

**Indian River Lagoon – North Project Delivery Team Meeting #11
April 29, 2004**

To: Attendees

From: ADA Engineering, Inc. & HDR Engineering, Inc. (ADA/HDR)

Subject: United States Army Corps of Engineers (USACE) and St Johns River Water Management District (SJRWMD) Indian River Lagoon (IRL) North Restoration Feasibility Study Project Delivery Team (PDT) Meeting Summary – April 29, 2004

Attendees: See attached sign-in sheet

Handouts: Meeting Agenda
Scope of Work Outline for Model Evaluation Group Review of Pollutant Load Reduction Goal Model

The eleventh Project Delivery Team (PDT) meeting for the Indian River Lagoon-North (IRL-N) Feasibility Study was held at the St. Johns River Water Management District (SJRWMD) Service Center in Palm Bay, Florida on April 29, 2004. The meeting began at approximately 10:00 am.

Welcome, Introduction, Agenda, AND FACA Reminder

Debbie Peterson, Planning Technical Leader for the United States Army Corps of Engineers (USACE) welcomed the PDT members. She stated that the meeting was being recorded if no one objected. She requested that all attendees introduce themselves and the agency they are representing. As an icebreaker, Debbie Peterson requested that individuals introduce themselves and answer: “What do you do when you get bored at a meeting?”

Debbie Peterson provided an overview of the agenda (Attached) and used a Microsoft PowerPoint presentation to highlight the key points. The agenda included the following items:

- Team Member Roles (Federal Advisory Committee Act (FACA)) – Debbie Peterson
- Miscellaneous Updates – Debbie Peterson
 - Action Items from Last PDT Meeting
 - Link to Comprehensive Everglades Restoration Plan (CERP)
 - 2004 State of the IRL Conference
- Sub-Team Updates – Debbie Peterson
 - Watershed
 - Ecological
 - Modeling
 - Shoreline Performance Measures

- Sediment Management Strategy Update – Mitch Granat
- Problems and Issues, East Indian River County – Marty Smithson, Indian River County
- Public Comment
- Lunch
- Prepare for Breakout Groups – Debbie Peterson
- Breakout Groups - All
- Public Comment
- Next Steps/Adjourn – Debbie Peterson

Miscellaneous Updates

Action Items from Last PDT Meeting:

- Dan Haurert, South Florida Water Management District (SFWMD) performed work on oyster modeling for IRL-S and will be invited to participate on the PDT.
- Grady Caulk (USACE Cultural Resources) will give a presentation at a future PDT meeting regarding an historical overview of Indian River Lagoon.

Link to CERP: Debbie Peterson and Pete Milam met with Dennis Duke of the U.S. Army Corps of Engineers for guidance on the link to CERP for the Indian River Lagoon North (IRL-N) project. It was indicated that IRL-N is similar to other feasibility studies recommended in the Yellow Book (1999). IRL-N is recognized as being a part of the greater Central and Southern Florida (C&SF) ecosystem requiring restoration. This project is a continuation of Indian River Lagoon-South, however, a feasibility study report will be prepared instead of a Project Implementation Report. The IRL-N project may be subject to Water Resource Development Act 2000 (WRDA) project assurances such as water reservations and other factors. This will be more clear as IRL-S makes it's way through Congress this year. Regarding coordination with CERP Restoration, Coordination and Verification (RECOVER) teams: RECOVER needs to understand IRL-N and potential impact on IRL-S, they can provide system wide performance measures and they should provide review of appropriate IRL-N products to ensure compatibility and consistency with CERP.

Question: Since the criteria falls short of IRL-S requirements, does this reduce the possibility of getting funding?

Answer: No. IRL-N is part of CERP, and as it goes forward to South Atlantic Division (SAD) and Headquarters, USACE (HQ,USACE), it can be subject to change.

Question: We are part of CERP and we aren't part of CERP, please explain?

Answer: True. IRL-N doesn't have to do all that is necessary of all elements of CERP and we are not competing for the current CERP budget of \$8 billion. We will coordinate with RECOVER, as appropriate. We are not being forced into the CERP mold and not subject to all the requirements associated with the CERP Program.

2004 State of the IRL Conference: This conference is scheduled for Saturday, May 15, 2004 at the Clemente Center at Florida Institute of Technology, Melbourne, Florida. You

can call 800-226-3747 or check www.fit.edu/lagoon for more information. The registration Fee of \$10 includes lunch.

Sub-team Updates

Watershed: This sub-team met the afternoon of the March 30, 2004 PDT meeting to discuss existing data and pertinent work underway in the sub-basin. USACE and SJRWMD need to provide some information for the sub-team to continue plan formulation, e.g. to size and site stormwater treatments areas (STA's). Therefore before the Watershed sub-team can go further, USACE and SJRWMD need to meet in Palatka to discuss putting together the required information. Scheduled a meeting on May 21, 2004 in Palatka for the USACE and SJRWMD to discuss the tools and requirements for completing the Future Without Project Condition and alternative plan formulation.

Ecological: At the March 31, 2004, meeting, Rich Paperno presented an evaluation of Florida Marine Research Institute (FMRI) fisheries data. These data looked at species richness versus distance from the inlet, which did not indicate a "break" in species richness at causeways. Fishes are variable, the quantities recorded are more indicative of the local habitats than the distance from the causeways. This study only looked at juvenile fishes and not clams or oysters. Florida Department of Environmental Protection may be putting together a study that specifically looks at the causeways' affects on larvae. A sub-sub-team has been tasked to formulate the Ecological Sub-team's current conclusions on the affects the causeways are having on species in the lagoon, and should be complete by the next PDT meeting. The need for biological performance measures for restoration of impoundments and wetlands was discussed. It was determined that the cost of the additional study needed to establish these additional biological performance measures would exceed the cost of restoration. Therefore, no additional biological performance measures would be necessary for restoration of impoundments and wetlands.

Modeling: This sub-team has meet twice in the last week. They selected five individuals and one alternate for the PLRG Model Evaluation Group (MEG) to review the Pollutant Load Reduction Goal (PLRG) model: Drs. James Martin, Allen Teeter, Billy Johnson, Ernest Estevez, Scott Hagen, and Bill McAnally (alternate). The Modeling sub-team is currently working on a scope of work containing a three-phase review. It will be necessary to look at the model first (2004), then review the model runs that evaluate alternative plans scheduled for completion next year (2005).

Shoreline Performance Measures: This sub-team last met on March 30, 2004 to discuss the use of different data sets to determine the amount of developed shoreline in the study area and thus removed from the intertidal shoreline inventory of the ecosystem. This information would be used to develop a shoreline restoration performance measure. A meeting was scheduled for May 12, 2004 in Palatka between USACE, SJRWMD and Taylor Engineering (Sediment Management Strategy contractor) to coordinate this work and prevent any redundancies in the effort.

Sediment Management Strategy (SMS) Update – Steve Schropp, Taylor Engineering:

1. HSPF models have been compiled with GIS data
 - Pounds per year
 - Starting to look at which basins are hot spots
2. Identified over 25-30 agencies covering the study area to coordinate Best Management Practices (BMPs) and have started initial contacts with some local entities.
3. Have been gathering information. Some could be useful for the shoreline performance measure; however, need to coordinate efforts.
 - Have shoreline digitized
 - Navigation surveys
 - Inter-coastal survey data of depths
 - Florida Department of Environmental Protection (FDEP) provided historical shoreline data from 1883 to 1979, which included maps and aerial photographs. These studies contained the same baseline, but were conducted in different test areas each time.
 - Aerial Photos – 1999/2000 to cover the whole area of IRL-N

Next step – continue with data gathering and contacting local agencies.

Question: Is the HSPF model current?

Answer: Yes. The Model has been run through the year 2020.

Problems and Issues, East Indian River County – Marty Smithson

Included in Indian River Farms are 300 miles of canal and ditch networks with three main outfalls, North, Main, and South relief canals.

Natural Conditions Prior to 1913 (See PowerPoint Presentation)

- Sheet flow into small tidal creeks and into the IRL
- 1920 was the first document produced
- First dredging in 1916
- 600 miles of ditch and canal banks

Problems Today

- Degradation of brackish estuarine environment –Indian River Lagoon
- Excessive muck sediments
- Excessive freshwater discharges
- Loss of habitats – seagrass beds
- Loss of species diversity
- Diseases of estuarine animals

A lot of sediment loading comes from breeches of canal banks during storm events.

Developments of private/commercial property sometimes have zero BMPs at construction sites. The National Pollutant Discharge Elimination System permits are forcing the County to deal with the problem from development sites.

Estimated Pollutants Loadings (pounds per year) North, Main and South Relief Canals:

	SJRWMD Model	PLRG Allowable Loads	Load Reduction Needed
Total Nitrogen	385,596	195,316	190,280
Total Phosphorus	66,380	33,409	32,971
Total Suspended Solids	6,167,733	2,569,950	3,597,783

Displayed photos of vegetation impacting water bodies and estimating loadings.

In the future, the South Relief canal will have discharge gates that will prevent the bottom from being stirred up, without lots of scouring.

Duckweed, algae, and water fern are discharged to IRL. The water is tannic, stained with lots of material in the water column. Stormwater structures are sometimes left open for about 20-25% of the year and discharging all the loading from the canals.

During a non-storm event, annual vegetative loading is estimated at 5 million pounds (lbs), based on a velocity meter, net and scale of wet material.

A mesh basket was manufactured to take a larger sample. Blocking the entire center spillway, the collection yielded about 14 lbs/minute with two gates open. This test represented about 30% above the base loadings.

Off-line CDS Vortex Unit can have a static weir to divert water into the vortex to capture more runoff and removal material.

Water Hyacinth/Algal turf scrubber is a Nutrient Removal System. This system is comprised of a membrane with a fine mesh to remove the nitrogen and phosphorous, which aides in the reduction of color in the runoff. The collected hyacinth and algae would be composted and used as feed for dairy cows.

Question: What is the current method for control of vegetation?

Answer: Currently, only the banks are being treated.

Question: How often do the rakes have to be cleaned?

Answer: the rakes/screens are automatically and continuously cleaned as a process of clearing the water.

Comment: There are tremendous algae blooms as a perceived result of development and construction sites. BMP/yellow barriers are up but not controlling the sediment into the runoff. Part of the issue is fertilizer from residents more so than construction sites.

Question: Where is the water quality data being stored?

Answer: There are two databases – one at the County and the other at the Water Control District. It is a standard program taking samples every month. The exact source of the runoff pollution has not been determined.

Previous discussion about runoff, all the pollutants of concern in stormwater runoff are directly correlated to turbidity and sediment loading. A reservoir is needed to hold the sediment in the runoff and slow down the flow of water into the lagoon.

If you spray or kill vegetation, the nutrients stay in the system.

Question: Has anyone looked at nutrient loading data in the vegetation?

Answer: No

Regarding the reservoir presentation at the last PDT meeting by Bob Ulevich, is there a status of the coordination between SFWMD and SJRWMD? It is being discussed by the WMDs. The IRL-N PDT is supportive of the concept of the new reservoir. It appears to be a worthwhile management measure to consider. IRL-N Feasibility Study is scheduled for completion in 2007. The inter-basin transfer reservoir would have a two-year window to acquire the properties (due to cost). IRL-N will be evaluating alternative plans in 2005. Alternative One is to take no action. Alternative Two is the watershed (i.e. reservoir). Alternative Three is the estuary. Alternative Four is a combination of alternatives 2 and 3.

As part of the Watershed only alternative, the PDT would like to include the regional restoration reservoir element and system improvement as a critical element in the watershed alternative plan.

Public Comment

No public comment was provided for the morning session.

Lunch

Breakout Groups

Two breakout groups were formed (Modeling Sub-team and the Ecological Sub-team). A copy of the Problems and Opportunities statements were provided to the groups for their use in the breakout sessions.

The charge for the Modeling Sub-Team included: The sub-team was instructed to continue development of the scope of work (SOW) for the MEG review of the PLRG. The sub-team has until the end of May to develop the Scope of Work for the MEG review of the PLRG model.

The Model Sub-team report out included the current PLRG review scope of work outline:

- a. Approach for PLRG development,

- b. Assumptions,
- c. Data (technical specifics),
- d. Calibration,
- e. Verification,
- f. Boundary conditions (specific technical information for each of the following, including development of the boundary condition, rationale for use, how the boundary condition is “fed” into the PLRG, others):
 - i. Upland (HSPF),
 - ii. Ocean,
 - iii. Meteorological,
 - iv. Antecedent.
- g. Use of PLRG for causeway evaluation,
- h. How PLRG will be used to evaluate alternatives.

The verification of the model will not be available until early fall of 2004. The verification will be considered Phase II of the three-phased process. Phase I will center around the background, gathering information etc. Phase III will focus on uses and applications. HSPF will be providing upland boundary data. A first draft of the Scope of Work will be completed for the Monday May 3, 2004 teleconference call scheduled for 1:00 pm.

One on one discussion with the modelers will be important. Should we provide Model Evaluation Group members with a kick off presentation? It was decided that the Model Evaluation Group members would be supplied with copies of all of the available reports and research that relates to this project. The MEG review of the PLRG, Phase I, needs to be complete by early 2005 since we'll be using the PLRG to evaluate alternative plans.

The charge for the Ecological Sub-team included:

- Provide PM's for problem statements 8 (oysters and clams) and 9 (exotic species).
- Finalize biological PM's provided by sub-team during 19 December 2003 meeting.
- What do you need for plan formulation, e.g. sizing and siting management measures? GIS Mapping, modeling, etc.

The Ecological Sub-team report out included:

To prioritize:

- Associated with a former Federal action (priority purposes)
- Will be affected by management measures

Problem statement 8 (oysters & clams are declining):

- 1967 levels were ~ 5,560 acres
- Additional 1,300 acres of suitable habitat

Since both seagrass and shellfish could “compete” for the same benthic habitat and since seagrass is considered a “keystone” habitat for IRL, this problem statement will utilize this performance indicator for evaluation: Maximize shellfish resources that also maximize seagrass coverage. The salinity module of the PLRG will provide spatial predictions of salinity, which can be associated with salinity requirements of shellfish.

Problem statement 9 (exotic species):

Potential management measures:

1. Reservoirs
2. New canals
3. STA's
4. Spoil Island Management
5. Causeway Modifications
6. Shoreline Stabilization
7. Reduce volume & freshwater discharges
8. Education
9. BMP's
10. Wetland Restoration

Species:

Management measures that could impact:

Upland Plants

- | | |
|-------------------------------------|----------------|
| • Brazilian Pepper | 4,10,8 |
| • Melaluca | 4,10,8 |
| • Australian Pine | 4,10,8 |
| • Freshwater Fish | |
| • Tilapia | 8,9,7 |
| • Armored Catfish | 8,9,7 |
| • Swordtails | 8,9,7 |
| • Saltwater Mollusks--Green Mussels | 8,9 |
| • Freshwater Plants | |
| • Hydrilla | 7,8,9 |
| • Hyacyth | 7,8,9 |
| • Saltwater Plants—Calerpa | 7,1,2,3,8,9,10 |

PM for exotic species developed for upland plants only since management measures directly impact, other exotic species would be difficult to quantify (lack of data), evaluate (lack of tool) and monitor.

Problem statement 9 (exotic species), performance measure: upland plants—zero acreage of upland exotic plants on spoil islands and within proposed project areas.

Finalize biological PM's provided by sub-team during 17 December 2003 meeting:

- Juvenile forage fish species density / biomass / evenness of native dominant and frequent species
- Juvenile pink shrimp density¹
- Seatrout²
- Snook³

¹ See footnote 5.

² Generate public understanding and support

³ Same as footnote 2

- Mullet
- Shellfish
- Blue crab⁴
- Stone crab⁵
- Horseshoe crab
- Sea turtles
- Birds⁶

From this list, the sub-team retained:

- Seatrout
- Blue Crabs
- Forage Fishes
- Shrimp

The performance measure would be: Increase density / acreage seagrass.
 FMRI data can be used to determine current density / acre seagrass. Then for whatever change in seagrass coverage a management measure provides, (current density / acre seagrass) X (acreage seagrass) = density of biological resource.

Greg Graves, FDEP, provided a PowerPoint presentation that provides current definition of Performance Measures. (See PowerPoint) Evaluation criteria are based upon both objectives and constraints, and are not limited to potential ecological effects or goals of the project. Performance measures are a subset of evaluation criteria based on project objectives. There are 2 types of performance measures, assessment performance measures and evaluation performance measures. Evaluation performance measures are based on project objectives. Impacts of alternative plans are compared against evaluation performance measures and used to select the recommended plan, i.e. prior to construction. Assessment performance measures include all of the measurements necessary to ensure the project fulfills its intended objectives, i.e. post construction.

Public Comment

There were no public comments.

Next Steps/Adjourn

Debbie Peterson thanked the PDT for their attendance and participation in today's meeting. The next full PDT meeting will be held July 29, 2004 from 10:00 am – 4:00 pm, Evaluation performance measures are based on project objectives. Impacts of alternative plans are compared against evaluation performance measures and used to select the recommended plan, i.e. prior to construction.
 the meeting adjourned at approximately 3:45 PM.

⁴ Establishing target would be tricky because sexes separate based on salinity and then migrate to inlet to spawn.

⁵ Establishing target may also be tricky because other variables impact these species.

⁶ Establishing target may be tricky because birds forage throughout the lagoon