



# REstoration, COordination, VERification (RECOVER)

## *Updating a System-wide Monitoring and Assessment Plan for a Large-Scale Ecosystem Restoration Project*

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# PRESENTATION OUTLINE

*“THERE ARE NO OTHER EVERGLADES IN THE WORLD”*

- Marjory Stoneman Douglas -

- **Comprehensive Everglades Restoration Plan (CERP)**
- **RE**storation, **CO**ordination, and **VER**ification (RECOVER)
- RECOVER's Monitoring & Assessment Plan (MAP)
- Process to Update RECOVER's MAP





# COMPREHENSIVE EVERGLADES RESTORATION PLAN (CERP)

## Framework to Restore, Protect, and Preserve America's Everglades

### Goal: Enhance Ecologic Values

- Increase the total spatial extent of natural areas
- Improve habitat and functional quality
- Improve native plant and animal species abundance and diversity

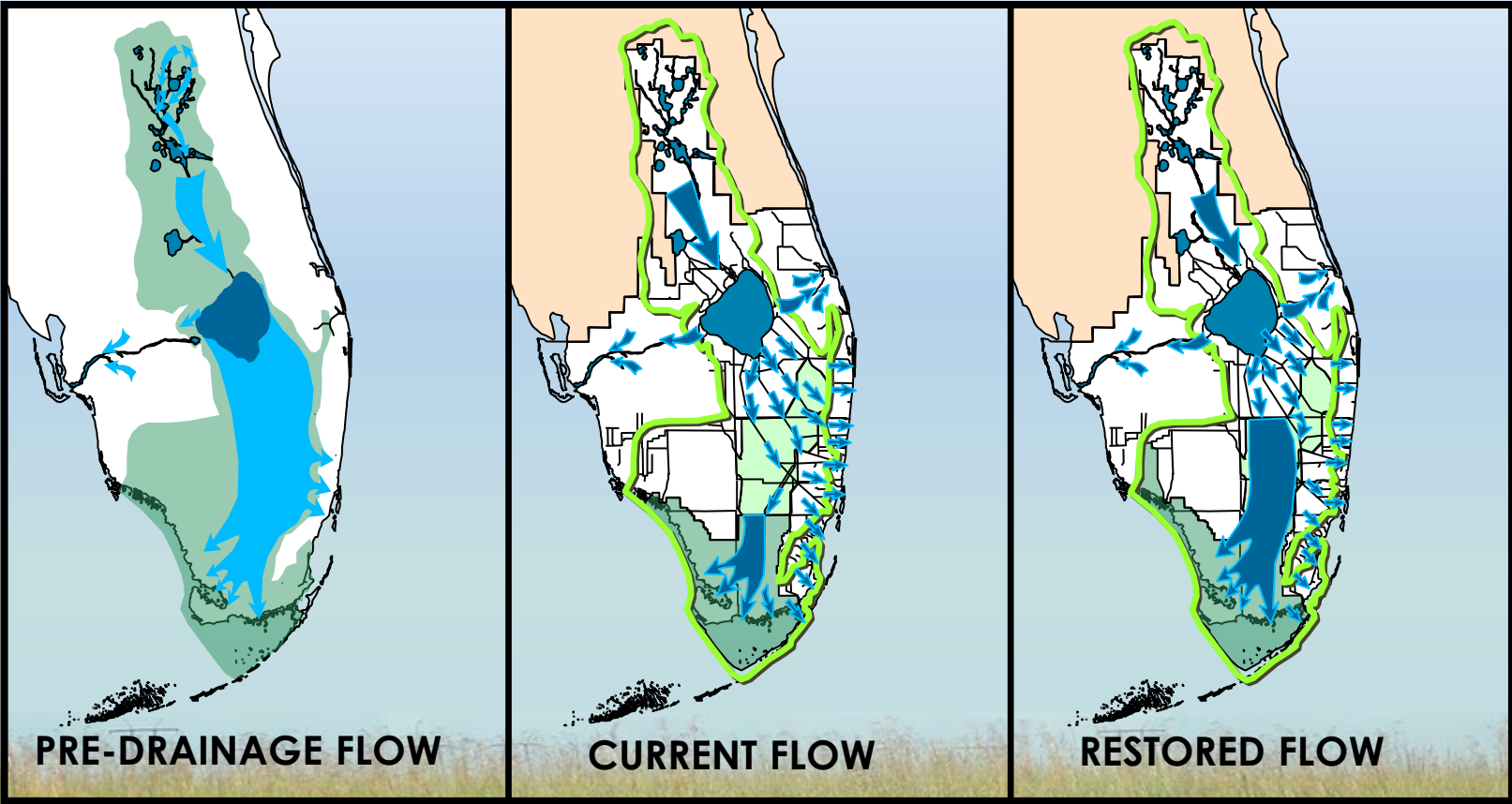


### Goal: Enhance Economic Values and Social Well-Being

- Increase availability of fresh water (agricultural/municipal and industrial)
- Reduce flood damages (agricultural/urban)
- Provide recreational and navigation opportunities
- Protect cultural and archeological resources and values



# CERP: GETTING THE WATER RIGHT



PRE-DRAINAGE FLOW

CURRENT FLOW

RESTORED FLOW



OUTLINE OF ORIGINAL SOUTH FLORIDA ECOSYSTEM COMPARED TO CURRENT AND RESTORED CONDITIONS



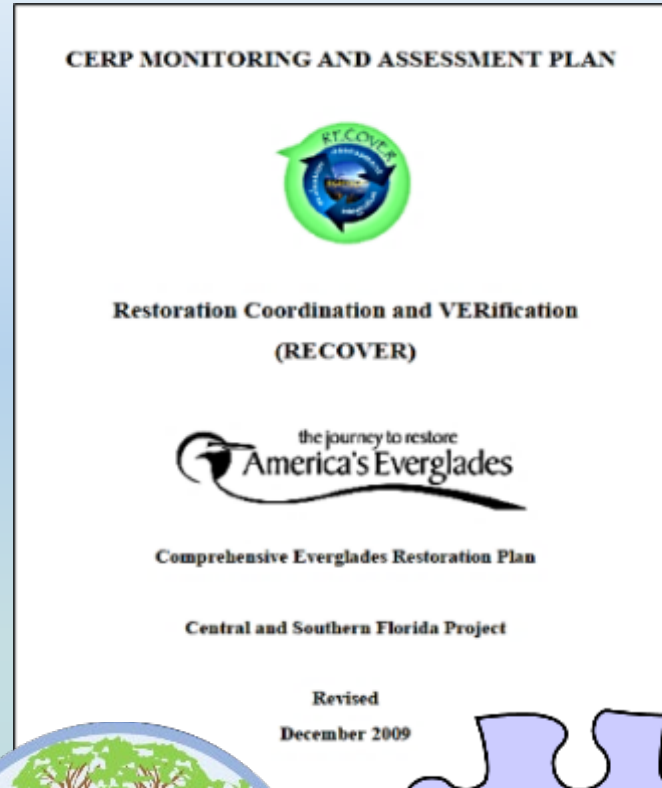
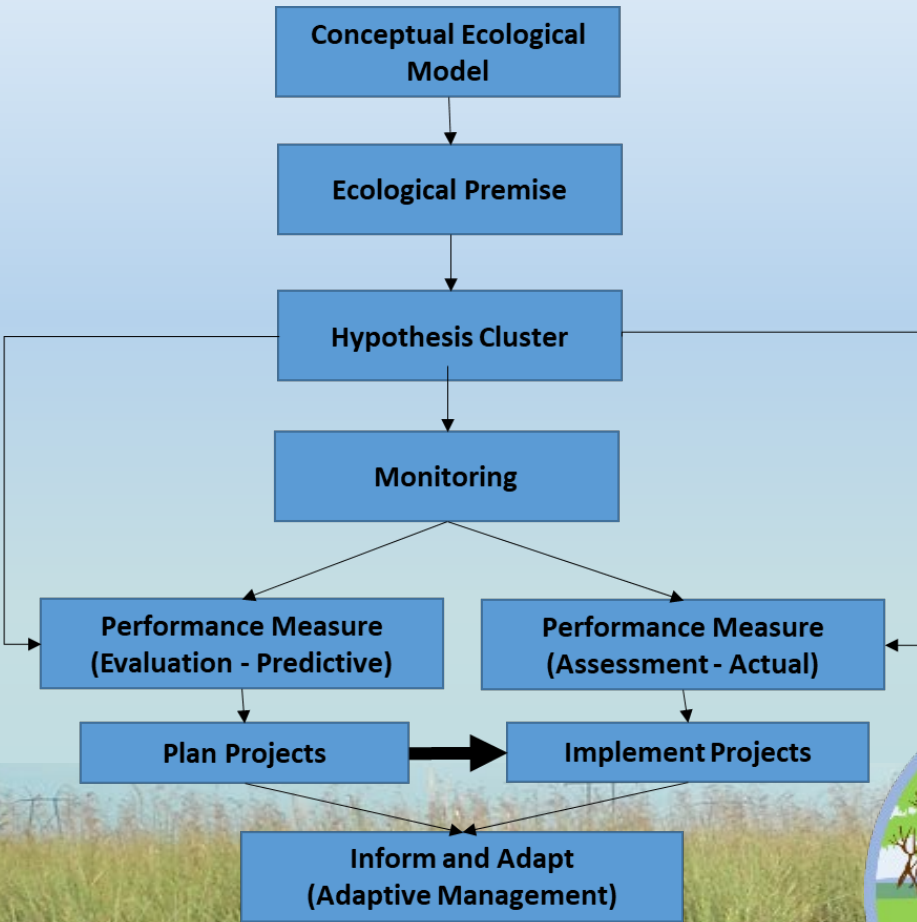


# WHO IS RECOVER?

- CERP Programmatic and system-wide perspective
- Collaborative and consensus-based
- Ensures CERP implementation is guided by the best available science
- **Three Major Components**
  - **Assessment** - measuring system-wide performance of projects through research and monitoring
  - **Evaluation** - forecasting project performance through predictive modeling and performance measures
  - **Planning** - integrating RECOVER with planning and operation of the system



# CERP: RECOVER APPLIED SCIENCE STRATEGY



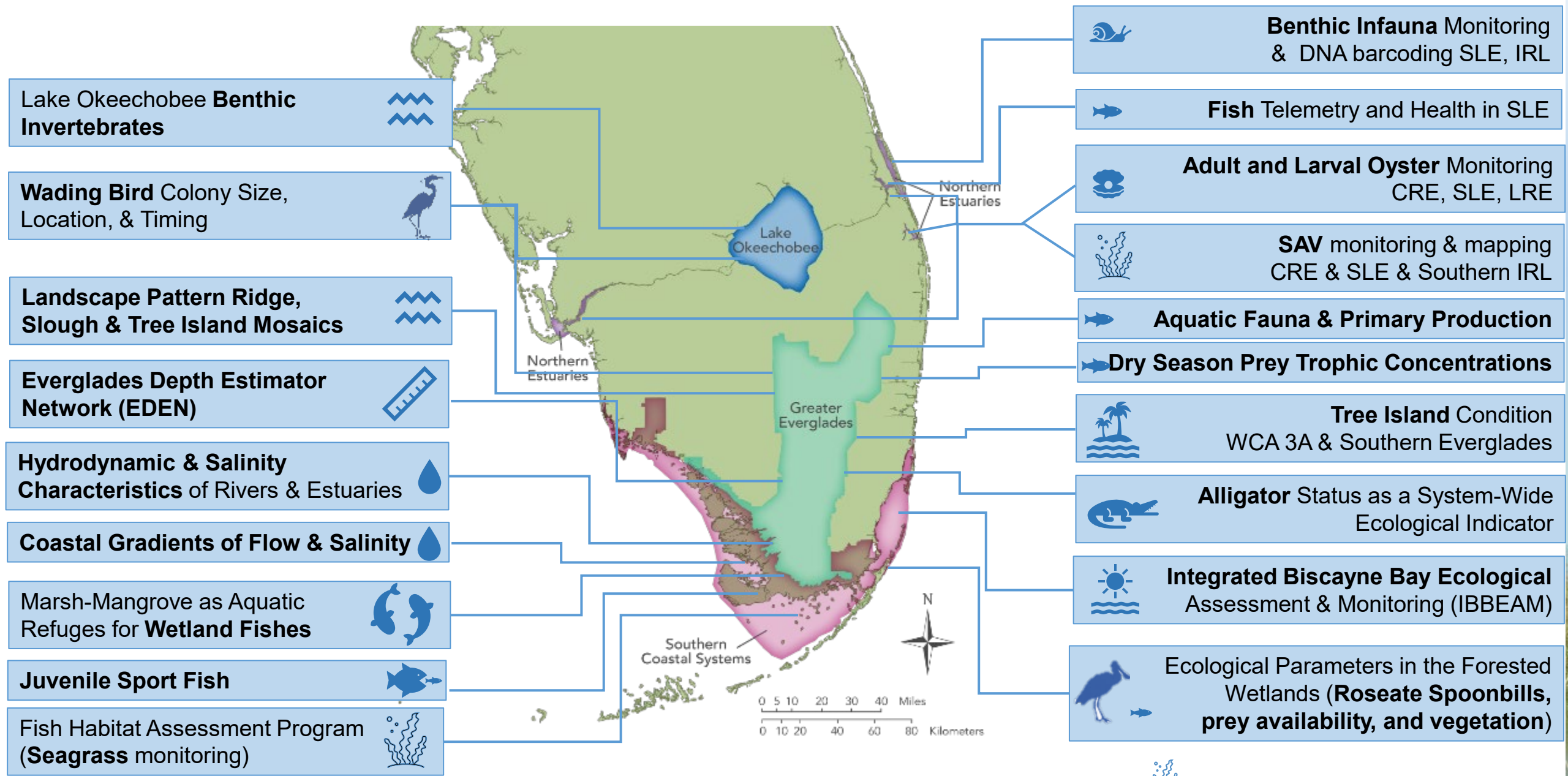


# RECOVER MONITORING & ASSESSMENT PLAN: OBJECTIVES

- Establish pre-CERP reference state
- Provide the **assessment of the system-wide responses**
- **Detect unexpected responses** of the ecosystem to changes in stressors, resulting from CERP activities
- Support scientific investigations designed to **increase ecosystem understanding, establish cause and effect relationships, and interpret unanticipated results**



# MONITORING FOR CERP IS SYSTEM-WIDE





# RECOVER MONITORING & ASSESSMENT UPDATE

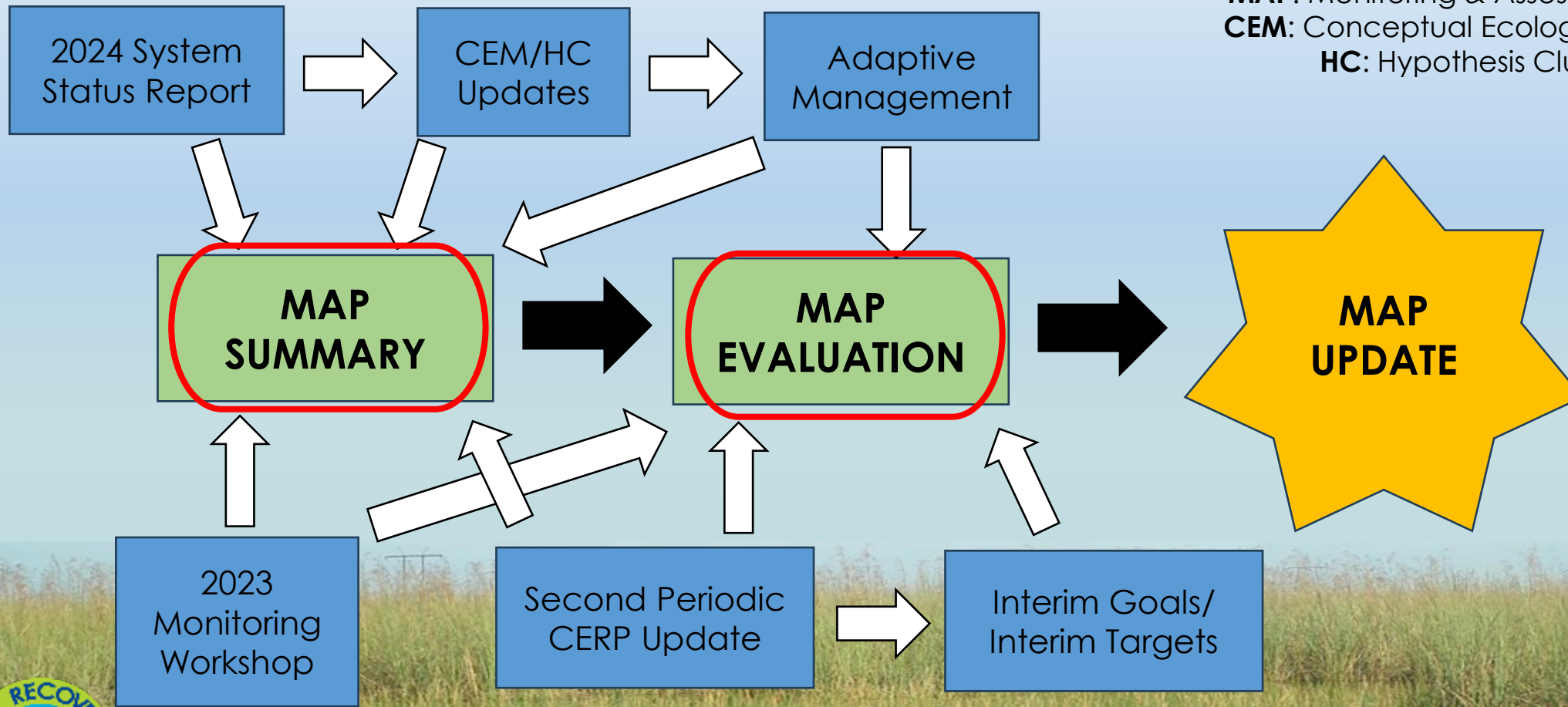
## ACRONYMS

**CERP:** Comprehensive Everglades Restoration Plan

**MAP:** Monitoring & Assessment Plan

**CEM:** Conceptual Ecological Model

**HC:** Hypothesis Cluster



# MAP SUMMARY

**Purpose:** *To summarize monitoring information gathered under the most current MAP (MAP 2009)*

## **Guiding Questions:**

- ***Why is the ecological indicator being monitored?***
- ***What monitoring is currently being performed?***
- ***What tools are available for the indicator?***
- ***Has a baseline been established?***
- ***Is there a description of historic/natural variability in the condition of the indicator?***
- ***Have thresholds been established?***
- ***Temporal/spatial scales associated with response?***
- ***When and where do we anticipate change?***

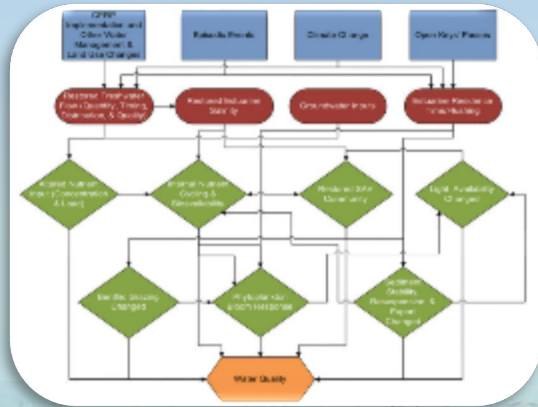
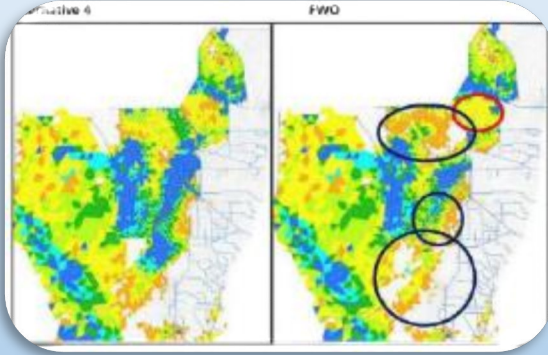
## **Uncertainties**





# MAP SUMMARY

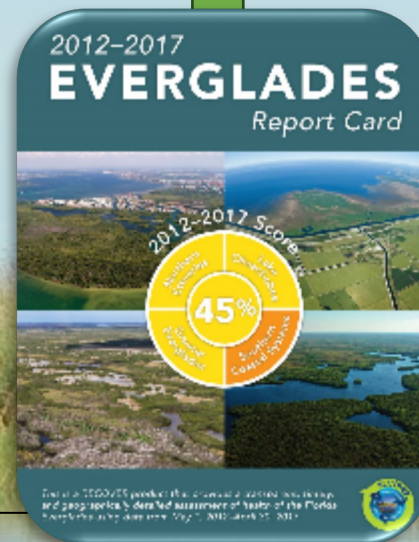
Modeling exercises  
(Second Periodic CERP Update,  
Interim Goals & Interim Targets)



Conceptual ecological model  
& hypothesis cluster updates



## MAP SUMMARY



Everglades system-wide  
assessments  
(RECOVER System Status Report)

## Programmatic Uncertainties

CERP AM Uncertainty and ID #. Is complete backfilling of canals and removal of levees an ecological and hydrologic necessity for restoration? Are partial backfilling and no backfilling of canals viable options? GE-12

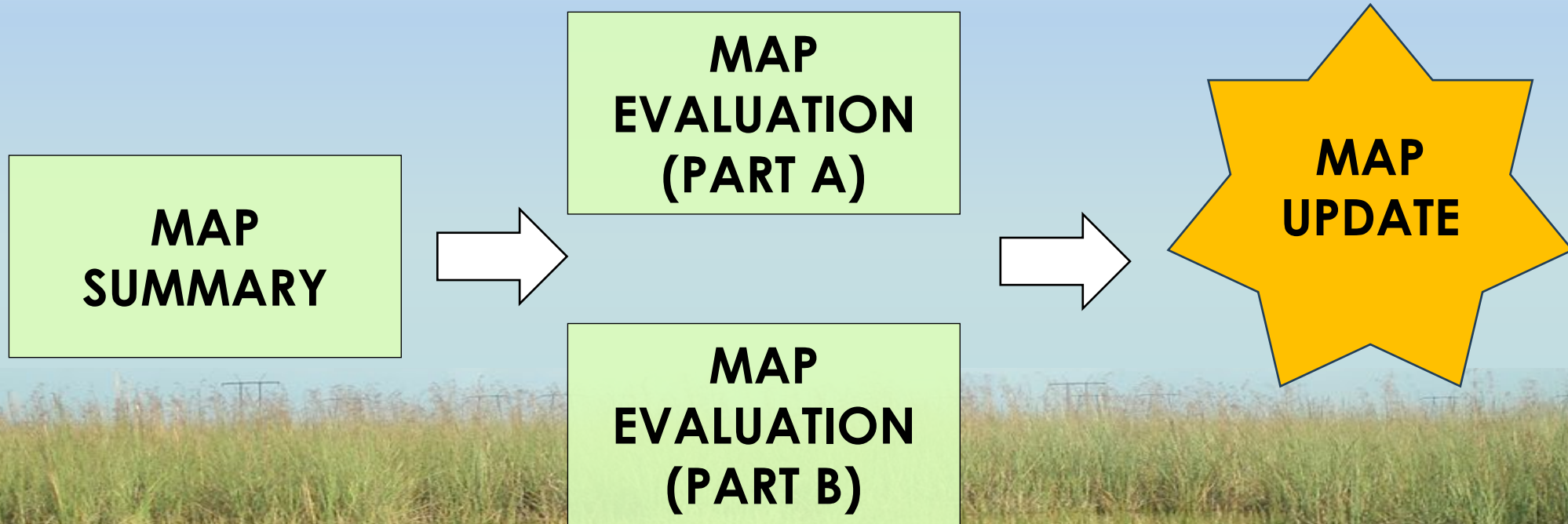


2023 Monitoring  
Workshop

# MAP EVALUATION

*Purpose: Provide recommendations for a revised MAP*

- Will use information gained from MAP Summary as a reference
- Two-part effort



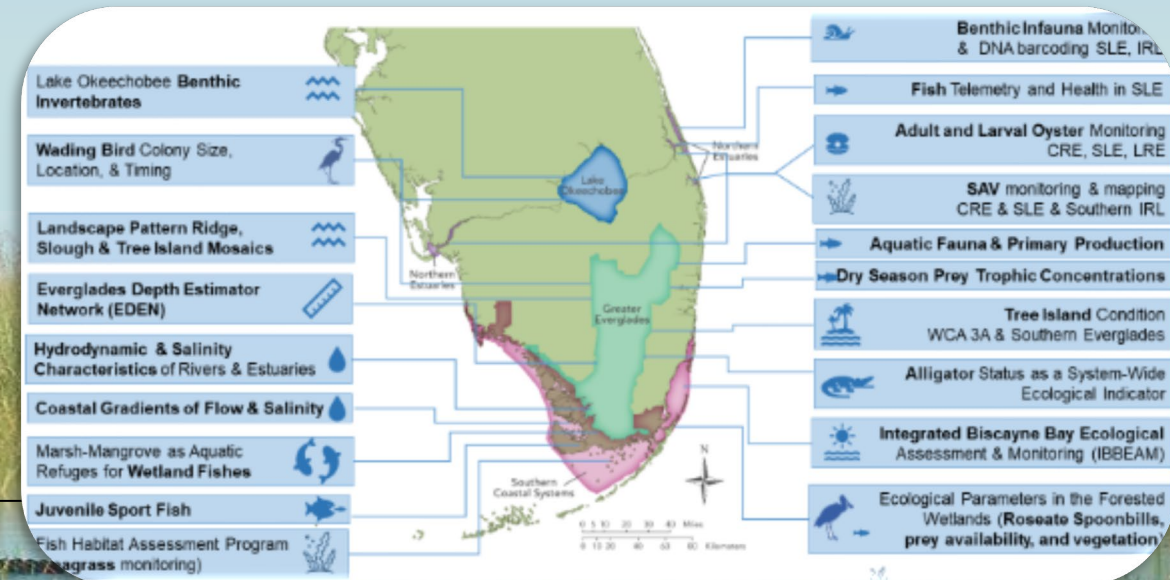


# MAP EVALUATION (PART A)

**Purpose: To understand if the current MAP includes the scientific rigor to assess whether CERP is achieving its goals and objectives**

## Guiding Questions:

- **Will current or planned statistical analyses related to indicators allow for statistically defensible conclusions based on the current survey design?**
- **If not, how should the survey designs for metrics related to indicators be modified for the MAP Update?**



# MAP EVALUATION (PART B)

**Purpose: To determine what monitoring is needed to assess whether CERP is achieving its goals and objectives**

**Preliminary Guiding Questions:**

- **What monitoring is needed to**
  - **address programmatic uncertainties?**
  - **develop the thresholds used to inform management decisions?**
  - **develop models/tools that can be used for identifying appropriate interim restoration goals/targets?**





# WHY DOES THIS UPDATE MATTER?

- Increases ability to more accurately track restoration progress
- Enhances CERP Adaptive Management Program
- Provides managers and decision-makers the capacity to act with the knowledge that they have the best information and scientific support available



# THANK YOU



## RECOVER Program Managers

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