

CENTRAL EVERGLADES PLANNING PROJECT



Central Everglades Planning Project (CEPP) *Adaptive Management Plan*

Presentation of Criteria and Screening

WG-Sponsored Workshop
Kelly Keefe, USACE

February 25, 2013

CENTRAL EVERGLADES

Presentation Goal and Outline

Goal - Status update on CEPP AM Plan, Increase understanding of team's screening and prioritization, Prepare you for today's discussion and activity

Outline

- 1. Review of process for developing AM Plan.**
- 2. Presentation of criteria.**
- 3. Presentation of CEPP AM uncertainties.**

After presentation - Constructive comments: red flags or show-stoppers

- Avoid word-smithing comments
- If you feel an **uncertainty is missing**, be prepared to suggest how it meets each criteria.
- If you feel a **criteria is missing/misguided**, be prepared to suggest an improvement and how it will affect the prioritization.
- **Today's workshop focus will be on monitoring programs that are producing data that can inform CEPP's adaptive management.**

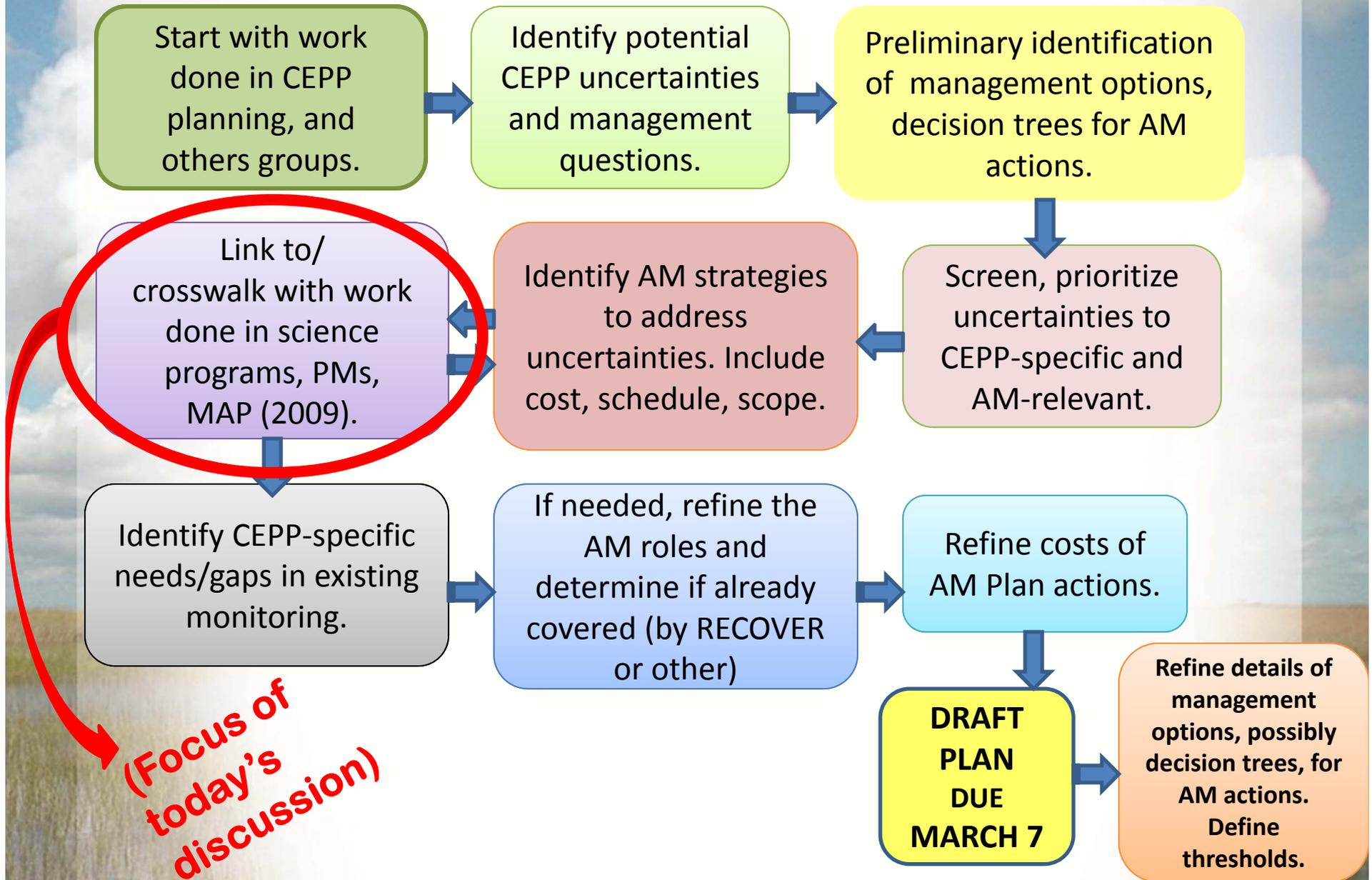
What is a Project's **Adaptive Management Plan**?

The ***Adaptive Management Plan*** guides the use of the data to

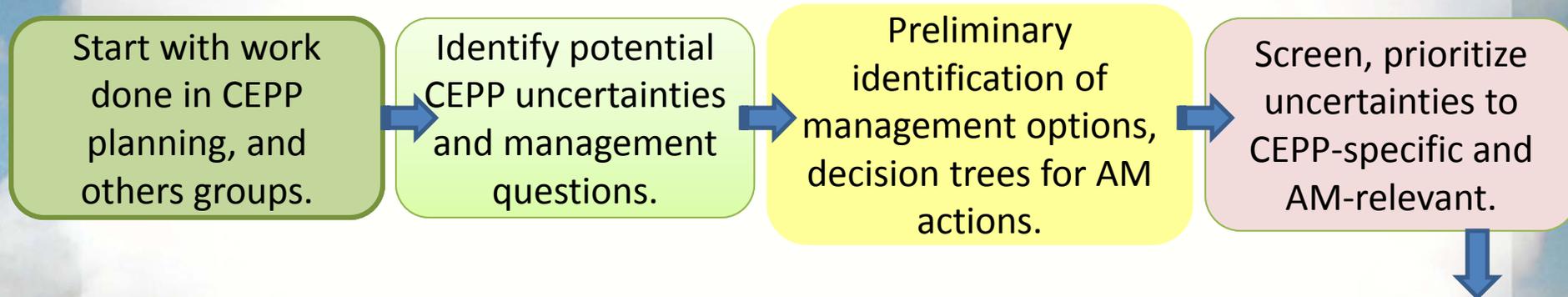
- Maximize project benefits while reducing project costs,
- Help inform implementation sequencing of CEPP,
- Determine if adjustments are needed in project implementation to improve performance.

The CEPP AM Plan will link to, compliment, and guide the CEPP monitoring plan.

Process for AM Plan Development



Progress toward screening and prioritization of CEPP AM Uncertainties



We have followed CERP's Adaptive Management Integration Guide's guidance, with refinements to fit our team and project.

Completed:

- ✓ Compiled existing and CEPP-specific uncertainties...
- ✓ "Yes/No" criteria were generated by the team as we performed initial 'clean up' of the uncertainties list. This was Level 1 screening.
- ✓ Identified preliminary management options for the uncertainties to aid screening and prioritization of the remaining uncertainties.
- ✓ Applied multi-criteria to further screen and prioritize the list.

Level 1 Screening: “Yes/No” Criteria

These criteria were used for an initial clean-up of the uncertainty list

1. Must be directly related to CEPP goals, objectives, or ‘significant considerations’.
2. Must be at the project’s scale.
3. Must have adaptive management options, i.e., ability to be improved by adjusting CEPP or a future increment.
4. Must be an uncertainty. Don’t include items that are already known.
5. Need an attribute to measure that fits in the time-frame of the Plan.
6. Some items may remain on uncertainties list to “keep them in view.”
7. Uncertainties covered by regulatory processes and monitoring may not be appropriate for AM Plan; the information may be useful for the AM Plan.

Multi-criteria Screening and Prioritizing

Risk: What is the risk (high, medium, low) of not meeting CEPP restoration goals if this uncertainty is not addressed?

- Low risk = if the uncertainty isn't addressed, not much risk to CEPP objectives.
- Medium risk = may or may not affect achievement of an objective.
- High risk = without addressing this uncertainty, there is high risk we will not achieve CEPP goals and objectives.

Knowledge: What is the level of (high, medium, low) understanding of this uncertainty (i.e., how much is known about this uncertainty)?

- Low understanding = little known about the question or how to address it.
- Medium understanding = some information is known in some geographical areas, but not all.
- High understanding = much is known about addressing this question in multiple geographical areas.

Relevance to Adaptive Management for CEPP: What is the level of confidence (high, medium, low) that something could be adapted to address the uncertainty?

- Low confidence = even if we address this uncertainty, CEPP design or operations will not be able to be modified given the results of CEPP adaptive management.
- Medium confidence = if we address this question, a connection to future CERP project implementation is established/documented, but adjustments to CEPP may be limited, especially if indicator response is longer than 10 years and is more relevant to system-wide monitoring. Also, options exist, but they may be less desirable or may impact benefits elsewhere.
- High confidence = if we address this question, we could modify CEPP design, implementation, and/or operations to improve restoration results.

Multi-criteria Screening and Prioritizing

Also discussed further:

Is there a physical attribute that can be measured in feasible timeframe?

Is there a modeling tool directly related to this uncertainty and its indicator?

Is there existing monitoring (regardless of funding status) that relates to this uncertainty?

Risk	Knowledge	Relevance	Tier
High	Low	High	High
Med	Low	High	High
High	Low	Med	High
High	Med	High	High
High	Med	Med	Med
Med	Med	High	Med
High	High	High	Med
High	High	Med	Med
Med	High	High	Med
Med	Low	Med	Med
Low	Med	Low	Low
Med	Med	Low	Low
Low	Med	Med	Low
Med	High	Med	Low
Med	High	Low	Low
Low	High	Med	Low
Low	High	Low	Low

Tier	Attribute ?	Model tool?	Monitoring?	Result
High	+	+	+	High 3+
Med	+		+	Med 2+
High		+		High 2+
Low	+			Low 1+
Med		+	+	Med 2+
Med	+			Med 2+
High				High 0+
Med			+	Med 1+
Med	+			Med 1+
Med		+	+	Med 2+
Low		+	+	Low 2+
Low	+		+	Low 3+
Med				Med 0+
Low		+		Low 2+
Med		+	+	Med 2+
High				High 1+
Low		+	+	Low 3+

CEPP AM Uncertainties by Overarching “Big Question”

There are several ways to group and sort the uncertainties.

One way: Key, big questions with their supporting uncertainties, then more detail.

The big questions appropriate for the CEPP Adaptive Management Plan...

- are overarching, in that they cover several geographic areas and have several sub-questions.
- *can be addressed in CEPP with adaptive management.*

Each big question has sub-questions, which are the AM uncertainties we’ve identified, screened, and prioritized.

Initial Level of Detail: CEPP AM “Big Questions”

Question A.

Is the ecological condition of the Everglades improving with CEPP in terms of key geo-morphological features, water flow, vegetation, fire reduction, and fundamental prey and predators? Question type: Ecological

Question B.

Will CEPP's changes in fresh water quantity, quality, timing, and distribution to the estuaries associated with the Everglades produce the expected results and benefits? Question type: Ecological

Question C.

How can the best available scientific information be used to inform potential tradeoff decisions in CEPP operations and recommendations for future increments? Question type: Ecological, Social

Question D.

How can we best take advantage of the multi-year implementation of CEPP to learn from early steps and maximize the effectiveness of all steps for restoration? Question type: Inform CEPP implementation

Next Level of Detail: Question A with supporting uncertainties

Here is Question A with a summary of the draft CEPP AM uncertainties related to it.

A. Is the ecological condition of the Everglades improving with CEPP in terms of key geologic features, water flow, vegetation, fire reduction, and fundamental prey and predators?

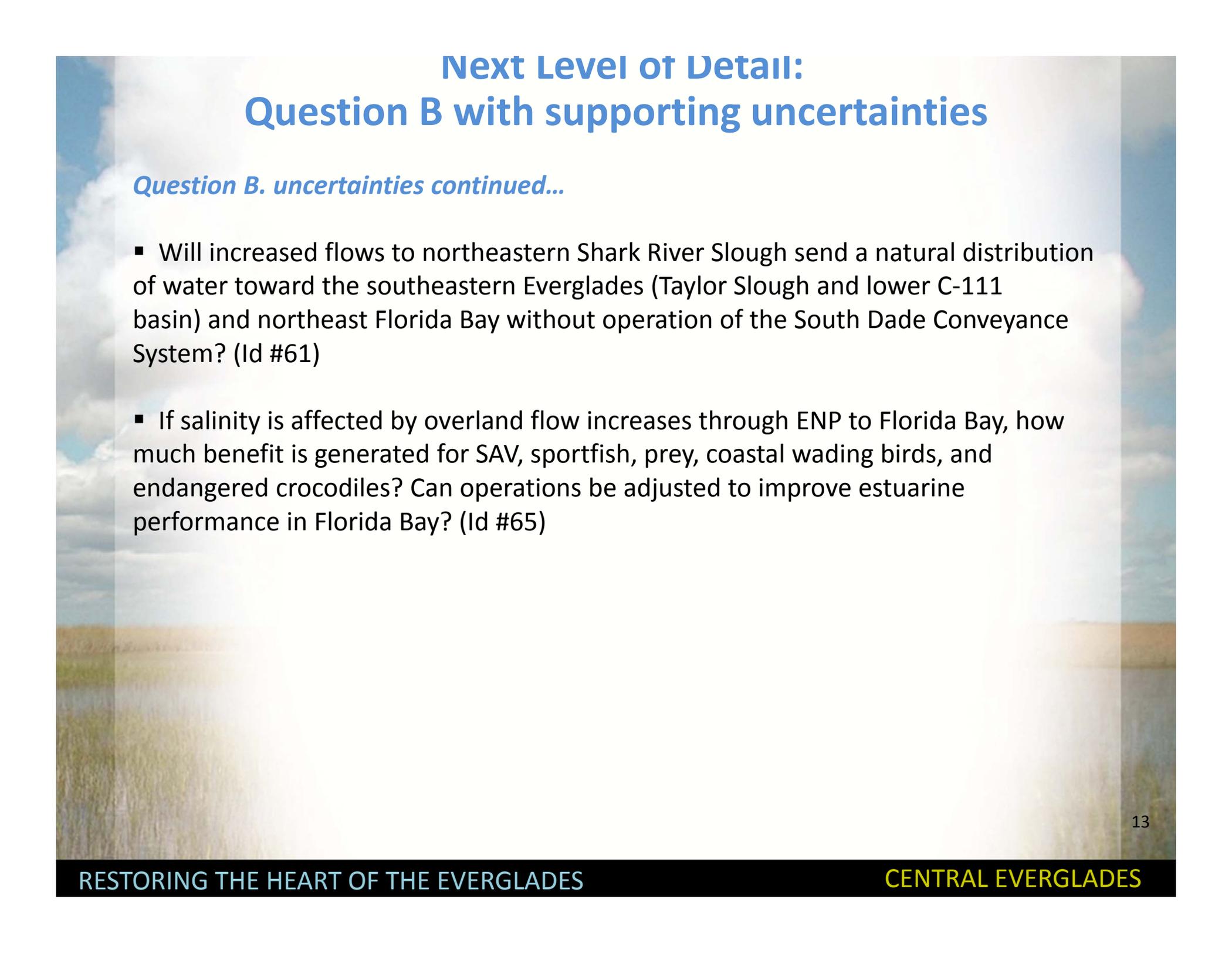
- Will CEPP achieve timing and distribution of water to reduce soil loss and fire in northeast WCA-3A, WCA-3B and Shark River Slough? (Id #5)
- Will CEPP hydroperiods and flow velocities reestablish ridge and slough landscapes, including tree islands? (Id #73, 32, 76)
- Will hydrologic restoration and vegetation management in Northwest WCA-3A result in measurable increases in predator and prey foraging and densities (Id #9, 10, 75)
- How will CEPP influence the introduction and growth of disease and/or invasive populations within the project area? (Id #59, 66)

Next Level of Detail: Question B with supporting uncertainties

Here is Question B with a summary of the draft CEPP AM uncertainties related to it.

B. Will CEPP's changes in fresh water quantity, quality, timing, and distribution to the estuaries associated with the Everglades produce the expected results and benefits?

- Will there be downstream effects associated with modifying flows and hydrologic conditions in ENP, i.e., ecological effects of nutrient movement and availability, such as periphyton changes, cattail expansion, and algal bloom events. (Id #63)
- Do reductions of large fresh water discharges increase oyster beds, SAV coverage, and benthic communities in the St. Lucie and the Caloosahatchee estuaries? How will the low-flows affect these natural communities? (Id #1, 2, 45, 46, 48, 49)
- Will CEPP help counteract saltwater intrusion to help southern coastal vegetation, soil, nutrients, and salinity in the Bays? Will the results be consistent with the expectations from the evaluation? (Id #62, 64, 67)



Next Level of Detail: Question B with supporting uncertainties

Question B. uncertainties continued...

- Will increased flows to northeastern Shark River Slough send a natural distribution of water toward the southeastern Everglades (Taylor Slough and lower C-111 basin) and northeast Florida Bay without operation of the South Dade Conveyance System? (Id #61)
- If salinity is affected by overland flow increases through ENP to Florida Bay, how much benefit is generated for SAV, sportfish, prey, coastal wading birds, and endangered crocodiles? Can operations be adjusted to improve estuarine performance in Florida Bay? (Id #65)

Next Level of Detail: Question C with supporting uncertainties

Here is Question C with a summary of the draft CEPP AM uncertainties related to it.

C. How can the best available scientific information be used to inform potential tradeoff decisions in CEPP operations and recommendations for future increments?

Question type: Ecological, Social

- Do CEPP's operational refinements for Lake O, which remain within LORS 2008 and which reduce the duration and number of high volume fresh water discharge events for the northern estuaries, affect the Lake O near-shore vegetation area? (ID#3)
- Will CEPP reduce surface and/or groundwater base flows and wetland/groundwater recharge to the east of the L31-N in areas such as the Pennsuco Wetlands and Biscayne Bay? (ID #62)
- How well will CEPP achieve simultaneous sawgrass and ridge & slough habitats in northern WCA 3A with the addition of fresh water through the western hydropattern restoration feature? (ID#6)

Next Level of Detail: Question D with supporting uncertainties

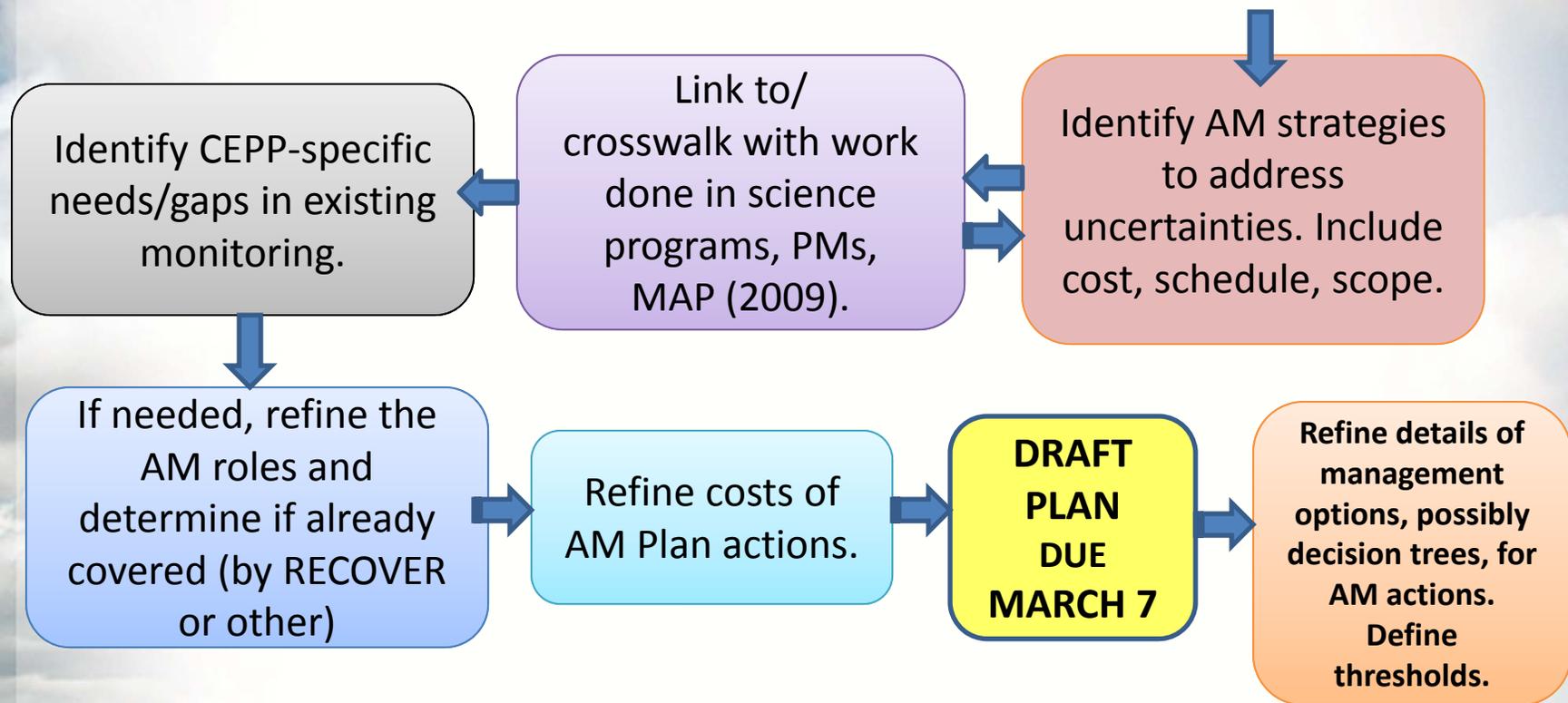
Here is Question D with a summary of the draft CEPP AM uncertainties related to it.

D. How can we best take advantage of the multi-year implementation of CEPP to learn from early steps and maximize the effectiveness of all steps for restoration?

Question type: Inform CEPP implementation

- How can we most effectively learn from the FEB-1 to integrate FEB-1 and FEB-2 and optimize their operations to maximize flows to the Everglades? (ID#4)
- Currently under revision for wording: How can we learn during the sequenced implementation of the WCA-3B and lower east coast CEPP features to most effectively meet CEPP's objectives and the diverse needs of the region?

How Do The Uncertainties Become an AM Plan?

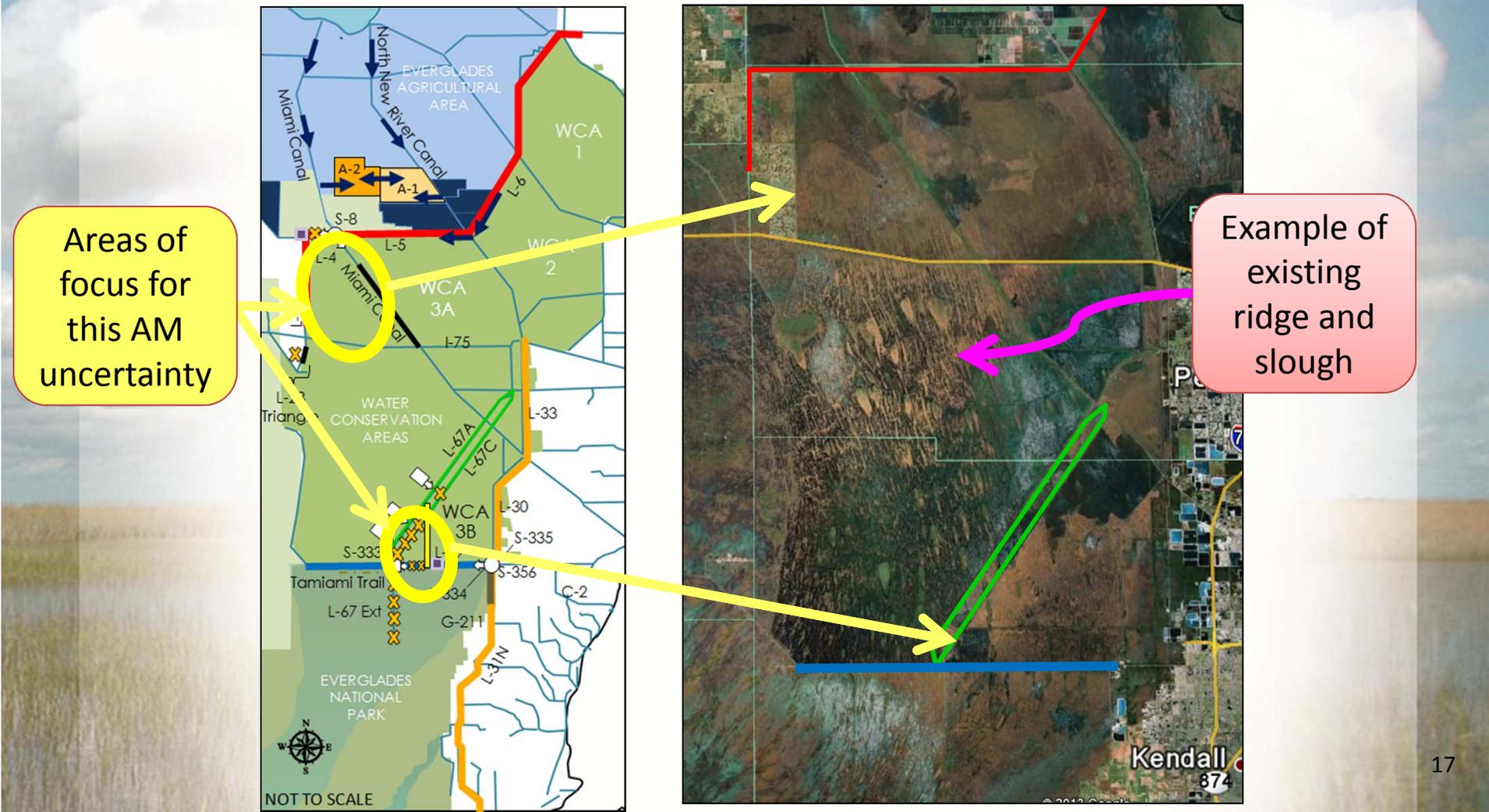


- **Written strategies include current knowledge and suggestions for how to learn more and adapt in the future if needed.**
- **AM activities are structured so that new knowledge gained is scientifically sound.**
- **Costs of monitoring and activities are included.**
- **There is time for refinement after the initial deadline and reviews.**

How Do These Uncertainties Become an AM Plan?

EXAMPLE

CEPP AM Uncertainty: Will CEPP produce the flow velocity needed to reestablish ridges and sloughs in its areas of highest potential to restore this habitat (northwestern WCA-3A and southwestern WCA-3B)? (ID#73)



How Do These Uncertainties Become an AM Plan?

CEPP AM Uncertainty: Will CEPP produce the flow velocity needed to reestablish ridges and sloughs in its areas of highest potential to restore this habitat (northwestern WCA-3A and southwestern WCA-3B)? (ID#73)

What CEPP structures are associated with this? The Hydropattern Restoration Feature (HRF), and the L-67A/C conveyance features.

What suggested CEPP management options could influence flow velocities in these areas? DRAFT: Pulse water releases to adjust flow and velocity; vegetation management in northwest WCA-3A

What information can we use to set our expectations? I.e., how do we know what we want in these areas?

- USGS information on velocities and conditions needed to restore ridge and slough, presented in CEPP “New Science” workshop February, 2012.
- Knowledge gained during RECOVER-supported science on ridge and slough restoration.
- Input from CEPP meetings.
- *If there is other information available, please let us know today during the hands-on activity.*

Continued...

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How Do These Uncertainties Become an AM Plan?

Based on this information, what is our expectation (hypothesis)?

Flow velocities, volumes, and water depths downstream of new CEPP inflow structures will redistribute sediments, support restoration of historic ridge and slough patterns.

What can we monitor to determine if flow is meeting the expectations and needs?

- Flow velocities: is the flow carrying floc and sediment?
- Are flow paths forming?
- Vegetation changes
- Peat decomposition rates

What if flow is *not* meeting the expectations or needs?

Monitoring conclusions will be brought to attention of implementing agencies, with suggestions. Suggestions will be based on knowledge gained, and may include operational adjustments, other ecosystem management, or potential suggestions for a future increment of CERP.

Examples...

Continued...

How Do These Uncertainties Become an AM Plan?

What agencies and roles are needed to implement AM for this uncertainty?

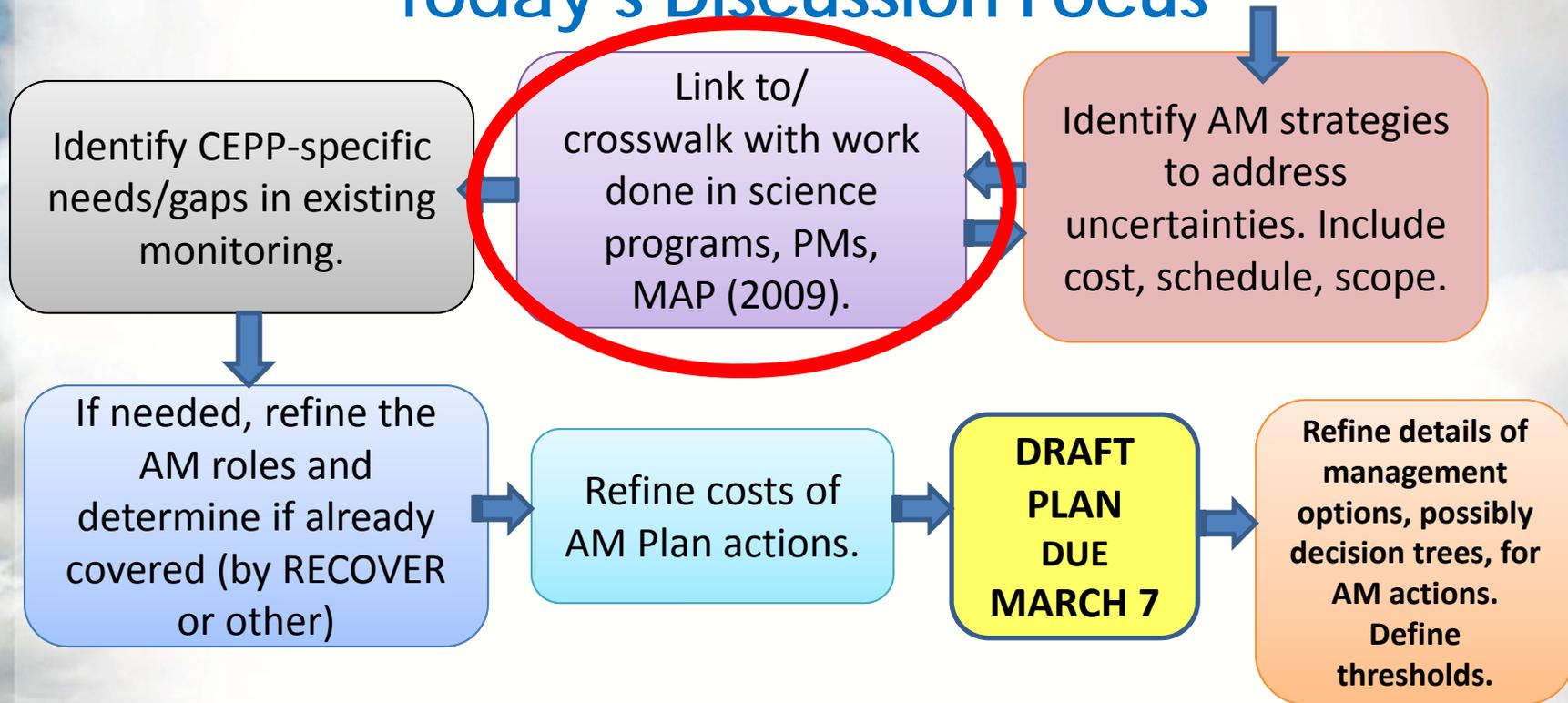
Hypothetical example of specifying roles:

“RECOVER will present results and conclusions to appropriate decision makers at CERP’s implementing agencies. If the results suggest a change is needed then RECOVER and the implementing agencies will consult together to determine which options are available to tweak or improve CEPP’s achievement of flows that promote ridge and slough restoration. Depending on the options chosen at that time, the next step may involve Operations and other agencies to make sure the process is transparent, and the actions are coordinated through the right channels.”

Costs associated with these options.

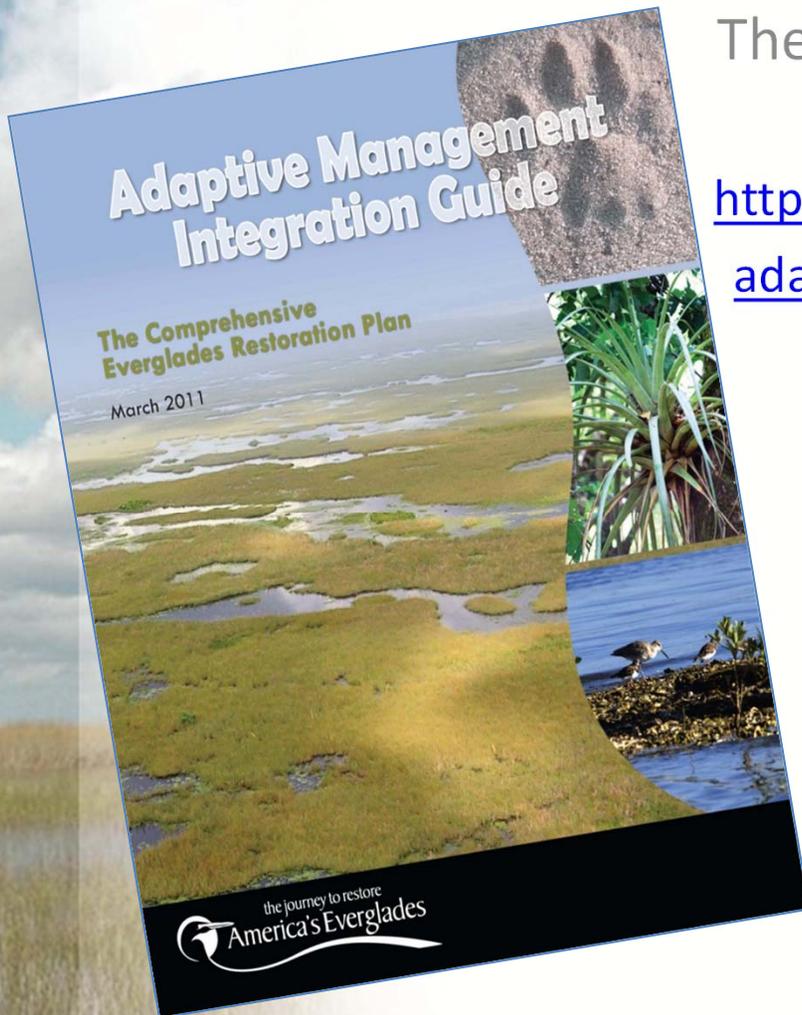
Additional monitoring costs, costs of management options.

Today's Discussion Focus



- **Get input on what monitoring programs exist that may provide information to help address the CEPP AM uncertainties.**
- **A draft table of the AM uncertainties and RECOVER monitoring will be provided; participants can further complete the table if they know of existing monitoring programs that are related, but not listed.**
- **Focus on existing/approved monitoring programs that inform the CEPP-specific, AM-relevant uncertainties.**

Learn more about Adaptive Management in CERP



The Adaptive Management Integration
Guide

[http://www.evergladesplan.org/pm/pm_docs/
adaptive_mgmt/062811_am_guide_final.pdf](http://www.evergladesplan.org/pm/pm_docs/adaptive_mgmt/062811_am_guide_final.pdf)