

WESTERN EVERGLADES RESTORATION PROJECT

WERP PDT Meeting

August 29, 2017



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US Army Corps of Engineers
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AGENDA

- **Review purpose of WERP Adaptive Management and Monitoring Plan**
 - **Provide definitions (Uncertainties, screening criteria, management options, etc)**
 - **Review Schedule**
- **Review Prioritization Process and Current Progress on WERP Uncertainties**
- **Next Steps**
 - **Development of Management Strategy Templates**
 - **Volunteers?**



What is a Project's **Monitoring and Adaptive Management Plan**?

The Plan is a combination of two required pieces of CERP Project Implementation Reports (PIRs):

- **A *monitoring plan*** specifies the data collection, analysis, and reporting that will inform project performance

- **An *Adaptive Management Plan*** guides the use of collected data to:
 - Address uncertainties related to project performance
 - Maximize project benefits while reducing project costs
 - Help inform implementation sequencing of WERP
 - Understand how monitoring will determine if adjustments are needed in project implementation to improve performance





What is a Project's **Monitoring and Adaptive Management Plan**?

Monitoring and Adaptive Management Plan – Appendix to WERP PIR Document

Introduction

Part 1: Adaptive Management Plan (AM Plan). Will include AM-relevant Uncertainties, strategies, and recommendations. Will refer to other monitoring where possible.

AM Monitoring will focus on addressing prioritized Uncertainties.

Ecological Monitoring will focus on WERP's success at meeting project objectives.

Part 2: Hydrometeorological Monitoring Plan

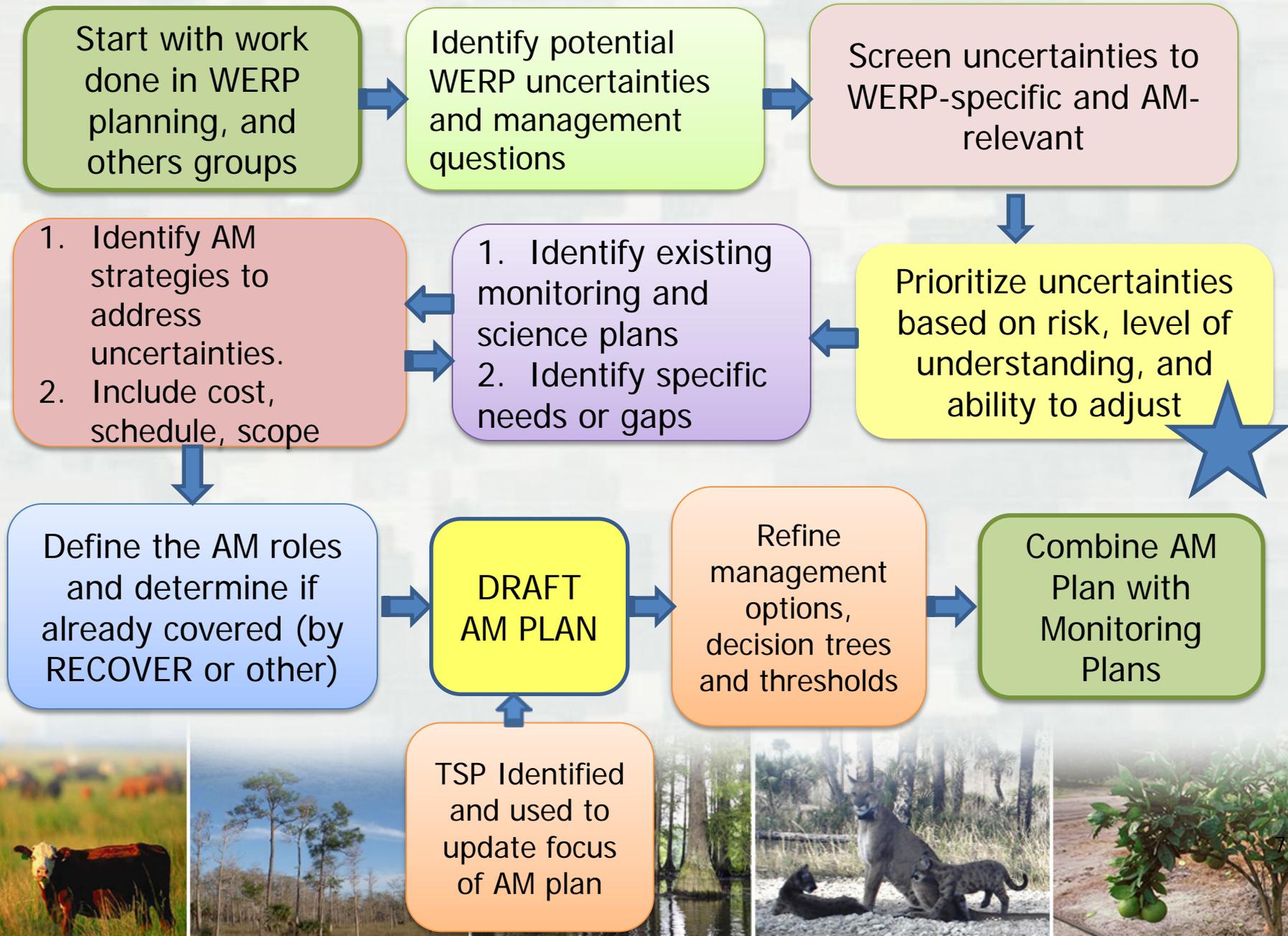
Part 3: Water Quality Monitoring Plan

How will the AM and Monitoring Plan be developed?

- **Monitoring plans will be developed based on ecological needs to determine project success**
- **AM plan development will be led by the Eco subteam and will coordinate with PDT, subteams (engineering, water quality), RECOVER, Science Coordination Group**
- **Starting point will include AM work already available from other projects, science programs, and WERP teams**



Process for AM Plan Development



AM Plan Development

1. Identify WERP uncertainties - **COMPLETE**
2. Screen uncertainties - **COMPLETE**
3. Prioritize uncertainties - **COMPLETE**
4. Identify adaptive management strategies to address top tier uncertainties
5. Define AM roles
6. Draft the AM Plan and refine with TSP
7. Refine management options and develop decision trees, thresholds and costs

Monitoring Plan Development

1. Identify current monitoring
2. Identify monitoring needed for AM Strategies and Ecological Monitoring, Water Quality and Hydrometeorological
3. Finalize monitoring with TSP and determine costs



Schedule for Monitoring and AM Plan Development

June/July 2017:

- Kick off AM and Monitoring Plan activity
- Confirm process for AM Plan development
- "Strawman" AM products: uncertainties, criteria to prioritize and key AM-relevant topics for review
- Parallel Process: Other sections of monitoring plan will be coordinated

July/August/ 2017:

- Identify and prioritize uncertainties
- Review existing monitoring plans

Suggested Dates

September/October 2017:

- Develop AM Strategies

March 2018: Draft Monitoring and Adaptive Management Plan Deadline

November/December 2017:

- Reviews of "strawman" products; will need to know TSP before finalizing
- Will include coordination with water quality and engineering subteams, PDT, scientists and experts

January/February/March 2018:

- Finalize items to include in Plan based on TSP
- Coordinate with experts and other monitoring
- Identify AM strategies, decision trees, and implementation plan
- Present costs

Adaptive Management

- A scientific process for continually improving management policies and practices by learning from their outcomes
- A structured approach for addressing uncertainties by testing for best project designs and operations to achieve restoration goals and objectives, linking science to decision making, and adjusting implementation, as necessary, to improve the probability of restoration success

Uncertainty

- A question faced during planning or implementation regarding the best actions to achieve desired goals and objectives within constraints, which cannot be fully answered with available data or modeling



Uncertainty Screening Criteria

1. Affect WERPs ability to meet its goals and objectives and remain within its constraints
2. Be at an appropriate WERP-scale spatially and temporally
3. Have options for adaptive management actions such as potential project adjustments
4. Have a combination of high importance to WERP and high uncertainty that could be reduced by practical adaptive management means



WERP Goals, Objectives and Performance Measures

WERP OBJECTIVE Restore the quality and quantity of WERP's aquatic habitats by...	Inundation Patterns	Sheetflow	Hydrologic Surrogate for Soil Oxidation	Slough Vegetation Suitability	Fire Risk	Vegetation Communities	Ecologic Connectivity	Downstream Benefits of Reduced Phosphorous Loading
Restoring freshwater flow paths, flow volumes & timing, seasonal hydroperiods, & historic distributions of sheetflow to re-establish ecological connectivity and ecological resilience of the wetland/upland mosaic	X	X	X	X	X	X	X	
Restoring water levels to reduce wildfires associated with altered hydrology, which damage the geomorphic and associated ecological conditions of the western Everglades					X			
Restoring aquatic low nutrient (oligotrophic) conditions to reestablish and sustain native flora and fauna								X



Criteria to Prioritize Uncertainties

	Low	Medium	High
<p><u>Risk</u> What is the risk of not meeting WERP restoration goals if this uncertainty is not addressed?</p>	<p>Even if the uncertainty isn't addressed, it doesn't pose much risk to achieving project goals and objectives.</p>	<p>If the uncertainty isn't addressed it may or may not affect achievement of a goal/objective.</p>	<p>Without addressing this uncertainty, there is a high risk to achieve project goals and objectives.</p>
<p><u>Knowledge</u> What is the level of understanding of this uncertainty (i.e., how much is known about this uncertainty)?</p>	<p>Little is known about the question/issue or how to address it.</p>	<p>Some information is known in some geographical areas, but not all.</p>	<p>A lot is known about addressing this question in multiple geographical areas.</p>
<p><u>Relevance to Adaptive Management for WERP</u> What is the level of confidence that anything could be done to address the uncertainty?</p>	<p>Even if this uncertainty is addressed, the project or operations will not be able to be modified given the results of the project's implementation.</p>	<p>If this question is addressed, a connection to future project implementation is established/documentated but future adjustments to the first increment of the project may or may not be limited, especially if indicator response is longer than 10 years and is more relevant to RECOVER system-wide monitoring.</p>	<p>If this question is addressed, project design, implementation, and/or operations can be modified to improve restoration results.</p>

Translating Qualitative Prioritization Scenarios to Rank Uncertainties

Risk	Knowledge	Relevance	Tier
High	Low	High	1
Med	Low	High	1
High	Low	Med	1
High	Med	High	1
High	Med	Med	2
Med	Med	High	2
High	High	High	2
High	High	Med	2
Med	High	High	2
Med	Low	Med	2
Med	Med	Med	2
High	Low	Low	2
High	Med	Low	3
Low	High	High	3
High	High	Low	3
Med	Low	Low	3
Low	Med	High	3
Low	Med	Low	3
Med	Med	Low	3
Low	Med	Med	3
Med	High	Med	3
Med	High	Low	3
Low	High	Med	3
Low	High	Low	3

1=high priority
 2=medium priority
 3=low priority

This Prioritization Scenarios Table is used to translate the qualitative L/M/H scoring of Uncertainties into quantitative “Tiers” to assist in ranking the Uncertainties for the AM Plan

Translating Qualitative Prioritization Scenarios to Rank Uncertainties

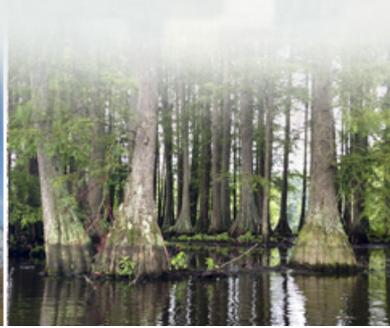
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High	Low	High	1
Med	Low	High	1
High	Low	Med	1
High	Med	High	1
High	Med	Med	2
Med	Med	High	2
High	High	High	2
High	High	Med	2
Med	High	High	2
Med	Low	Med	2
Med	Med	Med	2
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1=high priority
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Note: Only Tier 1 (high priority) and Tier 2 (medium priority) Uncertainties will be incorporated into the Adaptive Management Strategies Template of the AM Plan

PLACEHOLDER

**View Uncertainties
Spreadsheet Document**



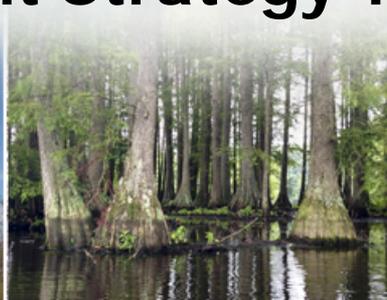
Examples of Prioritized Uncertainties from WERP

Category	Uncertainty
Hydrology- Flora/Fauna	Are the volumes of fresh water and associated improvements in seasonal hydroperiods predicted under WERP sufficient to reestablish desirable vegetative communities within the western Everglades?
Hydrology- Modeling	How will WERP influence the distribution of water adjacent to Loop Road?
Water Quality	Will there be downstream effects associated with modifying inflows along I-75 within the BCNP, including effects of nutrients on vegetation?



WERP Uncertainties Update

- ECO Sub Team aims to complete the screening, prioritization and ranking of Uncertainties by September 1st.
- Currently, WERP has 17 Uncertainties in a variety of categories including: Hydrology-Flora/Fauna, Hydrology- Climate, Water Quality, Active Management of Vegetation, Hydrology- Modeling.
- Once finalized, next step will be development of Management Strategy Templates



Strategies

- A plan to address one or more uncertainties identified in the adaptive management plan
- Active Adaptive Management - Multiple pilot projects or design tests are implemented to determine the most efficient and effective way to achieve desired goals and objectives
- Passive Adaptive Management – One project component or set of operational criteria is implemented to test its ability to achieve desired goals and objectives.

Management Options

- Potential structural, non-structural, and/or operational alternatives to be undertaken to improve restoration performance
- Adaptive management plans contain potential management actions “options” to improve performance in meeting project/program goals and objectives



PLACEHOLDER

View Management Strategies Template/ MOMs Example Document



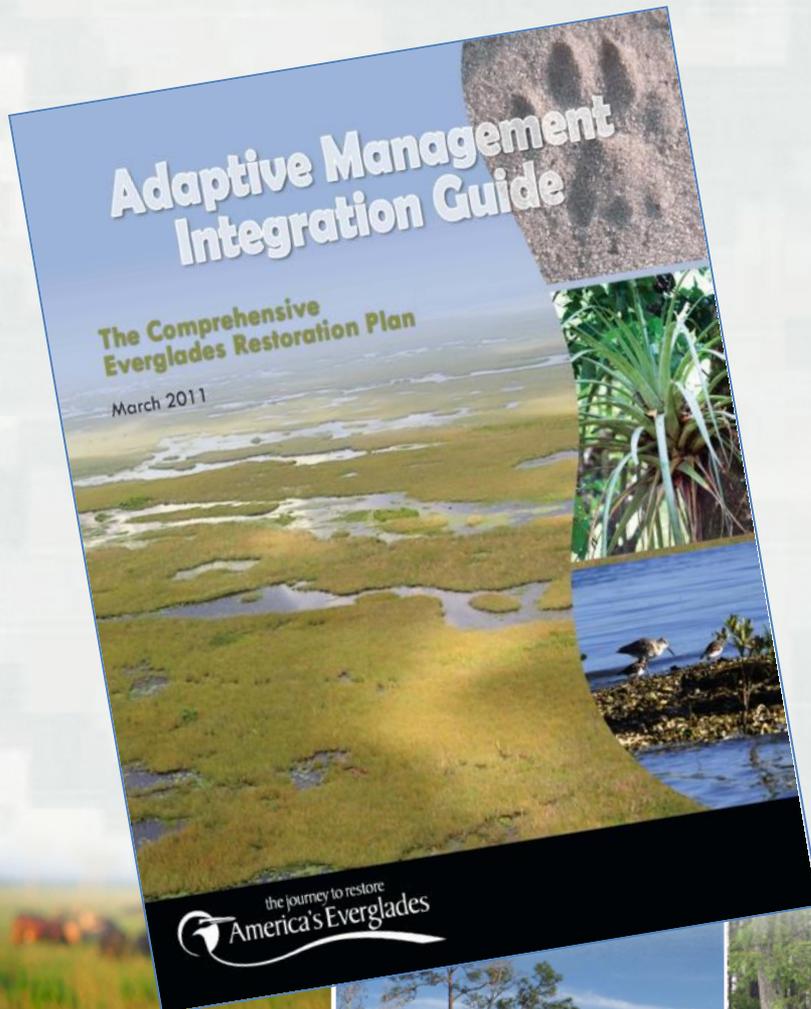
NEXT STEPS

- **Identify existing monitoring and science plans**
- **Identify strategies to address Uncertainties**
- **Develop Management Strategy Templates for each prioritized Uncertainty**

Volunteers?



Learn more about Adaptive Management in CERP



The Adaptive Management Integration Guide

http://141.232.10.32/pm/pm_docs/adaptive_mgmt/062811_am_guide_final.pdf

CERP Program-Level AM Plan

http://www.saj.usace.army.mil/Portals/44/docs/Environmental/RECOVER/2015_1019_CERPPROGRAMAMPLAN_DCT_APPROVED.pdf

