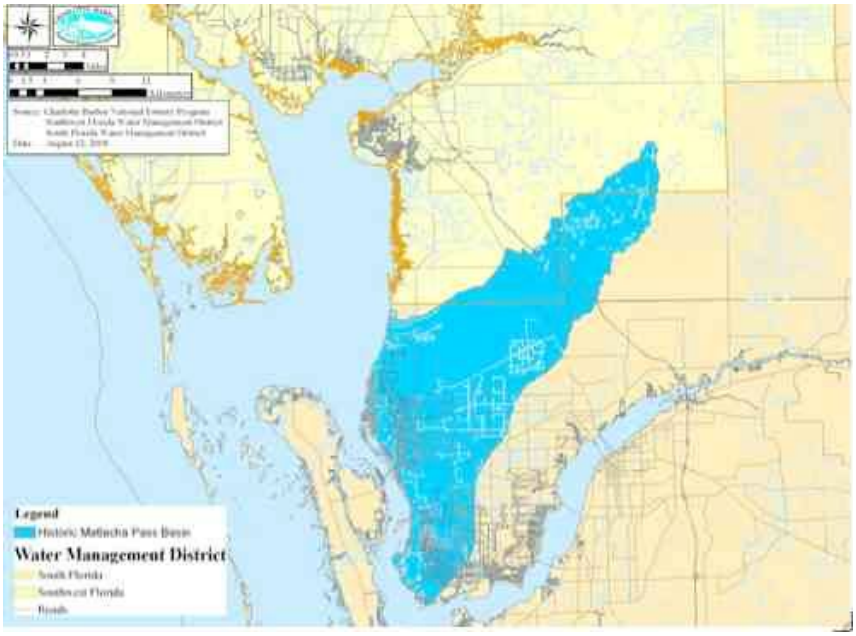
Cape Coral North Spreader Canal
Ecosystem Management Agreement Process

October 29, 2008 Meeting Report



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Meeting Planning, Facilitation and Report by
The Florida Conflict Resolution Consortium

October 29, 2008 NSEMA Meeting

Executive Summary

The Cape Coral N. Spreader Ecosystem Management Agreement stakeholders group and other participants met on October 29, 2008 at the SW FL Regional Planning Council in Ft. Myers. There were representatives from local, regional and state government and private groups and other interests. The focus of this meeting was on Net Ecosystem Benefit (NEB) targets/performance measures, NEB assumptions, project identification and project assessment methodologies.

There are two types of performance measure targets. The ecological performance measure targets include seagrass coverage and abundance, oyster health and number, and typha spread into mangrove habitat. Hydrological targets include minimum, average annual and maximum flows over the weirs of the North CCDS. The central issue is salinity. Water quality is related to the flow because the total loading is more important than concentration. Projects in the past have focused on flood protection and this has had a negative impact on freshwater flows and timing.

The group considered a number of assumptions and questions regarding NEB definitions and which projects will be considered as part of the thresholds and which will count towards a NEB. DEP will consider the input, request legal and policy guidance and bring a revised worksheet back to the group to review.

A list of possible types of NEB projects in the watershed, in the spreader and receiving wetlands and waters and general projects was discussed and refined. Possible criteria for evaluating projects were also addressed. Thirteen current or potential project descriptions were reviewed and discussed and several additional projects were suggested. A plan was presented for the methodology and methods for assessing projects. Participants were asked to provide additional information on current and potential projects so

In closing everyone went over a draft outline of the final report and talked about what pieces are ready to fill in and the next steps and work plan for completing the work of the NS-EMA Stakeholder Group

The following meeting summary incorporates meeting materials and notes from the discussions. It does not capture everything or exactly what was said. Additional materials related to the EMA process can be found at:
http://www.dep.state.fl.us/south/TMDL/tmdl.htm

Meeting Opening

The facilitators welcomed everyone and had them introduce themselves. Tony Janacki, the new Technical Lead expressed his appreciation for the opportunity to work on this important project and briefly described his background. There was a brief overview of the Ecosystem Management Agreement process (See Appendix A) and went over the EMA Goals, meeting objectives and agenda (Appendix B). The ground rules in Appendix C were summarized and then everyone.

Objectives

- To discuss possible water quality or quantity targets/performance measures
- To seek consensus on NEB assumptions
- To agree on types of projects and evaluation criteria,
- To review and refine a list of current, funded, planned and possible projects
- To discuss methodologies and/or models to be used to assess impacts of potential projects

Performance Measures

Rafael Montalvo, facilitator, drew a diagram and explained that performance measures will be used to describe targets and establish the thresholds for determining net ecosystem benefits (NEB).

Tony Janacki, the Technical Lead, talked about the need to have definitions upfront. This can build on the presentations by Jim Beever and Bob Chamberlain that used the SW FL Feasibility Study (SWFFS) work. Performance measures can be based on the historic coverage and abundance of sea grass, living oyster beds and typha (cattails). This is the text from his PowerPoint presentation:

Southwest Florida Feasibility Study (SWFFS) Performance Measures

1. Ecological performance measure targets include:

    a. Protection of seagrass such that historic species coverage and abundance is restored and/or maintained, where suitable habitat exists.
    b. Living oysters returned and are maintained at historic locations where suitable physical habitat exists.

c. Typha spread into mangrove habitat is stopped and eliminated from previously documented areas of encroachment.

2. Hydrological performance measure targets to achieve ecological targets include:
   a. Provide a combined minimum flow of 10 cfs over weirs of the North CCDS.
   b. Combined average annual flow from the North CCDS weirs <u>≤</u>100 cfs.
   c. Combined flow from the North CCDS weirs never <u>≥</u>1000 cfs.
   d. Combined flow from the North CCDS weirs never <u>≥</u>500 cfs for longer than a month.
   e. Preferred average wet season flow <u>≤</u> 200 cfs.

The central issue is salinity. Different organisms need different flows/salinities in different seasons and at different times in their life cycles. It was suggested that the group consider measures and benefits used in Biscayne Bay and other similar areas. The targets can be based on the pre-development hydrographs from the SWFFS. Long-term rainfall cycles need to be considered (40 year cycles).

Water quality is related to the flow because total loading is more important than concentration. Higher flows lower the concentration. Sea grass is impacted by turbidity, chlorophyll and salinity. The salinity level and rate of change is probably the most important metric.

Many of the projects in the past have focused on flood protection and this has had a negative impact on freshwater flows and timing. It is important to consider all potential negative impacts of possible projects in determining net benefits.

Net Ecosystem Benefit, NEB

The group reviewed each section of a NEB Worksheet and rated the acceptability of each item using the scale below. Then they made changes as needed to address participant concerns. Edits are shown with ~~strike through~~ and <u>underline</u>. Comments are in *italics.*

The Acceptability Rating Scale

4 = Wholehearted support. This is what I would do.
3 = Support, although it may not be what I would prefer.
2 = Minor reservations. I can support this, but I'd like some clarification or refinements.
1 = Major reservations. I cannot support this without major changes.

Possible NEB Assumptions and Questions

Character of NEBs

1. Environmental benefits must be related to improvements <u>tied to adopted performance measures</u> in the volume, timing, distribution or quality of water: in the

watershed of the North Spreader canal; in the spreader canal itself or associated feeder canals; or discharged from the spreader canal to the receiving waters of Matlacha Pass or the Aquatic Preserve, to count toward NEB for purposes of this process.

2. Environmental benefits that do not meet the above criterion, but that result from projects approved as part of the NSEMA may also be noted in the EMA report.

3. We will seek to establish seasonal optimum ranges for water volume, timing, distribution and quality from the spreader canal to specified areas of the receiving waters.

4	3	2	1
7	9	1	1

Location of NEB Projects

4. Projects within the current or historic watershed flowing to the spreader canal, canals and receiving waters including the mangrove fringe may be considered in the calculation of NEB (see map).

4	3	2	1
13	4	0	0

Discussion Notes

- *I am concerned about Matlacha Pass, the National Refuge and Charlotte Harbor.*
- *We need to clarify which receiving waters we are talking about.*
- *The people who gave this a 3 want to see a map.*

Procedure for Determining Net Ecosystem Benefit

5. A package of positive environmental impacts constitutes an NEB if they exceed the benefits that would be obtained through the ~~alternative~~, conventional enforcement action. The benefits of the conventional enforcement action therefore become a threshold to be exceeded through the EMA process. The Consent Order governing the NSEMA process defines the conventional enforcement action in this case as replacement of the barrier.
6. Projections of conditions resulting from replacement of the barrier are therefore the basis of the threshold that benefits from an alternative package of projects must exceed to constitute a Net Ecosystem Benefit.
7. Calculation of the threshold will also incorporate the projected impacts (positive or negative) of projects that are not eligible to have their impacts considered as part the NEB.
8. ~~The consent order requires consideration of future build-out conditions. The threshold will therefore be calculated by projecting forward to build-out the following: current conditions; the effects of replacing the barrier; and the impacts non-NEB projects~~. [See new #8 below]

9. <u>The calculation of NEB will make explicit the negative as well as positive impacts of projects.</u>

New 8. The threshold:

- Is a future condition;
- Has short-term and long-term components;
- Includes:
  - Projected impacts of replacing the barrier
  - Projected impacts of non-NEB projects, if known, (whatever definition of non-NEB projects is ultimately used)
  - Build-out conditions

4	3	2	1
0	4	4	1

Discussion Notes

- *There are 2, "Don't knows."*
- *I want to consider build-out but not include it in the calculations.*
- *DEP's review is based on EMA requirements [thresholds].*
- *Is build-out the same as development trends?*
- *Why is this a future condition?*
- *I am concerned that we don't know what the build out conditions will be. I want to look at the 2050 SWFFS model. I am concerned about the projection of the impact of replacing the barrier.*
- *Do you project that the bank [spreader canal wall] is to be repaired? No.*
- *The Consent Order says that Cape Coral is not responsible for repairing the bank only replacing the barrier and boatlift.*
- *Someone else could do the repair of the spreader canal wall.*
- *Replacing the barrier may not be permittable without repairing the canal wall because of possible negative impacts.*
- *Wall repairs will be evaluated as a possible project*
- *The replacement barrier would be installed north of the former site and DEP has said that the permits could be completed in 30 days.*
- *The number of breeches could be increased from 13 to 100 to spread the water flows our more evenly and direct them to where more water is needed, e.g. to reduce invasive plants.*
- *The spreader canal was an icon and a tragedy.*
- *We need a time frame for action. Some projects may take 4-5 years. There needs to be an implementation schedule.*
- *The consent order requires consideration of conditions at build-out.*
- *The SWFFS projects flows for 2050.*
- *Raise the weirs, build retention basins, fix flows and let the estuary be an estuary.*
- *We need an engineering fix for the biological problems. The barrier could be replaced, and control structures could be included along the spreader. Cost*

estimates are needed for possible projects and there needs to be ways to fund the most cost effective projects, possibly with a special district.

- *The Feasibility Study will have lists of projects and costs but this may not be for 2 years.*
- *Cape Coral is only ¼ built out. Storage facilities could be built incrementally in conjunction with future development.*
- *We want an optimum design to achieve a target that could be based in part on sea grass areas and density.*
- *The threshold is based on conditions with the barrier replaced, which would raise the water level about 1.2 feet.*
- *The Consent Order was created to be sure that a short-term fix does not become a long-term failure.*
- *Some think that the spreader worked and could be fixed others think that it would be punitive to have to replace the barrier.*
- *There may be a need for the barrier in the short-term because of high freshwater flows and it may not be needed when all the projects are completed.*
- *In summary, we need short and long-term targets and a threshold based on an estimate of conditions with the barrier replaced and non-NEB projects completed. Positive and negative impacts need to be tracked.*
- *The Feasibility Study may have numbers next year or we may have numbers for them.*
- *We need to decide how far out do we go for future projects?*
- *We need to consider conditions with and without the barrier and with and without the spreader wall restored or redesigned.*
- *USFWS determinations must be consistent with DEP determinations.*

NEB Questions for Discussion

Which of the following should be considered in determining the NEB threshold and which of the following should be counted as contributing to the NEBs?

a. ~~Projected impacts of projects currently underway, to be completed before the end of the EMA process (5-15-09)~~
b. ~~Projected impacts of projects currently underway, to be completed after the end of the EMA process (5-15-09)~~

[Replace a. and b. with this] Projects that are permitted, under construction and can still be modified to improve the benefits may be considered NEBs

c. Projected impacts of projects currently planned and funded, or otherwise locked-in
d. Projected impacts of projects currently planned but not funded
e. Projected impacts of projects developed as part of the EMA process

Acceptability rating for c d and e at a minimum

4	**3**	**2**	**1**

10	3	0	0

Acceptability rating including revised b

4	**3**	**2**	**1**
6	1	1	8

Discussion Notes

- *"a, b, and c" should be included in calculating the threshold.*
- *"d" has to be included as a NEB, especially if permitted. "a" and "b" should be part of the threshold. "c" needs more definition.*
- *If the utility project north of Pine Island Road is included as a NEB it will be an incentive for Cape Coral to fund it.*
- *The County would like credit for TMDL efforts. If there were no credit, it would discourage needed efforts.*
- *We don't want the NEB projects to just be a list of what we would do anyway even without this EMA.*
- *Include all projects so we recognize and give credit for everything that is being done.*
- *"d and e" are OK as long as projects address freshwater flows to Matlacha Pass.*
- *A key question is whether we can demonstrate that the spreader has not done what it was intended to do?*
- *DEP may want "a and b" considered in the threshold and "c and d" as NEB projects. The definitions for "c and d" may need to be refined.*
- *The council could cut funds any day. If there is no credit for the projects, no one will do them.*
- *Only include projects that are required by someone else or the money could be pulled.*
- *This could cause projects to be delayed until after the EMA agreement so they would qualify to be counted as a NEB.*
- *DEP can't include something that has already been permitted.*
- *May need to look at the impact of phased projects. Are all or some phases in considered for the threshold or NEB?*
- *Have the legal guys from DEP explain the tie with permits. Some projects are not capital projects.*
- *DEP can include soft projects*
- *There are projects that could be modified even if they have been permitted. Would the changes be credited for the NEB?*
- *There may be projects that are funded annually.*
- *Is there an assumption that there will be one permit at the end of the EMA process or it could be an intergovernmental MOA with each agency doing separate permits?*
- *The USACE would sign-on to an agreement.*
- *The USACE will provide comments but is not a Stakeholder Group member.*
- *In summary, "c, d and e" will be considered in determining the NEB.*

Possible Types of NEB Projects

The group suggested the underlined refinements to a draft list of types of NEB projects. Discussion notes are in *italics.*

Watershed Projects

1. Water retention, storage and release to the spreader canal (lakes, reservoirs, filter marshes, wetlands, weirs, swales, etc.)
2. Redirecting historic flows back to Yucca Pen, Charlotte flatwoods, Caloosahatchee creeks, etc.
3. Diverting excess water for water supply (ASR, irrigation, etc.)

Receiving Water Projects

4. Water distribution from the spreader to receiving natural areas (barrier replacement, repairing breeches to the spreader wall or managing openings in the spreader wall, other)
5. Coastal natural area habitat restoration or establishment in the spreader canal and adjoining receiving waters consistent with NEB assumptions.

General Projects

6. Water quality projects like sewering, swales, weirs, etc.
7. Others environmental benefits (upland restorations, exotic removal, etc.)
8. Non-structural projects (fertilizer education, fertilizer ordinances, water conservation, land development policies and practices and regulation)
9. Projects that restrict boating numbers, sizes, speeds, etc.

Discussion Notes

- *We seem to have an assumption that the projects we want to look at should accomplish the same goal as what DEP was trying to fix with the original spreader canal, barrier, etc.*
- *We are not considering the water quality problems that result from not putting in something that keeps huge numbers of boats from having direct access to the pass. This is a water quality issue.*
- *The number of lots already platted will determine the number of boats not the existence or not of the barrier, although it may have an impact on the size of boats. The cat's out of the bag.*
- *Boats are limited by the shallow areas in Matlacha Pass.*
- *There could be pressure dredging to accommodate larger boats.*
- *Remember secondary and cumulative impacts of boating will be evaluated as apart of the permitting, so we might as well look at them here.*

Possible Criteria for NEB Projects

Tony Janicki the Technical Lead presented these draft evaluation criteria for consideration by the group. The notes from the discussion that followed are in *italics.*

Project	Evaluation Criteria								
	Flow (water quantity) restoration	**Flow timing restoration**	**Water quality improvements in canals**	**Water quality improvements in receiving water bodies (e.g., Matlacha Pass)**	**Benefits to vegetated communities**	**Benefits to oysters**	**Benefits to fish community**	**Permittability (Agency)**	**Relative Costs**

Discussion Notes

- *We want measures and these will need clear definitions.*
- *Look at the distribution of flows from the spreader wall and the tidal flows.*
- *Consider suficial aquifer benefits for birds, etc.*
- *TMDL projects will have benefits.*
- *Minimum Flows and Levels, MFLs are as important as maximum flows.*
- *Change "oysters" to "shellfish." They don't have different salinity needs.*
- *Is the spreader a stormwater body or an ecosystem? Is it a target area?*
- *The canal can have a TMDL.*
- *Add the completion timing as a measure.*
- *Include impediments to success such as funding availability, political acceptance, etc.*
- *Under "permitability" indicate the agency that has responsibility.*
- *Get the rules on the table. I am not a fan of weighting, but we can do that if the group wants.*
- *Put wording on each criterion so everyone understands exactly what they mean.*
- *We haven't talked about surficial aquifer levels. Improving levels should be a criterion.*
- *Freshwater/stormwater distribution is the main criterion – make this explicit.*
- *What is the resource that we are trying to protect? Is it the area west of the spreader, or the canal itself? If the canal is a "stormwater pond" you would not expect good water quality in it.*
- *We need to prioritize potential projects. Obviously everything west of the spreader is something that everyone is concerned with. Are we concerned with quality in the canal itself? There are improvements that could be made in the canal itself.*
  How many think that salinity and quality in the canal should be considered? 3
  How many do not? 0
- *Primary objective should be NEB in wetlands, receiving waters and sea grasses. Improving the canal is one of the means. It is subordinate to the main objective.*

- *We can't change the fact that the spreader waterway is part of the stormwater system, and you can't put nastier stuff in there and expect to see improvements in the Pass. But do you hold that part of the stormwater system to a higher standard than the rest? You have to improve incrementally all the way up the system.*
- *Essentially, the treatment plan is right next to the resource you want to protect. My preference is to improve the system up to Burnt Store Road.*
- *You have to maintain the stormwater systems. With the barrier gone, there is no separation between the canal and the pass.*
- *We have the ability to view the spreader system not as a stormwater retention system, but as something better. Of course we include the canal into the system.*

New criteria:

Timing.

Qualitative estimate of the likelihood of success.

Surficial aquifer

TMDLs

MFLs

Shellfish

Possible EMA Projects

The group reviewed this partial list of potential projects submitted by local sponsors to the Caloosahatchee River Watershed Protection Plan, by Lee County and by the City of Cape Coral that may be relevant to the Cape Coral Spreader Canal Ecosystem Management Agreement (EMA). The discussion notes are shown in *italics.* There are also additional projects suggested by the group.

1. Filter Marsh possibly with Reservoir, Zemel Property, 00001.0000

Description: Approximately 222.3 acre parcel located adjacent to the Gator Slough and potentially available for development as a recreational area, wetlands park and filter marsh for on-land storage of water.
Flow Benefits:
Storage/Timing Benefits: impact major reduction in peak flow quantities and provide some water quality treatment benefits.
Water Quality Benefits:
Expected Completion Date: Conceptual
Project Budget:
Agency: Cape Coral

Discussion Notes

- Could be broadened to be a large project, possibly in phases, along the north side of Gator Slough that takes advantage of the drops along the weir for storage.
- Could the Technical Committee provide conceptual information about performance per hundred acres based on experience elsewhere?
- Where would the water come from? From the north side? Intercept water in Gator Slough.
- I am concerned because we have been trying to buy the Zemel property for ten years – they are not interested in selling. The State has some land that too.
- Conceptually, if we have more water coming into the system than the system can store, we need to be looking at storage somewhere in this area.

2. **Gator Slough Channel Improvement** (Also known as Gator Slough/Powell Creek Hydrologic Restoration; Also known as North Fort Myers Surface Water Restoration Project)

CRE 66 – Alt 2, Local
Source: Management Measure description.
Description: This project has three components (1) Gator Slough flow way and water quality improvement; (2) Redistribution of Gator Slough/Powell Creek water originating from northern reach (Charlotte County) of Lee County and construction of a filter marsh to improve water quality; (3) Construction of ditch plugs and installation of risers to mimic natural system in the region.
Storage/Timing Benefits: None
Flow Benefits: None
Water Quality Benefits: No apparent water quality load reduction.
Expected Completion Date: June 2009
Project Budget: $2,800,000
Agency: Lee,

Discussion Notes

- Shallow conveyance with weirs to allow management that mimics natural hydroperiod.
- Is this taking water from in the watershed and diverting it outside the watershed? The Powell Creek portion would.

3. Aquifer Storage and Recovery Program
North-South Transfer Station, In Construction

CRE 77 – Alt 2, Local
Description: Installation of one (1) Class V injection well for storage and recovery of surplus freshwater. Location allows for use of recovered water for irrigation or to maintain minimum flows during dry season
Source: Management Measure description.
Storage/Timing Benefits: None
Flow Benefits: None presumed at this time.
Water Quality Benefits: No apparent water quality load reduction.
Expected Completion Date:
Project Budget:
Agency: Cape Coral

Discussion Notes

- I am ambivalent about ASR. It can reduce water flows, but also may divert water that historically flowed to the estuary.
- Even in wet season, the concept of "excess water" is debatable.
- The value of all storage systems, whether ASR or higher weirs, depends on what you do with it. If you use these to mimic natural patterns, they can be good.
- In terms of diverting water that historically went to the estuary, as development increases, you have more runoff that historically did not make it to the estuary.

4. Canal Pump Station Operations, North-South Transfer Station Optimization

Description**:** Development of procedures for best management and operation of Canal Pump Station at NSTS to maximize freshwater storage in the City's canal system.
Flow Benefits:
Storage/Timing Benefits
Expected Completion Date: On-going
Project Budget:
Agency: Cape Coral

5. Cape Coral Canal Weir System

CRE 78 – Alt 2, Local
Description: Construction and reconfiguration of existing weirs in the canal system to reduce stormwater discharges
Source: Management Measure description.
Flow Benefits: None presumed at this time.
Storage/Timing Benefits: Surface area of canal system is estimated at 2800 ac.
Water Quality Benefits: No apparent water quality load reduction.
Expected Completion Date:
Project Budget:
Agency: Cape Coral

Discussion Notes

- Subsequent phases could be credited towards NEB if that is allowed.

6. Cape Coral Utility Extension Program North 3 and North 7 areas, Planning

CRE 80 – Alt 3, Local
Description: Construction of wastewater collection and transmission facilities to remove domestic sanitary waste from residential and commercial septic systems in the Northwest section of Cape Coral
Source: Management Measure description
Storage/Timing Benefits: Approx. 1500 ac in Cape Coral east and 18000 ac in Cape Coral west, according to current expansion plan out to about 2015.
Flow Benefits: None
Water Quality Benefits: Calculated using SWFFS reductions for "central sewer" (currently 2.5 lb/ac/yr for TN and 0.4 lb/ac/yr for TP). (This presumes that the entire area is fully built out with septic.)
Expected Completion Date:
Project Budget:

Agency: Cape Coral

7. Cape Coral Utility Extension Program (UEP)
Stormwater Drainage System Improvements, On-going
Description**/Purpose:** Stormwater drop inlets are upgraded during utility installation. Drainage inlets are changed from "open slot" type to Type C and Type E which feature flow control orifices and elevated grates to prevent "first flush" flows from polluting canals.
Flow Benefits:
Storage/Timing Benefits
Water Quality Benefits:
Expected Completion Date:
Project Budget:
Agency: Cape Coral

8. **Yellow Fever Creek/Gator Slough Storm Water Transfer Facility,** CRE 64 – Alt 1, Local
Description: Restoration of historic flows that were disconnected due to development. Construct an interconnect facility to transfer water during high-flow periods from Gator Slough to Yellow Fever Creek rather than over the Gator Slough weir to Matlacha Pass.
Source: Management Measure description. Additional information from Anura Karuna-Muni, Lee County, by phone, 4/24/08.
Flow Benefits: Reported by Anura Karuna-Muni as 500 gpm, or 806 ac-ft/yr.
Storage/Timing Benefits: None
Water Quality Benefits: Water would be transferred from one basin to another, with no net change in loadings. Using 806 ac-ft/yr and an estimate of 1.27 mg/L for TN and 0.154 mg/L for TP, which is typical of runoff from the Yucca Pens area, the load is calculated as 2784 lb/yr for TN and 338 lb/yr for TP.
In the water-quality spreadsheet, these flows and loads will be subtracted from the N Coastal subregion and added to the Tidal N subregion. It will contain one line for each subregion.
Expected Completion Date: June 2009
Project Budget: $ 700,000
Agency: Lee

Discussion Notes

- May need to hold off on initiation if would not otherwise qualify for NEB.

9. **Project Name**: **Matlacha Pass Hydrologic Restoration Phase I**
Description: Restoration of historical flow ways and base flows; Improving drainage while minimizing flooding downstream of Burnt Store Road and reducing fresh water flow through Gator Slough Canal into Matlacha Pass.
Flow Benefits: Storage/Timing Benefits Water Quality Benefits:
Expected Completion Date: December 2008
Project Budget: $1,800,000
Agency: Lee,

Discussion Notes

- Minimal water goes to the west, most goes to the south along Burnt Store Road.

- Some is supposed to go to Charlotte Harbor independent of Gater Slough, but there is not enough capacity; it backs up.

10. **Project Name**: **Matlacha Pass Hydrologic Restoration Phase II**
Description: Restoration of historical flow ways and improving water quality downstream of Burnt Store Road
Flow Benefits: Storage/Timing Benefits Water Quality Benefits:
Expected Completion Date: June 2011
Project Budget: $1,200,000
Agency: Lee,

Discussion Notes

- Would move water west, especially if back-ups addressed. Will probably wait until the completion of these discussions since the agreed-upon distribution of water here may affect what we do.

11. Fertilizer Ordinance City of Cape Coral
Description: Development and implementation of a local fertilizer ordinance limiting the type/application areas/time of use of landscaping fertilizers that adversely impact surface water systems by contributing to nutrient loading during precipitation events
Flow Benefits: Storage/Timing Benefits Water Quality Benefits:
Expected Completion Date: Conceptual; Project Budget: ?; Agency: Cape Coral

Discussion Notes

- There should be a NEB, along with other regulatory projects.

12. Add culverts under the two power line easements that run north-south through the drainage west of I-75 (Noel Andress).

13. Restrict off-road use of the Charlotte Harbor Flatwoods area west of US 41 and north of Cape Coral for the disruption to the land has produced many dams impeding sheet flow through the area (Noel Andress).

Additional Watershed Projects Suggested at the Meeting

Buy interspersed empty lots to make smaller retention areas. Larger numbers of smaller areas provide distributed storage. Look at foreclosed properties.

Pull projects from SW FL Feasibility Study (need to examine for impact to Gator Slough).

Need some idea of storage capacity in acre-feet. Also an indication of area treated.

Improve treatment for the approximately forty square miles of lots north of Pine Island Road and west to Hwy. 41 that drain to spreader; beyond what happens in the canals.

Reconnection of Webb to Charlotte flatwoods (restoration of historic routing of that water). (I-75 widening is an opportunity.)

Create marshes, in the current footprint of the canal, to filter runoff before it goes into the spreader.

Additional Receiving Water Projects Suggested at the Meeting

Install weirs to distribute water from the spreader wall to the area west of the spreader.

Change seawall regulation in Cape Coral to be more like Lee County. Specify slopes and vegetation.

Establish littoral vegetation and hard-bottom reef habitat along canals – west of Burnt Store and near the spreader.

Hydrological restoration of tidal creeks using information regarding historical elevations, etc.

Install really big culverts under Pine Island Rd. Mitigate freshwater flows by increasing circulation.

Whenever you bring a deeper water body up to more natural grade, it benefits water quality.

Create seven miles of oyster and clam farming along the spreader.

General Projects Suggested at the Meeting

Restrict shallow-water areas, outside channels, to non-motorized vessel traffic only.

Require better stormwater management for new single-family construction? Require low impact development standards.

Provide a program with incentives for actions that individual homeowners or dock owners can take, e.g. xeriscape, fertilizer reduction, rain barrels, etc.

Provide education and possibly programs, regarding pet waste.

<u>Discussion Notes on the Projects</u>

- Summarize agreed-upon facts, update by the next meeting.
- The Technical Committee will put together map of lands that are publicly held.
- USFWS has a coastal grant program. Requests cannot be regulatory related. There are other possible sources of funding.
- Are there things that individual home or dock owners can do? If so, develop some sort of program of incentives for these actions.
- We need information regarding aquifer and surficial aquifer recharge areas.
- Focus limited funds on volume projects.

Project Assessment Methodology and Models

The following are the notes from the power point presentation by Tony Janacki that also included maps. The full power point will be available at the DEP NS—EMA website.

NS-EMA Model Needs

- Hydrologic model that can provide daily flow estimates from the NS Canal Watershed with relatively fine spatial resolution to allow the evaluation of potential projects
- Flow-salinity model that allows prediction of salinity within the receiving water body as a function of freshwater inflow from various points within the NS Canal Watershed

Surface Water Models in the North Spreader Canal Watershed Area [map]

NW Lee County Stormwater Management Model

- Development: by Boyle Engineering for Lee County
- Use: Estimate Design Storm Flows, Water Levels
- Model Type: ICPR v2.2
- Domain: NW Lee County
- Time Step: 15-minute
- Data Time Frame: NA

NW Lee County ICPR Model [map]

Cape Coral Canal System Stormwater Model

- Development: by Southern Data Stream and Boyle Engineering for Cape Coral
- Use: Estimate Design Storm Flows, Water Levels
- Model Type: XP-SWMM2000
- Domain: City of Cape Coral
- Time Step: 15-minute
- Data Time Frame: NA

City of Cape Coral SWMM Model [map]

Tidal Caloosahatchee River Sub-Regional Model

- Development: by DHI Engineering for SFWMD
- Use: Estimate Time Series of Flows
- Model Type: MIKE 11/MIKE SHE
- Domain: Tidal Caloosahatchee River/Gator Slough
- Time Step: Daily
- Data Time Frame: 1990 – 2000 (Calibration Only)

Tidal Caloosahatchee River Model [map]

SWFFS Integrated Hydrologic Model

- Development: by SDI Engineering for SFWMD
- Use: Estimate Time Series of Flows
- Model Type: MIKE 11/MIKE SHE
- Domain: TCR, C-43, Estero Bay, and Big Cypress Watersheds
- Time Step: Daily
- Data Time Frame: 1990 – 2000 (Calibration Only)

SWFFS Integrated Model [map]

Potential NS-EMA Model Strategy

- Lee County and Cape Coral models can provide highly spatially-resolved flow estimates – however only for storm events
- SFWMD SWFFS Integrated Model provides daily flows for pre-development, current, and future conditions – however its estimates are spatially coarse
- Use best features of both models
- Look into another hydrodynamic model option – SWFWMD
- Plan B – use empirical modeling approach to predict salinity at continuous monitoring stations as a function of freshwater inflow
- Relate salinity at continuous monitoring stations to salinity at more spatially distributed stations
- Relate freshwater inflow to salinity at more spatially distributed stations

Period of Record

- CHEC Fixed Stations 1996-2008
- CCHMN Probabilistic 2002-2007

Watershed Management Model

- Development: by CDM for SFWMD
- Use: Estimate Pollutant Loads
- NPS, PS, Septic Tanks, Groundwater, Reductions from BMPs
- Model Type: Spreadsheet
- Domain: Caloosahatchee River and Estero Bay Watersheds
- Time Step: Monthly or Annual
- Data Time Frame: Average for PPT Station POR (88 years)

Watershed Management Model [map]

ERD Pollutant Loading Model

- Development: by ERD for Lee County
- Use: Estimate Pollutant Loads
- NPS, PS, Septic Tanks, Groundwater, No Reductions from BMPs

- Model Type: Spreadsheet
- Domain: NW Lee County
- Time Step: Monthly or Annual
- Data Time Frame: Average for ppt Station POR

ERD Pollutant Loading Model [map]

Project Assessment Methodology and Model Discussion Notes

Flows

- *Is there any connection between daily and small and large storm events?*
- *We can't do continuous simulation on the Boyle model. Their model only looked at storm events. You can only put in a few days of data at a time.*
- *Are there any rules of thumb relating storm events to annual flow? Are the proportions of flow from the various sub-basins different for small and large events?*
- *How about seasonal distribution of flows? We will have daily flows.*
- *There is a EFGC Model.*
- *Do a correlation with USGS data at Burnt Store Road.*
- *We have models to mesh with the bathymetric studies*
- *The Inland Navigation Authority did a study in 2003.*
- *There was a study done in 1994 by MWH that Alec Hart works for.*
- *I will help (Dave Scott).*
- *We need to consider what is happening all the way to the bay.*
- *There may be mangrove losses. We have more mangroves than in the 1940s.*
- *We need to establish the links between projects and flows.*
- *We want to predict flows and loading.*

Salinity

- *How long have the continuous monitors been in operation? Two to three years.*
- *You are mixing two data sets with the salinity. Have you looked at the data sets to see the deviations between the two? We will look at continuous monitoring points and look first for monthly points near them.*
- *Can you cross reference the USGS gauges at the weirs?*
- *Datasonds go back ten years. This is pretty good. You will probably get more variation from surface to bottom than between the two sets of data.*
- *The USFWS has a couple of models employed on Coastal Restoration. This may be useful. Have any of those other models been applied to this geographical region?*
- *We need bathymetry data for the canal.*
- *Estimates for inverts for the breaches, and gross estimates for cross-sectional area of each are needed.*

- *Will you look at the impact of groundwater over drainage or saltwater intrusion? We haven't found any data that would let us look at that yet. The canal weirs keep saltwater out.*
- *Head on the canal may be keeping the saltwater from reaching the point it would naturally.*

Proposed NS-EMA Report Outline

The participants reviewed this draft outline and offered the comments that follow.

Executive Summary

I. The EMA Process
- a. Statement of the Problem
- b. EMA Process Objectives
- c. Statutory Requirements
- d. NS-EMA Work Plan
- e. EMA Measures, Targets, and Thresholds
- f. Net Ecosystem Benefits (NEB) Definitions and Assumptions

II. Matlacha Pass and NS Canal: Hydrologic and Natural System Delineations
- a. Description of the Hydrologic Setting
  - i. Where does the water entering the NS Canal come from?
  - ii. Water quantity and timing
- b. Natural Systems
  - i. Primary systems affected by NS Canal – Matlacha Pass etc. – document environmental concerns (Maps, tables depicting areas, measures, targets, thresholds)
  - ii. Secondary systems affected by potential NS-EMA Projects – Yucca Pen, Gator Slough, residential canals (Maps, tables depicting areas, NEB)
- c. Desired Outcomes [performance measures] and NEB
  - i. Restoring historical flows (quantity and timing) to Matlacha Pass, Caloosahatchee River, Gator Slough
  - ii. Improve water quality (salinity, nutrient loading, chlorophyll, water clarity) in receiving waters
  - iii. Define methods for determining NEB

III. NS-EMA Proposed Projects and Contributions to Net Ecosystem Benefits
- a. Description of methods used to identify potential projects
- b. Define methods for project evaluation
- c. Project types
  - i. Flow Diversion
  - ii. Flow Retention
  - iii. Spreader Wall/Breech Repair or redesign
  - iv. Barrier replacement
  - v. Water quality improvement
  - vi. Habitat improvement

IV. Predicted Effects of NS-EMA Projects on Desired Outcomes and NEB
- a. Achieving targets and thresholds
- b. Synergies among projects – positive or negative
- c. NEB achievements

V. NS-EMA Projects Implementation
- a. Monitoring
- b. Adaptive Management

VI. NS-EMA Agreement Provisions
- a. EMA Amendments
- b. Terms of Agreement – inter-local agreements, permits
- c. Termination
- d. Notices
- e. Effective Date

Report Outline Discussion Notes

- *We want to start putting information into the outline and check for agreement.*
- *It needs to explain the legal standards for the EMA and NEB.*
- *All projects are compared to conditions with the barrier replaced.*
- *Decisions need to be based on a business model.*
- *A professional engineer needs to provide control elevations.*
- *Provide the metrics for the system that failed.*
- *Chapter and 2 are based on the first meetings. By the next meeting we should be able to check for agreement.*
- *We can do an annotation of the outline and check for agreement on details.*
- *We don't have adequate information on the canal.*
- *The USGS data is not useful.*
- *Remember GIGO, garbage in, garbage out. Projections are only as good as the data.*
- *In some cases we will have to rely on professional judgment.*
- *Compile the 1994, bathymetry, City and County surveys.*
- *Why will water spread without a barrier?*
- *The Technical Committee needs to help us understand what happens with and without the barrier and wall repair.*

Work Plan Review

The facilitators highlighted the status of the work plan (Appendix and commented on revisions to reflect the progress to date.

Closing

The facilitators summarized the meeting activities and products and ask for concluding comments that included:

- Tony Janicki will provide a map so people can identify project locations and affected watersheds.
- We need to be sure to notice meetings.
- I am glad that we have begun discussing projects.

Appendix A

Background on the Cape Coral North Spreader Ecosystem Management Agreement Process

In the 1970's the Florida Department of Environmental Resources (a predecessor of today's Department of Environmental Protection, or FDEP), required General Development Corporation, principal developer of the area that would become the city of Cape Coral, to cease dredging canals through the mangrove fringe as part of its residential developments, and to install a system to collect and treat water from areas it had already developed. This system became known as the North Spreader. It consists of a seven-mile long canal; roughly parallel to the coast, with a western "spreader" bank, a barrier to flow near the southern end, and a boatlift at the barrier. The spreader collected water from the developed area and canals and distributes it in an even "sheet flow" through the mangrove fringe to its west, in order to filter it before it reached Matlacha Pass and the larger Charlotte Harbor ecosystem. This system, and some of the legal obligations that flowed from the state's enforcement action against GAC (described in a document known as a Consent Order 15), were inherited by the City of Cape Coral.

Over time, as development in the North Spreader watershed increased and as water from other areas was redirected to it, a number of breaches (thirteen by 2008) developed in the western spreader wall of the canal. The largest breach developed around the western edge of the boatlift. An aerial assessment of the North Spreader in July 2006 by FDEP showed accelerated growth of several of the breaches into the tidal wetlands to the west. FDEP therefore undertook enforcement action against the City of Cape Coral to remedy the situation.

In discussions with FDEP in 2007, the City initially planned to address the large breach around the current barrier and boat lift by building a new, better engineered, storm water barrier and lift north of the current location. In subsequent discussions, however, Cape Coral argued, and FDEP agreed, that relocation of the barrier and lift was unlikely to address the underlying problems with the spreader. These resulted largely from the greater volumes of water directed to the spreader as a result of development since the 1970s, and as a result of the hydrologic connection of neighboring basins to the area served by the spreader. Relocation, they believed, would simply lead to greater hydrologic pressure north of the new structure, and result in additional breaches in the western spreader wall, with corresponding additional damage to tidal wetlands and mangroves.

Cape Coral and FDEP therefore agreed to amend the consent order to undertake an Ecosystem Management Agreement Process, as described in Florida Statutes. The EMA process allows a state agency and a regulated party to convene the full range of stakeholders affected by a potential enforcement issue, and to jointly develop with them a package of measures or projects that collectively provide a **net ecosystem benefit** – an outcome better for the environment – when compared with the results of conventional enforcement action. To arrest further erosion damage to the tidal wetlands

while the EMA process is underway, the amended consent order also provided for the potentially temporary removal of the existing barrier and lift. If the EMA process did not reach agreement on measures that would provide a better outcome for the environment, Cape Coral would be required to rebuild the barrier.

An initial version of this amendment to the consent order was adopted in early 2008, and subsequently challenged by petitioners, including individuals, citizen and environmental organizations, and Lee County. The petitioners were concerned that removing the stormwater barrier would allow large amounts of freshwater into Matlacha Pass at a single point, potentially causing more harm, in their view, than the breaches in the spreader wall. They also believed safeguards should be included in the consent order to ensure that the barrier would be rebuilt if agreement on NEBs were not reached through the EMA process. After further discussions between Cape Coral, FDEP and the petitioners, all agreed to a second amendment of the consent order that allows the EMA process to go forward, and that provides strong assurances that Cape Coral will rebuild the barrier and boat lift if no package of measures can be found that would provide a net ecosystem benefit. If Cape Coral is required to rebuild the structures, the City will not have any obligation to undertake the design and construction of any other work along the spreader canal.

The stakeholder group will meet for twelve months. It includes representatives of local, regional, state and federal governmental agencies, citizen and environmental groups, and communities affected by the North Spreader. The stakeholders bring very different initial perspectives on the wisdom of removing the barrier and on the best approach to solving the problems. They share, however, a commitment to working together to find the best solutions for the problems of the North Spreader and the ecosystems it was intended to protect.

If, at the end of twelve months they do not reach consensus on a package of realistic measures that they believe would provide a greater ecosystem benefit than rebuilding the barrier and boatlift, then Cape Coral will be required to rebuild the barrier and boatlift. If the group does reach consensus, the city and other stakeholders will proceed with implementation of the alternative measures.

Appendix B

North Spreader Canal Ecosystem Management Agreement Process

Meeting 4

October 29, 2008, 8:30-5:00

Objectives

- To discuss possible water quality or quantity targets/performance measures
- To seek consensus on NEB assumptions
- To agree on types of projects and evaluation criteria,
- To review and refine a list of current, funded, planned and possible projects
- To discuss methodologies and/or models to be used to assess impacts of potential projects

Agenda

8:30 Welcome and introductions

8:45 Targets/Performance Measures

10:15 Break

10:30 Net Ecosystem Benefits, NEB, Assumptions, Thresholds and Projects

12:00 Lunch

1:00 Project Types

1:30 Break

1:45 Projects Identification

3:00 Break

3:15 Project Identification (Continued)

3:45 Project Assessment Methodology and Models

4:00 NSEMA Report

4:15 Work Plan

4:45 Closing

5:00 Adjourn

Appendix C
STAKEHOLDER GROUP GROUNDRULES

I. AN APPROACH TO CONSENSUS

Consensus is a process, an attitude and an outcome. Consensus processes have the potential of producing better quality, more informed and better-supported outcomes.

As a **process**, consensus is a problem-solving approach in which all members:

- Jointly share, clarify and distinguish their concerns;
- Educate each other on substantive issues;
- Jointly develop alternatives to address concerns; and then
- Seek to adopt recommendations everyone can embrace or at least live with.

In a consensus process, members should be able to honestly say:

- I believe that other members understand my point of view;
- I believe I understand other members' points of view; and
- Whether or not I prefer this decision, I support it because it was arrived at openly and fairly, because provides a good and acceptable way to solve the problems we are addressing, and because it is the best solution we can achieve at this time.

Consensus as an **attitude** means that each member commits to work toward agreements that meet their own and other member needs and interests so that all can support the outcome.

Consensus as an **outcome** means that agreement on decisions is reached by all members after a process of active problem solving. In a consensus outcome, the level of enthusiasm for the agreement may not be the same among all members on any issue, but on balance all should be able to live with the overall package. Levels of consensus on an outcome can include a mix of:

- Participants who strongly support the solution;
- Participants who can "live with" the solution; and
- Some participants who do not support the solution but agree not to veto it.

II. PARTICIPATION

A. Stakeholders Group

The Amendment to the Consent Order reads, "The City (Cape Coral) shall initiate the EMA process by proposing a broad-based team of stakeholders (Stakeholders Group) including federal, state and local regulatory agencies with jurisdiction over the affected area, other governmental entities, environmental groups, citizen groups including not-for-profit organizations concerned with water quality, fishing and the environment that request to participate and others for Department approval. (See the initial list of stakeholders in Appendix A.) The City shall work with the Stakeholders Group to develop a report that contains a list of recommended projects that will result in a net environmental benefit to the Charlotte Harbor Preserve, Sate park, Matlacha Pass Aquatic Preserve and Charlotte Harbor Aquatic Preserve (receiving waters)."

The Stakeholders Group will build a mutual understanding of the situation, identify, evaluate, prioritize and seek consensus on projects to be included in the EMA. They will be supported by the facilitation team and Stakeholders Group staff and consultants.

B. Designated Representatives and Alternates

Each governmental entity or non-governmental group that is a member of the Stakeholders Group shall designate a single representative and an alternate to formally represent them in deliberations, consensus testing or decision-making as appropriate. These persons shall be designated in writing to the facilitators. Alternates will be expected to attend all Stakeholders Group meetings to remain sufficiently informed to participate effectively.

C. Other Participants

Others may participate with the stakeholder group in discussions and deliberations. These may include:

- Other interested agencies or governmental entities;
- Individuals or groups interested in the issues under discussion;
- Staff and constituents of governmental or non-governmental groups represented on the stakeholder group;

Only designated representatives or alternates will be involved in the consensus testing. Representatives may consult with the other participants prior to consensus testing.

D. Contact List

A contact list will be maintained for distribution of materials and information related to the process. The list will include Stakeholder Group members, other participants, and any member of the public who requests to be placed on the list.

E. Technical Committee

The Stakeholders Group shall appoint a Technical Committee to gather and analyze information, and provide the technical foundation for evaluation of alternatives. A Technical Lead will help the Committee develop and implement an integrated plan for its work.

F. Subcommittees

The Stakeholders Group may designate other subcommittees as it finds useful in furthering its work.

G. Facilitators and Support

The Florida Conflict Resolution Consortium facilitation team will work with agency staff, consultants and others to manage the EMA process, design agendas, prepare meeting materials and provide reports.

III. DISCUSSION AND CONSENSUS-TESTING

A. Inclusive Dialogue

Stakeholders Group discussions will be designed to ensure that all perspectives have an opportunity to be heard and discussed. Other participants will be given frequent opportunities for input at the discretion of the facilitators.

B. Discussion Guidelines

Members and participants recognize that others involved in the EMA process represent a variety of differing perspectives. To promote open discussion of difficult issues, members will be asked to abide by the following guidelines.

- Expect and respect differing perspectives.
- Listen to understand. Listening does not necessarily indicate agreement.
- Offer ideas for discussion. This indicates a desire to explore the idea, not necessarily support for it.
- Clarify your assumptions
- Ask questions.
- Seek solutions that work for everyone.
- Speak one at a time and in the order established by the facilitators
- Say everything that needs to be said, concisely.
- Focus on issues, not personalities.

B. Consensus-Testing

At various points in the process, the Stakeholders Group will use the following scale to evaluate individual ideas, groups of ideas, or drafts. Such evaluation will not constitute a formal decision – just a gauge of the group's current reaction to the ideas under consideration.

- Wholehearted support. This is what I would do.
- Support, although it may not be what I would prefer.
- Minor reservations. I can probably support this, but I would like some clarification or refinements.
- Major reservations. I cannot support this without major changes.

IV. DECISION-MAKING

A. Consensus Draft Development

Draft recommendations may be developed in the full group or in subcommittees. Subcommittees may meet between Stakeholders Group meetings in publicly noticed sessions to develop initial draft recommendations.

Stakeholders Group members may be asked to individually rate the acceptability of each initial draft recommendation using a consensus testing scale. Full group review and discussion of the rated recommendations will follow.

The drafters of the recommendations (a subcommittee or the full group) will then be asked to address concerns and suggestions expressed during the full group review in redrafting and refining the draft recommendations.

Steps 2 and 3 may be repeated as necessary to produce more generally acceptable options. Unless they agree otherwise, the Stakeholders Group will have at least two opportunities in the full group to discuss and evaluate any option, and to seek to refine it for greater acceptability.

Re-drafted recommendations will ultimately be compiled into a single text for the Stakeholders Group's review and refinement. Unless they agree otherwise, the Stakeholders Group will have at least two opportunities in the full group to discuss and evaluate draft report, and to seek to refine it for greater acceptability.

B. Ninth Month Continuation

The Stakeholder Group is required by the consent order to decide at the ninth month in the process whether it appears "reasonably probable that the Stakeholder Group will be able to develop a Report with recommended projects that will result in a net environmental benefit." If there is not a consensus to proceed then the EMA process will end and the City of Cape Coral will proceed to construct a permanent barrier and boatlift.

C. Consensus Final Report

Once a draft final report has been developed using the process outlined in IV (A) above, Stakeholders Group members will be asked to rate the report as a whole. The consent order requires consensus of the stakeholders for adoption of the final report. Consensus on the final report shall be understood as a rating of "2" or higher on the following scale by each member (or alternate) of the Stakeholder Group present at the final meeting.

4. Wholehearted support. This is what I would prefer.
3. I can support the proposed measures, although they may not be what I would prefer.
2. I do not fully agree with the proposed measures, although I may believe they have some or even a great deal of value, and I need to register my disagreement. However, I do not choose to block the decision.
1. I do not agree with the proposed measures, and I feel I must block their adoption.

Note: if there is not a consensus to proceed then the EMA process will end and the City of Cape Coral will proceed to construct a permanent barrier and boatlift.

V. OPEN MEETINGS

The EMA process will be conducted as an open public advisory process consistent with applicable law. All meetings of the Stakeholder Group and its subcommittees will be noticed. The public will be afforded opportunities for comment and input throughout the process.

Appendix D
Outline of 10-29-08 PowerPoint by Tony Janacki

SW FL Feasibility Study (SWFFS) Performance Measures
December 2003 Draft

Developed performance measures for

1. Ecological concerns
2. Hydrological concerns

Southwest Florida Feasibility Study (SWFFS) Performance Measures

3. Ecological performance measure targets include:

    a. Protection of seagrass such that historic species coverage and abundance is restored and/or maintained, where suitable habitat exists.
    b. Living oysters returned and are maintained at historic locations where suitable physical habitat exists.
    c. *Typha* spread into mangrove habitat is stopped and eliminated from previously documented areas of encroachment.

4. Hydrological performance measure targets to achieve ecological targets include:
    a. Provide a combined minimum flow of 10 cfs over weirs of the North CCDS.
    b. Combined average annual flow from the North CCDS weirs $\leq$100 cfs.
    c. Combined flow from the North CCDS weirs never $\geq$1000 cfs.
    d. Combined flow from the North CCDS weirs never $\geq$500 cfs for longer than a month.
    e. Preferred average wet season flow $\leq$ 200 cfs.

Appendix E

NS-EMA Work Plan

D R A F T

Please note: This work plan is intended as general guide to the sequence of tasks to be undertaken by the Stakeholder Group and the Technical Committee. It will be refined and updated to reflect actual events and developments in the process on a regular basis.

July 8, 2008– Organizational Meeting

- Review, refine and adopt groundrules and decision-making guidelines
- Review, refine and adopt work plan
- Develop a joint understanding of what the group hopes to achieve
- Identify and discuss, preliminarily, data and modeling needs

August 7, 2008 – Natural Systems and hydrology

- Sunshine briefing
- History of the North Spreader - what was the spreader designed to do and why?
- Current conditions of the spreader -- how was the current spreader functioning before the removal of the boatlift, and how is it functioning now?
- Historic ecosystems and flows - what ecosystems existed predevelopment and where did the water flow?
- How have historic watershed boundaries changed?
- Overview of the canal system in Cape Coral
- Overview of available water quality and quantity data and modeling

September 12, 2008 – Natural Systems and hydrology (continued), Water Quantity and Quality

- Key natural resources of concern: estuarine habitat, mangroves, salt marshes, and exotics, fish populations, oysters, sea grasses, creeks, recent appearance of "grey blobs"
- Water quality -- a preliminary evaluation: long-term view *vs.* recent snapshot of water quality from the top of the watershed to the spreader and Pass
- Overview of Yucca Pen and C. Webb areas, current management efforts and problems
- Hydrologic insight: flow concerns and project discussion. What NSC relevant information is available from this effort?
- Initial discussion of net ecosystem benefit assumptions

October 29, 2008 – Targets/Performance Measures, Project Evaluation and Modeling Methodology, and Initial Discussion of Project List

- NEB assumptions, thresholds and projects – continued discussion
- Ecosystem-based targets/performance measures – initial discussion
- Initial discussion of project types and evaluation criteria
- Potential project list -- initial review and refinement
- Project evaluation and modeling methodology– initial discussion

- Discussion of the spreader concept, e.g. barrier replacement and wall restoration

November – Review and Refinement of Project List

- NEB assumptions and approaches – additional discussion and consensus-seeking, if needed
- Ecosystem-based targets/performance measures (water quality and quantity)– additional discussion and consensus-seeking, if needed
- Project list – additional discussion and refinement
- Review of initial scoring exercise for existing projects, using project evaluation methodology

December – Establishing the NEB Threshold and Water Budget, Further Review and Refinement of Project List

- NEB threshold – initial review and discussion of model run incorporating assumptions regarding replacement of barrier, non-NEB projects and build-out
- Evaluation of the spreader concept – theory and experience
- Water budget – initial discussion
- Project list – additional refinement, if needed

January -- Project Impacts and Prioritization

- Project impacts – initial review of model runs depicting the impacts of projects or combination of projects
- Project prioritization – initial discussion based on model runs

February – Project Impacts and Prioritization

- Project impacts – continuing review of model runs depicting the impacts of projects or combination of projects
- Project prioritization – continuing discussion based on model runs

March -- Nine Month Decision

- 9 month decision whether to proceed

April – Initial Discussion of Recommendations

- Project impacts – continuing review of model runs depicting the impacts of projects or combination of projects
- Consensus seeking on unresolved issues
- Initial review and discussion of draft recommendations

May - Draft Report

- Review, discussion, and refinement of draft report

June – Final Consensus Seeking and Decision on the Report

- Consensus seeking on unresolved issues
- Finalize recommendations and report language

Final decision to adopt the report or require construction of the barrier and boatlift