

# CENTRAL EVERGLADES PLANNING PROJECT

## SMART PLANNING FOR THE CENTRAL EVERGLADES PLANNING PROJECT

GEER Conference 2015 Session 9

Linking Hydrology to Ecology in Restoration Planning,  
Design, and Implementation

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# SMART PLANNING

Specific, **M**easurable, **A**chievable,  
Risk-informed, **T**imely

- Reflects concerns from public, sponsors, Congress
- Nation-wide initiative
  - Increase efficiency and effectiveness
  - Reduce time and cost of USACE studies
- Parallel guidance
  - Establish scope of the study
  - Limit schedule and budget



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# INCREMENTAL DECISIONS

- From a corporate perspective:
  - What are the key decisions that must occur and when must they occur?
  - What information is needed to make these decisions?
- Frequent coordination with the Vertical Team



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# INCREMENTAL DECISIONS

- Alternatives
- Tentatively Selected Plan
- Agency Decision
- Final Report
- Chief's Report

SMART Feasibility Study Process

18-36 MONTHS



# MANAGE RISKS

- Unknowns & uncertainties are out there
- Ask, what is the risk of this uncertainty to the:
  - decision we might make
  - study cost
  - study schedule
- Some uncertainties do not affect the quality of planning decisions
- Data collection and analysis is focused on the higher risk uncertainties



U.S. ARMY



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# TOOLS

- Risk Register

- Usually a table
- Identifies risks & uncertainties
- Describes what could go wrong
- What is the risk to the decisions or the study?
- Options to resolve or reduce the risk

- Report Synopsis

- Summary updated regularly & submitted before each milestone decision
- Becomes the Draft Report

Risk Category	Description	Impact	Mitigation
LIMITED INFORMATION	A limited amount of project information will be available to the project team.	There may be a delay in the project team's ability to make decisions.	Establish a communication plan to ensure that all team members are kept up to date.
Unclear Roles & Responsibilities	A limited amount of time will be spent on defining roles and responsibilities.	There may be a delay in the project team's ability to make decisions.	Establish a communication plan to ensure that all team members are kept up to date.
Unstable Government	There will be a limited amount of time to establish a communication plan.	There may be a delay in the project team's ability to make decisions.	Establish a communication plan to ensure that all team members are kept up to date.
Complexity of the Project	The project is complex and there are many risks.	There may be a delay in the project team's ability to make decisions.	Establish a communication plan to ensure that all team members are kept up to date.
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# TOOLS

- Decision Management Plan
  - Key actions to reach the next major decision
  - Focuses on High Risk items from the Risk Register
  - Identifies what will be done, and how it will be quantified & evaluated
- Decision Log
  - Lists each issue & decision
  - Coordinated with the Vertical Team
  - Reduces re-addressing prior decisions



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# SMART PLANNING FOR CEPP

## LOWER RISK ITEMS

- CEPP problems and opportunities, goals, objectives, constraints, & management measures
  - Identified from existing research & recent CERP studies
  - Developed quickly
  - Coordinated thoroughly



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# SMART PLANNING FOR CEPP HIGH RISK ITEMS

- Screening of management measures and preliminary alternatives
  - Existing model output
  - Use fast new models to analyze many combinations
  - Rigorous screening

**CONVEYANCE AND DISTRIBUTION MEASURES / COMPONENTS / OPTIONS**  
Southern WCA 3A, WCA 3B, & ENP - Greenline/Baseline

**PURPOSE**  
Incrementally restore hydropatterns, hydrologic connections, and historic seasonal water flow through WCA 3A, WCA 3B, and ENP ecosystem, and to reverse the ecosystem fragmentation caused by the L-67s and L-29.

**CEPP OBJECTIVES**

1. Restore seasonal hydroperiods & freshwater distribution to support a natural mosaic of wetland/upland habitat in Everglades system.
2. Improve sheetflow patterns and surface water depths and durations in the Everglades system to reduce soil subsidence, frequency of damaging fires, decline of tree islands, and decrease saltwater intrusion.
4. Restore more natural water level responses to rainfall to promote plant and animal diversity and habitat function.

## 1 SCREEN MANAGEMENT MEASURES 3.2.3.1

1. Compile measures from CERF efforts, Modified Water Deliveries to ENP Studies, Tamiami Trail Modifications Next Steps, Everglades Restoration Transition Plan (ERTP), tree island and ridge and slough habitat research, Working Group sponsored workshops, and PDT meetings

2. Determine consistency with CEPP objectives

3. Screen configurations of measures (size, combinations, locations) based on:

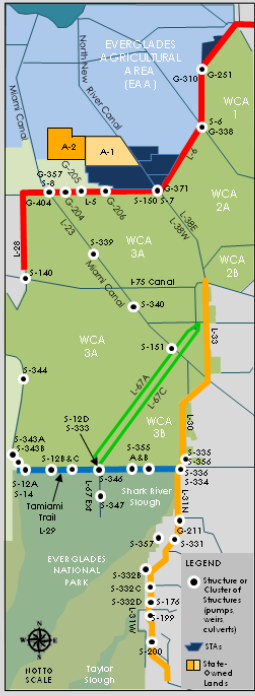
- Environmental effectiveness
- Maintenance needs
- Cost

**RESULT**  
**WCA 3A TO WCA 3B CONVEYANCE AND DISTRIBUTION**

- Levee Removal
- Levee Degradation/Gaps
- Levee/Berm Construction
- Weirs
- Gated Water Control Structures
- Culverts within Existing Levees

**WCA 3A/3B TO ENP CONVEYANCE AND DISTRIBUTION**

- Collection canal
- Beleve roadway
- Gated water control structures
- Weirs
- Pump stations
- Levee berm
- Operational changes
- Bridging
- Flow-through wetlands



**LEGEND**

- Structure or Cluster of Structures pumps, weirs, culverts
- STA's
- Un-located lands

110110 SCALE Taylor Slough


## 2 LOCATE MANAGEMENT MEASURES 3.2.3.2

1. Configurations of retained management measures established by Working Group, stakeholder, and PDT members—evaluated on feasibility and effectiveness (meeting objectives and avoiding constraints)


**RESULT**

2 configurations:

- Concept 1: multiple conveyance structures in L-67 and L-29 levees
- Concept 2: similar conveyance structures plus a levee within WCA 3B near the Blue Shanty Canal to redirect water within WCA 3A, and modify seepage out of WCA 3B



Concept 1



Concept 2

## 3 FORMULATE OPTIONS 3.2.3.3

1. Two flowways underwent model analysis—hydrologic modeling using operational targets (water depths and durations) to arrive at optimized combinations of structures and operations to best fit the targets

2. Highly functional features of the two flowways were assembled into 23 different "options" (locations and varying capacities)

3. Screening removed options that were:

- very similar to each other
- incompatible with future plans for Tamiami Trail construction

**RESULT**  
10 options retained for further model analysis

## 4 EVALUATE OPTIONS 3.2.3.4

1. Multi-Criteria Decision Analysis (MCDA) & Cost-Effectiveness Evaluation for 10 options

**LEVEL 1**

- CEPP OBJECTIVES
- PERFORMANCE MEASURES:
  - Inundation (WCA 3A, 3B, & ENP)
  - Average ponding depth
  - Recession rate for gage 205 (healthy marl prairie habitat)

**LEVEL 2**

- OTHER ECOLOGICAL CONCERNS
- STAKEHOLDER CONCERNS:
  - Operational flexibility
  - Adaptability (robustness & future compatibility with future CERF increments)
  - Ecologic connectivity

**RESULT**  
4 options carried forward  
3 cost-effective options + revised flowway option

**4 OPTIONS**

**Option 1**

- Increase S-333 to 3,000 cfs
- Unconstrained L-29 stage
- 750cfs centrally located structure on L-67A
- Gaps on L-67C Levee @ 750cfs structure

**Option 2**

- Increase S-333 to 3,000 cfs
- Unconstrained L-29 stage
- (2) 500 cfs and (1) 750cfs structure on L-67A
- Gaps on L-67C Levee @ structures
- New S-335C outflow structure (500 cfs) on L-29

**Option 3**

- Increase S-333 to 3,000 cfs
- Unconstrained L-29 stage
- (4) 500 cfs structures on L-67A
- Gaps on L-67C Levee @ structures
- (2) 500 cfs pumps on the L-29

**Option 4**

- Increase S-333 to 3,000 cfs
- Blue Shanty Levee L-67A to L-29
- Unconstrained L-29 stage
- (2) 500 cfs structures on L-67A inside Blue Shanty Rowway
- Upgrade L-67C and L-29 in Rowway
- (1) 500 cfs structure north of Rowway
- Gap on L-67C Levee @ structure



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# SMART PLANNING FOR CEPP

## HIGH RISK ITEMS

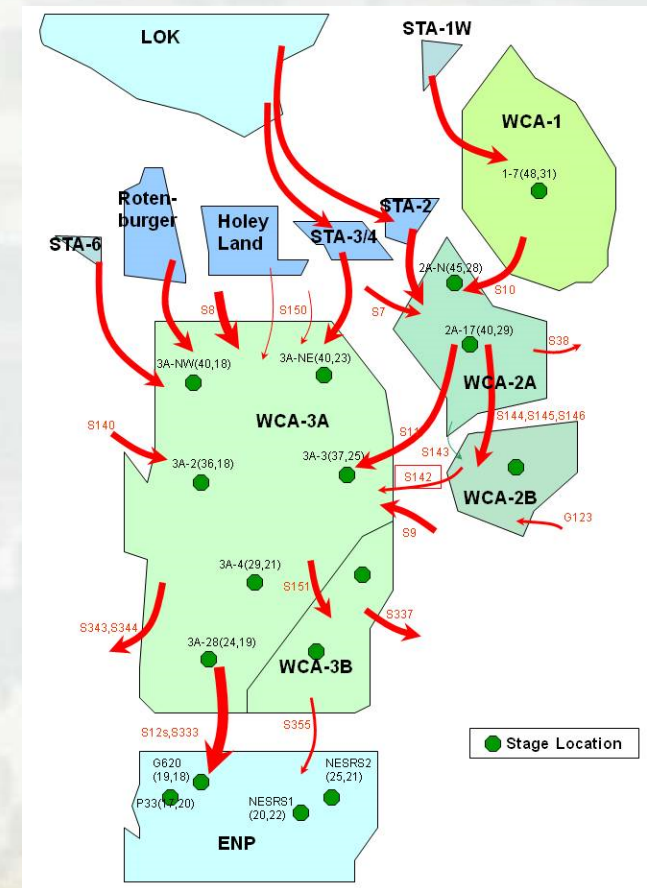
- Joint operation of a CEPP Flowage Equalization Basin with the State's A-1 FEB & STA 3 / 4
  - Concern with meeting water quality requirements, high construction cost, & cost sharing of O&M
  - Prepared multiple scenarios with model runs for performance, cost estimates, & cost sharing comparisons to allow USACE & SFWMD leadership to reach the same decision
  - Negotiations at high levels



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# SMART PLANNING FOR CEPP HIGH RISK ITEMS

- Longstanding uncertainty of how to operate structures to achieve target hydropatterns in the WCA 3
  - Dedicated the time & labor to apply a new inverse model to reduce this uncertainty
  - This modeling also help establish the most effective size & location of the features



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# QUESTIONS & DISCUSSION



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