quantifiable benefits. The methodology should also be appropriate to communicate to their intended audience as well as easy to describe to a non technical audience. They are going to be determining the information and tools that are needed to help describe the outcomes of the scenarios with respect to those key science management questions. They will then apply this to one scenario and they have identified CERP 0 as their scenario for the proof of concept. Their proposed approach is to map out the key science management questions to things people care about. They need to be able to communicate to stakeholders and users of the resource why these things are important. They begin with

aspects of the Mather Economic Study and those things quantified in that report such as park visitation, water supply, etc. They will be using a mind map approach which is essentially a stream of consciousness approach to making linkage across different components of the Everglades ecosystem. They will also be developing SERES evaluation maps which are conceptual models that analyze different restoration outcomes. Steve reviewed the SERES mind map for wading birds, one aspect considered as being important for park visitation, as an example. Information is taken from the mind maps and connections are made with different components of the system. He ended his presentation with examples of visualizations that they are currently working on showing the connection of the Everglades and their water supply.

John Marshall (ARM Foundation) said Bob Johnson provided a user friendly definition of synthesis and noted there is plenty of stuff on the internet. He said he appreciated the emphasis on ecosystem services value and he believes it is important to use the Costanza synthesis as a tool to get to the total economic value of ecosystem restoration. What has been left out of the Mather Report is a statement about quantifying ecologic and economic benefits. They think the Costanza synthesis is the ultimate way to bring some of this stuff together and provides a way to do analysis of alternatives. He said he would like to see the next report use the Costanza synthesis.

Kim Taplin asked whether the culling process used for the stream of consciousness bring to light any specific key parameters that are common. Steve Davis said there is a lot of redundancy with the mind mapping approach and translating that becomes complicated. Joel Trexler said the answer is no since they will be just beginning the second year of the project and the culling process has to be done and will be done using the existing modeling frameworks that will go through the vetting process. Greg Knecht wanted to follow-up with the culling process since culling to him means “scratch it off the list”. Steve Davis clarified he did not mean to suggest they would lop things off just because they do not understand the relationship. He knows there will be areas where there are important linkages and they do not have the quantitative tools allowing them to make the connection where they will try to use inferential mathematical approaches to try to get at that. Idea with culling is to acknowledge that some variables have much more explanatory power than others. Those that may account for less than 10% of the variability of change may be too complex and not worth considering at this time.

Chuck Collins said he noticed that they never ask ‘why is this question important’ and that also depends on the targeted audience since it helps people understand why it is important to the people and the management. One question they should always ask. Kelly Keefe said the presentation was great and could see they are going through a process of identifying what the key questions are and coming up with methods to apply what is known. However, she sees a pitfall and asked what they going to do with the compounding uncertainty associated with each of those factors. Steve Davis acknowledged that at some point every member of the core team has expressed that concern. In dealing with a project of this nature and considering the spatial and temporal scale those are issues you are bound to face. At this point they are trying to demonstrate a process and those are issues they will be facing in the next phase of the project. Which is why they have assembled the team they have to deal with that uncertainty as best they can.

Shannon Estenoz said she was very impressed by this and focused a lot on the communication tool at the end. Looking at decision making from a high level, about what to build and when, and how to pay for it, she asked whether they are distinguishing the variables that can be affected by management decisions and those they can't control such as rainfall and how do they use these tools help decision makers understand what they can control. Steve Davis replied that it begins with the hydrologic options that they would consider, ranges of storage and treatment and then removing barriers to flow and identifying those that are most feasible. Tom VanLent has been working with a subset of core team to identify those that are most feasible for their project and moving forward with this type of analysis. Bob Johnson clarified the project is not trying to come up with any new options and is looking at what is already out there and building on the new science/information gained. For example the work of RECOVER and the ROG process has identified a greater need for water being delivered to the Everglades. That need creates a requirement for storage, treatment and conveyance that they did not look at.

Joel Trexler added that this project stands out because the scientists that are involved are the same scientists that are working on other initiatives, not going to create new models. This project allows the technical folks to work with economists and some of the limitations are things that will be worked out. The second thing is that it will bring together the graphic artists and those that have special expertise in communicating with the public and they will have a chance to collaborate with those folks. Leonard Pearlstine said in terms of being able to deal with uncertainties, there are techniques available without getting into the weeds that are probability based/probability approaches as Obey, Stephanie and others are developing the decision support tools a lot of that will come out.

Susan Markley asked whether they reached out to elected or appointed officials and how they decided who they would talk to. Steve Davis said they talked to a few county commissioners, heads of environmental organizations, people on the Task Force, at different state and federal agencies and the tribes. He said he was impressed with the group of people who were interviewed in person and by phone as well as those that attended their meeting.

Matt Harwell asked how they viewed the next iteration and whether they were looking to tap individual subject matter experts or groups such as RECOVER. Steve Davis said they are assessing the team and needs going forward. In terms of reaching out to a wider group, absolutely, once they get into a modeling phase they are going to have to tap into expertise at different levels. Bob Johnson added that part of the issue was how much of the agencies' staff time could they tap. It was easy to reach out to Interior since it is being funded by Interior but it is not a minor task to ask for modelers to be made available. The WG and SCG needs to think about how they want to influence a project like this. If they see a significant value for doing this type of analysis of options then the agencies have to say okay we want to participate in this at the SCG, WG or individual agency level. The value we get out of this is what the agencies, NGOs and others contribute. The questions if answered would help guide the implementation of restoration and it is critical to look at the questions with that viewpoint. It has to be things that matter to the people and drives the public's concern about restoration.

Paul Souza said he applauded the work done and noted there are so many of these questions that the key is figuring out the subset to spend time and energy on. He asked if there were any surprises or overarching observations. Steve Davis replied he was amazed at how much is known about the Everglades relative to other ecosystems he has studied. There has been an explosion of information and it has taken some time for him personally to digest all of it.

Joel Trexler said they have not interacted with the economists for very long and he thinks it will be a mixed bag in terms of its products. The tools the economists have available are fairly limited and they have to be very careful as they start to incorporate the dollar valuation into their decision making process. It is a relative new field and huge gaps will remain after their effort. The risk of coming up with a conclusion of a dollar valuation because of compounding uncertainties and how they are going to communicate a hard dollar value that comes out of this exercise or communicate any kind of message about ecosystem function that gets a comparable weight to the power of a dollar figure when you get into the public discussion will be a challenging, eye opening new world. Bob Johnson encouraged the members to look at the Mather Report. A couple of examples looking at parameters such as salinity and dissolved oxygen and you can set a target to get back to the conditions they had in the 1970s and then you can say what economic benefit/value that provides to society. You can look at how much of that benefit you get in restoring the Everglades and that's where you get these really large economic returns on Everglades restoration progress. The key is to expand the set of parameters to get to the things that are critical for the ecology of the system and to why Floridians and the American public value the Everglades. Susan Gray said she was appreciative of the opportunity to participate and welcomed the opportunity to participate again. She encouraged the use of a non-cost environment adding there are a lot of people who have a lot to offer to the process. Important to integrate with RECOVER and the knowledge gained effort.

John Marshall added that for the Costanza synthesis, Costanza and a group of scientists got together and analyzed 16 biomes of the planet and came up with an estimate of ecosystem services that was close to the planetary GDP. The paper is easy to get to via Google 'nature 387'. Matt Harwell suggested looking at the Gulf Ecology Division of US EPA working in Tampa Bay on ecosystem services and their web page has information on the communication of services, the valuation and the risk of losing those services as part of the decision making process. Costanza is great but is an old study that is outdated.

Tom MacVicar (private consultant) said the business community relates to economics, they understand it and going in that direction is a good idea. He found it disconcerting to hear how much the Mather Report is referred to since it violates things such as commitment to standards and science that others can see. He read the report and found that there are some basic, factual errors such as the description of the geology, aquifer system, salinity, etc. The idea of getting the right number of the economic benefits of restoration is key but they need to be careful in what they put out in that front. He recommended they bring the economics into the same kind of scientific scrutiny so it will have as much credibility. Stephanie Romanach said two page factsheet for the Mather Report if anyone is interested.

Shannon Estenoz said she is encouraged and supportive of efforts that improve their ability to evaluate what they are doing and improve their ability to communicate. Complexity is the enemy. Policy makers are wrestling with very fundamental questions, what to build first and who pays for it. They are operating within frameworks that are controlled by other forces, regulatory, policy/decision making, litigation, etc. She reiterated that the higher up in the food chain the more basic the communication tool needs to be. They can't dictate what the public cares about she said she is learning that to make a connection to the public they have to make a connection of what they already value. Ecosystem services is fascinating to the extent they can translate that to things folks already value and as a communication tool it becomes more useful. Greg May reminded the group that one of the reasons they had this presentation on the agenda was to ask whether these are the right questions for the Task Force. He said it was his observation that these are the right questions to develop the decision support tools to make sure they are covering enough parameters to be able to answer the questions that a majority of Everglades' decision makers and scientists are asking. The tool is needed to answer the basic questions of which projects do they need to build first. The follow-on phases of the effort are very important. Being able to describe these questions as being useful to develop the tool and the tool being able to answer some of the basic questions may be a helpful way to introduce this to the Task Force.

Dan Kimball asked about the schedule. Steve Davis noted the timeline keeps getting moved back and completion is scheduled for the end of May/June. They will then be doing some internal assessment of the team and what needs they need to address before moving into Phase 2. Phase 2 would resume in June and that would be the full blown analysis of the different scenarios/hydrologic options and end sometime in May 2012. Dan said this is a really forward leaning project and on the delivery of information to decision makers, it is a real art. He asked whether the team thinks there is a role for social media not only for decision makers but for young people using Facebook and twitter. Steve agreed it makes sense and they could possibly tap into the use of that type of communication.

### ***Stakeholder Engagement Best Process Regime***

Allyn Childress provided a presentation (Encl. 4) noting that the recent NRC report talked about stakeholder engagement and in 2008 NRC issued a report on the entire topic of stakeholder engagement and environmental decision making. They did not get into specifics and they wanted to make sure that stakeholder engagement is more flexible rather than a rigid set of rules. The value of stakeholder engagement among other things is that it improves decision making in terms of quality, legitimacy and capacity. They wanted to make sure that it was not an added piece of the process but fully incorporated into decision-making. The basic principles they outlined included program management, organization and science integration. In terms of management they want them to be among other things, clear, committed to the process and have a stakeholder engagement process that is not done too far at the end that it isn't relevant to decision-making. In terms of organizational principles they need to be inclusive, collaborative and have a transparent process and focus on good faith communication. For science integration they have to ensure transparency and be explicit about assumptions and uncertainties. NRC recommends a best process regime rather than best practices which allows for selection of techniques most appropriate for the specific situation, encourages monitoring for

effectiveness and encourages adjusting to maximize the quality, legitimacy, and capacity of decision-making. Allyn reviewed the steps for the best process regime which included monitoring of the process to see whether the tools and techniques are meeting anticipated and emerging challenges and stakeholders are aware that things could be adapted as necessary.

John Marshall said he appreciated having the public sit at the table and allowing them equal say and was hopeful that it would continue. Bill Nuttle noted that as Executive Officer for the MARES project, things people care about is a phrase that has popped up through the economists they have engaged in their project. It has become a focus for the way they think about the ecosystem and trying to get scientists to think about things differently. They are finding with both the SERES and MARES projects that getting the scientists to focus on things people care about is very important. Susan Markley added that sometimes what's really getting written down in some settings is what the scientists or the managers think people should care about or think they should understand. She said they have to be careful not to impose their judgement or value on what they think people care about.

Matt Harwell noted they tackle stakeholder engagement as part of the larger CERP umbrella in the Adaptive Management Integration Guide. Susan Markley added that the terminology 'stakeholder' may mean different things to different people sometimes talking about other stakeholder agencies other than the lead agencies, a conservation group or general public and they should all be thinking about the same thing when they refer to stakeholder.

### ***Structured Decision Making (SDM) Best Process Regime***

Allyn Childress provided a presentation (Encl. 5) noting that the information for this came from a different source. There are a lot of different ways, techniques as well as terminology to get to structured decision making. She noted she would be talking about the process in general and drawing from a recent USGS report that was published earlier this year from the Grand Canyon area that applied structured decision making to their process. This will be theory and actual examples of what USGS did out west. This is decision making trying to integrate science and policy and having a set of concepts and steps that can be flexible. She reviewed the six steps taken from [www.structureddecisionmaking.org](http://www.structureddecisionmaking.org). Basic foundation for the steps is iteration which could be used to finesse the process.

Obey said he appreciated the effort to use SDM as a basis for the decision making bodies, particularly the Task Force. He said he liked the USGS report since they tried to apply a theoretical approach to a real problem. The bubble diagram needs to be the basis for the discussion on decision making so that they know where they fit in the bubble diagram and it is helpful to structure the discussion. Chris Kelble asked how much different is the ADM approach to the approach that is currently being undertaken. Allyn Childress said the terminology is different and making sure to get through the analysis and then adding the values, it is putting names to the process already being utilized.

Susan Markley said the concepts of how they should make decisions are fine but the real world is more complicated. Some of the tools they have used so far with respect to science seem to work better on a system-wide or regional scale but a lot of projects in implementing CERP and related projects are made on a project scale. Some of the philosophical approaches they try to

use may not be working at that level. She noted comments in the CISRERP report about whether the process they have now really lends itself to incorporating science feedback. The report also raised a list of other issues such as the role of non agency scientists in decision making and what mechanisms exist for incorporating their ideas and the process for resolving science disagreements. She encouraged the members that while they are listening to the next presentations to think about those things and shape their discussion and questions for the presenters.

### ***Overview of Corps Decision Making Process***

Steve Kopecky provided a presentation (Encl. 6) noting that it all comes down to three questions should they do something, if so, what and how much should they budget. Although science plays a big role it is not just about science, there are laws and policy that sometimes go back 150 years, it's the budget realities, politics and special interests. He reviewed the decision making process and clarified that the White House proposes the budget and WRDAs, the Congress (authorization and appropriation committees) decides and the USACE makes recommendations. He reviewed the authorization (permission to study, construct, etc.) process noting that authorizations typically come from WRDAs. They have to get the things they care about in WRDAs through a Chief's Report, Administration proposal, Congressional 'Add' (which they do not do anymore). Adds have been a major way to get things done historically. They can also get authorized by being picked up in other bills, such as Defense Appropriations. The Chief's Report is how the Corps formally presents their recommendation to Congress. It goes to the Committees on the Hill and also to the Assistant Secretary of the Army for Civil Works and OMB for their review. Steve clarified that the operating rules for today is that they are only going to only pick up projects that have administrative clearance and are policy compliant/ready to go. The Corps had a ten year gap of no WRDA bills from 1976 and 1986 and the current operating rules come from WRDA 86. Since 2000 they have had one WRDA bill and an extremely unpredictable schedule. He reviewed the budget cycle noting that they are working on three budget years at a given time. The three types of appropriation measures (regular, continuing resolution and supplemental) were also reviewed. USACE makes science based recommendations with the goal of being an honest broker. They objectively evaluate costs and benefits and make informed investment recommendations. Science is critical to basic decisions such as setting project goals and objectives, articulating the purpose and need, identifying targets and trade-offs, articulating benefits and identifying and maintaining proper sequencing and pace. Key challenges include lack of scientific consensus, trade-offs and decision making and prioritization.

Greg Knecht said the state process has a lot of similarities but is not as complicated. The key challenge they are facing now is which projects are the projects they focus on now. Should they focus on projects that provide salinity benefits or wading bird benefits? If we can only do one of them, where do we get the best bang for our buck? Decision makers have to know what they get for those dollars. Steve Kopecky noted that as soon as they hear controversy they assume the project is not ready and not ready means zero, complexity is the enemy. Steve Davis asked about the accumulation of Chief's Reports and whether they have an expiration date. Steve Kopecky said nothing is ever de-authorized and nothing expires. He also said that he doesn't believe in the term shovel ready because something always changes somewhere along the line

and they become harder with age. Obey said that multi criteria decision analysis would be one way to address Greg Knecht's question. He asked whether the Principles and Guidelines have been modified to formally incorporate multi criteria. Steve Kopecky said they are trying to update the P&Gs. His personal experience with multi criteria has been good and bad and there is a tendency for it to become complicated. They are trying to make the P&Gs more than economic drivers where the environment has equal say and include multi criteria.

Shannon Estenoz, on the issues of earmarks, said that the Everglades is the opposite of an earmark since Everglades projects tend to be subject to years of analysis and stakeholder input. Science in all of its complexity will be influential in the development of alternatives, evaluation of alternatives and development of Chief's Reports but science is also important late in the process when talking to decision makers about funding priorities. The science that is communicated in a PDT would not be communicated the same way as it would be with a Congressional committee member. Important to think through what those communication tools look like.

Stu Appelbaum reported that they formally sent the C-43 PIR to Congress and it is one of the projects they hope to have included in the next WRDA bill. The C-111 SC project is just about there for the Chief's Report. A few issues remain on the Biscayne Bay Coastal Wetlands project that need to be worked out and following close behind is the Broward County WPA. A groundbreaking ceremony for the Melaleuca facility annex is scheduled for May 10<sup>th</sup> at the Davie facility.

### **Recognition of Paul Souza and Greg May**

Dan Kimball noted Paul Souza is taking a position with FWS in the endangered species program in Washington, DC and Greg May is retiring and moving to Louisiana.

COL Pantano said he learned a lot from his many phone calls with Paul Souza who he credits with informing his perspective. He presented Paul with the second district coin and thanked him on behalf of everyone at the Corps. He said it was a privilege and honor working with Paul and he considered him a personal friend.

Col Pantano said Greg May has been an absolute gentleman, professional and incredibly respectful of people. He has a great way of bringing people together and finding consensus. He said he too has been a mentor to him and has been a tremendous listener. COL Pantano presented Greg with a Corps flag from one of their vessels along with a citation. He also presented him with a coin which is now blue, shaped like a dog tag and contains an osprey as the mascot.

Dan Kimball noted the number of things he has worked on with Paul Souza since they can't do anything without it affecting an endangered species. He credits Paul Souza and the USFWS to do the funding for the initial planning so they were shovel ready on the Cape Sable Project. He encouraged everyone to hear his talk on climate change and what it means for south Florida, the country and our kids. He presented Paul with a painting done by his wife, Kit Kimball, of Florida Bay.

Dan Kimball noted that he met Greg May seven years ago and it was the beginning of a beautiful relationship and said he could not believe how much he has learned from Greg. He said he couldn't think of a better person to be the Executive Director of an intergovernmental Task Force like this. He said Greg has taken this Task Force in a very positive direction. He presented Greg with a Brian Cull photo of the East Everglades.

Shannon Estenoz said when she first heard the news of Paul Souza's promotion her initial emotion was devastation. She added that she is really happy for Paul, his family and the rest of the country. She believes Paul and the folks at Vero have some of the hardest jobs with the issues they wrestle with. She was impressed with his staff which she said has been aided by a strong and able leader. Paul has been a constant champion, giving all the credit that is due to his folks. Paul is solution oriented which is the best thing to say about him, in an area where solutions are very hard to come by. Folks who are focused on those solutions are valuable members of the team. Paul is respected by the GB and the SFWMD, one of the few folks who could come to the GB with credibility and persuasiveness and she appreciated that as a Board member. He is going to go on and help the nation with even bigger issues and on behalf of DOI she presented Paul Souza with a Clyde Butcher.

Shannon Estenoz noted that Greg May is leaving before the next Task Force meeting so she is making this presentation on behalf of the Task Force. Greg walked into her office and told her he was leaving and her initial reaction was shock. They talked for a long time and no one understands and respects Greg's motives and his choices more than she does. She said they are going to miss Greg terribly adding that it is hard to lose colleagues, hard lose leaders and especially hard to lose friends and nice people like Greg May. She added that science and the use of science in a high integrity way has no bigger champion than Greg May. She presented Greg with a Clyde Butcher print on behalf of the Task Force.

Paul Souza said he was overwhelmed and humbled adding that it has been a wonderful experience to be a small part of this, the most rewarding part of his professional life. He recognized the folks at FWS and all of their hard work and all of the lifelong friendships he has made.

Greg May said that words cannot express how much he is going to miss working with each and every person. He is blessed to be able to spend quality time with his family and as difficult as the choice was he along with his wife Kanda are very excited and happy. He will forever cherish everyone and publicly thanked his staff for their phenomenal contributions.

### ***Overview of SFWMD Decision Making Process***

Ken Ammon explained his presentation (Encl. 7) will review how the SFWMD integrates science within their agency. The SFWMD reorganized three years ago and science is important to the CERP mission, without science there would be no Everglades restoration. Science is the pinnacle information needed to make appropriate decisions and adjustments. Under the Everglades Restoration and Capital Projects there are five departments (hydrologic and environmental systems modeling, policy and coordination, land acquisition, engineering, and construction) with Science as the basis for all the groups. They can take a problem from the basic science that identifies the problem through all these other aspects and have a finished

project within one resource area. All of these six groups form a team from conception to the ribbon cutting so science is represented in each one of these aspects. The groups also coordinate with other state and federal agencies. They work closely with DEP and coordinate with DOI, Corps and EPA to the maximum extent they can. Science is vetted through the federal and state agencies and CISRERP as well. That science coordination is the key to the success of this program as well as answering the right questions. He explained that on a day to day science coordination basis the Executive Director and the Governing Board are not part of the flowpath. When it comes to budgeting they have to propose it to DEP and they have a trim notice due July 1<sup>st</sup>, they finalize the budget through the Governing Board and it is then submitted to the Governor's Office. The process is a little more controlled than what the federal government has.

John Marshall said they are looking forward to the re-start of the ROG Phase II process. Ken Ammon said they are looking forward to it as well. Currently analyzing the results of the Legislative changes and potential budget impacts to determine what will continue versus what needs to be cut back or delayed. They are focusing on continuing those projects that they currently have under construction and on the planning documents that are currently under preparation for PIRs. They will have to wait and see.

### **Decision Support Systems**

#### *Multi-Criteria Decision Analysis (MCDA)*

Andy LoSchiavo provided a presentation (Encl. 8a) on what the multi criteria decision analysis (MCDA) tool is and if folks want to hear more that could be a follow-up presentation. The challenge with making decisions is that there are multiple indicators and they relate to multiple objectives and/or constraints. This tool is meant to try and wrap those up so you can easily look at them. Sometimes find that there are competing objectives with these different indicators. Some alternatives may improve some objectives and impact others and vice versa. Scientists want input into the decision making process but science is not the only piece that goes into the decision making process there are legal issues, politics, values, socio-economic information, etc. These are tools meant to inform the decision makers and stakeholders but not make the decisions. With these types of tools the process can be made transparent. The SCG Indicators Report listed 12 indicators, there are also RECOVER System-wide Regional Performance Measures and there are constraints related to phosphorus, endangered species critical habitat and flood damage reduction protection. There are also metrics and values such as cost/benefits, recreational benefits, socio-economic effects and historic preservation. When there is information on every single indicator for one alternative the question is how to compare it with all the other alternatives.

The National Research Council 2010 Report talked about potential competing objectives and mentioned short term and long term trade-offs between water quality and quantity was mentioned in the report. The RECOVER Band 1 Report, a modeling effort looking at the first set of ten projects, looked at trying to balance Lake O high stages with estuary discharges or dry season releases to ENP and northern water conservation area dry-outs are examples out there when they talk about trade-offs. As an example of different values or weights criteria, he reviewed an EPA and Corps funded report on what to do with the disposal of contaminated

sediments. EPA experts valued the criteria differently from the Corps' experts. Depending on the mandate and mission of each agency there is preference on the weights of the different criteria or objectives. These tools try to make the process transparent. He reviewed some of the methods that are being used for Multi Criteria Decision Analysis (MCDA). He clarified that not all decision support tools use MCDA. He reviewed feedback from RECOVER and some of the agencies on what these tools should be developed to address. It included understanding uncertainty and risk in the decision context and the need to plug into benefits analyses for Congress. He also reviewed the CERP Adaptive Management looking at the six step planning process and the Corps project life cycle where they are trying to recognize uncertainties related to their goals and objectives. MCDA tool most likely used when they are comparing and selecting plans to make recommendations. There were no questions.

### ***NOAA Decision Support***

Chris Kelble provided a presentation (Encl. 8b) on the decision support tools that are being developed by NOAA focusing on projects relevant to south Florida. The lack of good interaction between managers, scientists and politicians does not come from a lack of knowledge but from a lack of communication. The Magnuson Stevens Re-authorization Act said instead of focusing on a group of species to focus on managing ecosystems. In Everglades restoration they have been doing ecosystem based management and have been fairly successful at it. He provided a sample of a communication tools that NOAA is currently using that shows managers where it is that they can have an impact. He reviewed three projects Marine and Estuarine Goal Setting (MARES), Integrated Ecosystem Assessments (IEA), a NOAA Wide program, and Integrated Marine Protected Area Climate Tool (IMPACT), a new program focused on how to take climate data and communicate it to sanctuary managers and the public. The goal of MARES is to communicate desired future conditions of the coastal ecosystem of south Florida by engaging scientists, managers and policymakers in a systematic manner. To take the investment they have made in science and increase the usefulness of it by getting it into the management context. The IEA is NOAA's main scientific support of ecosystem based management and the primary objective is to make comprehensive information available to inform management decisions. IEA is very similar to Structured Decision Making and many are coming to the conclusion that this type of process is the way forward. IMPACT is a new project and is open to the decision makers interested in participating.

Obey said he is passionate about the SDM approach and added that they need to be careful with these complex situations to not further complicate it for the decision makers. The nice thing about SDM is that things like legal constraints, conceptual models, trade-off analysis, etc. are put into a structured framework that they can use and if everyone is speaking the same language it is easier to understand. The MCDA tool is one of the tools that fits into that framework and when they talk about what project to build next and are facing different performance measures they may need to go down that path and decide how far and when to stop within that framework.

Shannon Estenoz said that when the Adaptive protocols for Lake Okeechobee were developed last year the Governing Board struggled for two dry seasons with how to make decisions about its recommendations to the Corps. They struggled because they did not have a tool that could

show them the magnitude of the trade-offs. The tool they ended up with is not perfect but at the end of the day the Governing Board felt better about making the decision because of the tool. Greg Knecht said he struggles with the word 'risk' and one of the things he thinks about is risk associated with a legal challenge. What's the risk if the wrong decision is made, what's the magnitude? Chris Kelble said they would have to come up with parameters to incorporate resilience. Obey added that the SDM or MCDA tool boxes can allow for the incorporating of risk or uncertainty either using weights or some other mechanism, the methodology allows it to be incorporated into this approach.

Greg Knecht said the other thing he struggles with is uncertainty. They all want definitive answers they all have to be careful not to use risk and uncertainty as a crutch for not doing anything. Going forward with projects they know there is uncertainty and risks because it is an incredibly complicated system. He urged them to figure out how to deal with this. Chris Kelble agreed adding they need to figure out the best way to communicate the information up the chain. Obey said they need to actively decide when Adaptive Management should be used. Andy LoSchiavo said the theory behind the CERP Adaptive Management Integration Guide is that there is uncertainty with implementing CERP, they don't have all the answers but they know enough that they think they can move forward with these actions in an incremental way, learn from it and improve the process. If there is a lot of risk they would go back to the planning process and try to minimize that risk or do an incremental phased approach and build something smaller so that the impacts are not as severe as they would be with going forward with the full project. The Monitoring and Assessment would provide the information back to the decision makers on what actually happened. He encouraged everyone to look at the guide.

Shannon Estenoz said they all agreed that they would be implementing this program adaptively although they haven't perfected what that means and risk and uncertainty is a big part of what they have struggled with. At some point they have to make the judgment/value call and the investment. Susan Markley said that it would be a constructive exercise to identify a case study to try some of these ideas on, maybe a subset of people that have these critical questions in mind, what are the projects that need to be done first, what is the critical monitoring that they need to keep, what are the measures that are used to put on a graph and how is that information communicated. The next workshop would be to deal with one of these difficult things and try to make some progress. More meaning to do a case study, something they are struggling with. Greg May said one of the things they need to consider in selecting the pilot project is the scale of the decision making and he thinks they are talking about ecosystem wide planning. Shannon Estenoz added that in the current planning process is focused on a project by project basis which is how the Corps' justification process works. For example, seepage management within the Corps process is hard to justify by itself without DECOMP. This is a valid question about how they consider these infrastructure investments (seepage barrier, storage reservoir, etc.) when they are looking at how to sequence their investments the current justification process is a problem. Greg Knecht said the big scale stuff is important but there are some micro scale/project related issues that he is facing. Having the science gives him comfort in going to his boss. Although there are risks the science behind it says it is the right thing to do and that along with the Adaptive Management and the monitoring program enable the decision maker to be willing to take the risk. He would welcome the opportunity to lay out some of the

issues that they deal with along with the questions so they can figure out how to answer the questions. Stu Appelbaum said the Corps typically racks and stacks projects nationwide, on an ecosystem it is tougher because they do not have monetized benefits. John Marshall said clearly the estuaries are in big trouble particularly the Caloosahatchee and the priority for them is to save the estuaries and move the clean water south.

Greg May said the amount of money they have to spend year over year is a major factor in determining the optimum set of projects to do next. The different funding scenarios give decision makers a better feel for the trend of the impacts. Tom McVicar said the Corps is going to be 'spitting things out' at a faster pace than the state can absorb their share of the costs and they need to be ready to go with it. Stu Appelbaum added that because the SFWMD has done a lot, it is to everyone's benefit to bring those projects forward because they will get the credit and it provides the working capital 'a gift that keeps on giving' because a good share of the work has been done. Shannon Estenoz said that in addition to the credit they also need to come to terms with the state's likely expense on water quality.

### **Everglades Agricultural Area (EAA) CEM**

Elise Pearlstine provided a presentation (Encl. 9) reviewing how the fields are structured within the EAA (sugarcanes, canals, ditches and dirt roads). She noted that most of the work she does is along the edges of the fields and looking at what is happening in that dynamic habitat where they get the interface. About 280,000 hectares and most of it is sugarcane which is rotated with rice, there is sod and vegetables. The sugarcane is rotated with rice so the rice fields move around. There is limited access and there are few trees and structures with most of the property being gated. The managers watch and are aware of what is there. They have done surveys for fish, amphibians for birds in a structured manner. They have been able to complete bird surveys for the last working 8-9 years they have been working in the EAA. They are currently doing amphibian surveys in the evenings and birds in the mornings. Recently completed two years of surveys on fish and they can pretty much get anywhere. They get into the rice, a short hydro-period marsh. They haven't done specific mammal and reptile surveys and keep track of what they see as they are driving to and from the field points. A herparoo mainly looking for the Florida kingsnake was done every spring for seven years. They are trying to keep track of bobcats using GPS.

One of the assumptions that people make about agriculture is that there is more exotic species and lower species diversity and there will be more pest birds. They do get a lot of black birds but the exotic and invasive species they found were not more apparent than what they were seeing in the natural areas. It isn't until they get to the cities, outbuildings and the farms that they see the Cuban tree frogs, curly tailed lizards, and collared doves. There is concern for the bats in the area with the proposed wind farm development going through the EAA. They do not have pythons yet and are not sure why. There are 164 species of birds with at least 36 that breed in the EAA. The most numerous group of birds are the song birds or the perching birds. In the EAA it is difficult to say whether the EAA provides important habitat for these and other birds but the EAA has been there for fifty years and birds have been using this habitat for that long. There are some unfarmed areas along corners and edges that support a number of wildlife species. The edges are very important and provide an alternative habitat for things to

come and go from. They don't have a Conceptual Ecological Model (CEM) she has a draft that she presented at the GEER Conference and she is hoping to get input on the data gaps. They know there are a lot of animals in the EAA what they don't know is the effect of agriculture on the populations and whether the EAA is important or detrimental. Wind power development is being considered and the studies are ongoing. Elise noted she has been working in the EAA for almost 10 years and sees a lot of things changing in terms of rock mines and wind power bio fuels. The growers are looking down the road as soil becomes an issue, in some areas it is getting fairly thin. She offered anyone interested in a species list to read her final report prepared for the EAA Environmental Protection District containing 8 – 9 years worth of work.

Paul Souza asked if Elise had seen any indigo snakes or snail kites. Elise replied that she believes there are areas that support indigo snakes, when they do any STA construction they tend to find them. She has not seen snail kites but there have been reports but that is when there are snails in the ditches and canals and they have been working hard to keep everything out of the ditches and canals. Paul Souza asked whether she had done surveys in the footprint where the wind power project is proposed. Elise said they have surveyed everywhere out there.

Joan Browder asked if there was refugia out there and the potential for refugia on farm lands to harbor native or beneficial insects that would prey on insects that attack crops and native pollinators such as bees. Elise reminded the group she is completely grant funded and piggy backs whatever she can, there are a good number of butterflies and native flies but was not sure about others. There are no native plants in the EAA it is agriculture or non native edge vegetation. The pond apple keeps trying to come back when they don't mow down the canal banks for ditch maintenance. The owl boxes have been a big success, owls intended to control rodents and some have stopped using rodenticide. Joel Trexler asked whether there were any studies where they have looked at pesticides in the tissue of fish in those fields. Elise said that is a sensitive subject and she is grower funded but she has not seen any evidence. Because of the water quality issues they are dealing with, they keep as much water as they can on their fields and by doing that they are keeping nutrients and pesticides on. They are also doing a lot about BMPs.

John Marshall said it is their hope and request that the SFWMD and the Task Force will continue to support the development of Elise's CEM so it can be used in the ROG workshop when it reconvenes.

### **Next Steps and Closing Comments**

Shannon Estenoz announced that Chris McVoy and others have published Landscapes and Hydrology of the Predrainage Everglades. She congratulated them on the publication of this book which is available on Amazon.com and has a CD included.

Gene Duncan personally thanked Greg May and Paul Souza who he sees as tremendous professionals. He has the utmost respect for both of them and thanked them for their service adding that he really appreciated it.

Dan Kimball said they need to map out next steps forward now that they have been grounded in decision making, science and public engagement. Next step could be using a practical example and weave it in to a real world decision they are wrestling with.

Susan Markley said they are all facing unprecedented cuts and changes in leadership and there is a lot of uncertainty which makes it more important to identify key issues that decision makers need from stakeholders and the science community. She was not sure they should pick out a specific pilot project. She suggested a smaller subgroup work between now and the next meeting to set up a path forward.

Susan Gray agreed with a small sub team and suggested DECOMP Physical Model be the project they take on. Greg Knecht said he is more than willing to spend some time with a small group at least identifying problems and hurdles that they have in front of them, if for no other reason to educate why some things are as difficult as they are. He said it would be a step in the right direction. If they get a group of folks from a broad background and they all stand there together and say they are willing to accept risk and uncertainty and they agree it won't result in irreversible impacts, he truly believes all the people in this room and agencies/organizations they represent can make these tough things do-able. COL Pantano said it is called shared adversity. Shannon Estenoz said she deferred on the example and added that taking a problem they are currently wrestling with and trying to create some decision making tools will take it from the abstract and would be really useful. She said she agreed with taking it to the next level and taking a real problem and actually try to solve it.

Chad Kennedy said DECOMP PM is close to them and asked whether they should look at something with a longer range planning effort. Susan Markley said she would pick something at a bigger scale but they have to start somewhere. She said they should be more mindful of what they define as success. They spent a lot of time on the briefing papers in particular the new science paper was a really useful learning process. At the end of the exercise they hadn't solved every problem but having the open discussion on what the challenges are was a big accomplishment. They could make progress on understanding why it has been so difficult to get to the next step and come to some agreement on what communication tools would help them. She was not sure DECOMP Physical Model had a big enough scope but she was not opposed to that either. Shannon Estenoz said it was the whole group of issues, the funding, regulatory, planning and justification knotted up together that make it all a big 'wicked problem'. It could get complicate and get into policy and legal issues that may bring the effort to a screeching halt so there is some merit to taking a small step first.

Tom Teets said they should tackle the physical model first then go to the next step and build on the success to make progress. Dan Kimball said the geography is right, being in the central flowway. Susan Markley, Chair of this group, Susan Gray, Greg Knecht, Kim Taplin, Chad Kennedy. Susan Markley said they need some balance and perspective. Matt Harwell, Chris Kelble and Stephanie Romanach also volunteered. Dan Kimball said they will have someone from the park. Greg Knecht said he did not want to presuppose on what the outcome was going to be. The group needs to meet and do some brainstorming. Susan Markley said the group may determine that some type of analysis or presentation from someone not here today will be

needed. Joan Browder asked if they were going to test out some of these different decision methods or come up with a new decision method for this pilot. Susan Markley said it was possible some of things have been attempted in the context of DECOMP team work or Adaptive Management team.

Matt Harwell offered a suggestion for a secondary theme that could go in parallel. There has been a lot of discussion about uncertainties but he was not sure they were all talking about the same kind of uncertainty. A number of exercises over the past few years looking at uncertainty within CERP such as the SCG looking at it from a needs and gaps analysis and RECOVER now going through an uncertainty characterization process. There are multiple ways to capture what uncertainty is, IPCC has one way, risk assessment framework has another and they should explore that further to help advance that part of the discussion.

Shannon Estenoz said this was her first WG/SCG meeting and found this to be very helpful. She said she wants to keep this dialogue going and asked them to think about how they could do this and avoid touching on this every six months or once a year.

Todd Hopkins introduced Bob Progalski the new Assistant Field Supervisor for Everglades Restoration who replaced Pam Repp. Stu Appelbaum reminded everyone of the Melaleuca Groundbreaking Ceremony the following week on May 10<sup>th</sup>. Greg May personally thanked everyone for participating in the workshop adding it was the best dialogue between decision makers and science and technical community. Everyone came prepared and did engage and participate. It was a great workshop. He thanked the two teams who helped to develop the agenda and presentations. He thanked Sandy Soto for her work to help the Task Force and Working Group function. He thanked Shannon Estenoz for Chairing the February Task Force workshop, for her insights, leadership and friendship over the last 10 years. He also thanked Dan Kimball, Susan Markley and Greg Knecht for their leadership on the WG and SCG, their insight and friendship. He warmest wishes to everyone and high hopes for continued success on Everglades restoration.

Meeting adjourned at 4:40PM.

#### Handouts:

1. Agenda
2. Workshop Overview presentation
3. Synthesis of Everglades Restoration (SERES) Questions Overview
  - a. Report
  - b. Steve Davis' PPT
4. Stakeholder Engagement Best Process Regime
5. Structured Decision Making Best Process Regime
6. Overview of Corps Decision Making Process
7. Overview of SFWMD Decision Making Process
8. Decision Support Systems
  - a. *Multi-Criteria Decision Analysis*
  - b. *NOAA Decision Support*

9. Everglades Agricultural Area (EAA) CEM
10. Judge Gold's Omnibus Order handout (Gene Duncan)
11. Appendix 3A-4: Annual Summary of Total Phosphorus Concentrations at Everglades Protection Area... from the South Florida Environmental Report 2011
12. 2009 System Status Report – Executive Summary
13. RECOVER 2009 System Status Report Key Findings