

Adaptive Management

An Overview

What is Adaptive Management?

Adaptive Management is a structured management approach for addressing uncertainty by testing hypotheses, linking science to decision-making and adjusting implementation when necessary to improve the probability of restoration success. Founded on science, adaptive management provides an efficient process to address risk and uncertainty inherent within ecosystem restoration by encouraging flexible plans and designs. Adaptive management also encourages stakeholder engagement and interagency collaboration, which leads to common understanding of issues to be addressed by projects. When integrated into existing Comprehensive Everglades Restoration Plan (CERP or Plan) processes, adaptive management generates new information to improve the implementation of CERP through iterative refinement of project plans, designs and operations.

Why CERP Utilizes Adaptive Management

The Water Resources Development Act of 2000 (WRDA 2000) conveyed the expectation that adaptive management principles would be applied during CERP implementation. The 2003 Programmatic Regulations specified development of an adaptive management program that includes monitoring and assessment of ecosystem restoration performance, periodic updates of CERP, and continuous improvement of the Plan. These requirements clearly recognized that adaptive management application would be very beneficial to CERP. Consistent with the U.S. Army Corps of Engineers (USACE) collaborative planning process, adaptive management encourages stakeholder engagement and interagency collaboration, which leads to a better understanding of issues that arise during implementation.

Adaptive management has great potential for improving CERP because it is scientifically based. As new scientific/technical information is learned, it is communicated to managers and decision-makers for use as the Plan is implemented. Additionally, because adaptive management promotes the incorporation of flexibility, beneficial adaptations of the Plan and/or individual components of the Plan are possible. The application of adaptive management during the planning, engineering and design phases will extend beyond those phases, and will be particularly useful as CERP enters the construction and operation phases.



CERP Adaptive Management Integration Team

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Adaptive Management

The Comprehensive Everglades Restoration Plan



Adaptive management is a beneficial approach to CERP implementation because it continually uses scientific/technical information to inform decision-making. Adaptive management also promotes the use of flexibility in program/project planning in anticipation of uncertainty and the need to make timely decisions in spite of incomplete information. Adaptive management for CERP is applied at both the program and project levels through the implementation of nine activities. These activities are based on the USACE Six-Step Planning Process and help make planning and implementation more efficient and effective. The details of each adaptive management activity and its interface with program/project implementation are included in the Adaptive Management Integration Guide.



Past Flow



Current Flow



Future Flow



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SOUTH FLORIDA WATER MANAGEMENT DISTRICT

The CERP Adaptive Management Program

Application of adaptive management for CERP is the responsibility of everyone involved, at both the program and project levels, including scientists, managers, planners, engineers and decision-makers.

A multiagency team, the Adaptive Management Integration Team, has facilitated development of the CERP Adaptive Management Program, which is composed of two parts: (1) the Adaptive Management Strategy; and (2) the Adaptive Management Integration Guide (Guide).

The Adaptive Management Strategy will be used as the restoration framework for CERP. It maps out a process for seeking a better understanding of the South Florida ecosystem and using new scientific/technical information to improve the Plan. The Guide was developed for use by project delivery teams (PDTs), managers and scientists working on CERP. It provides guidance on how to deal with uncertainties during project planning and design, and how new information gained by project and system-wide monitoring and assessment will be incorporated into CERP decision-making.

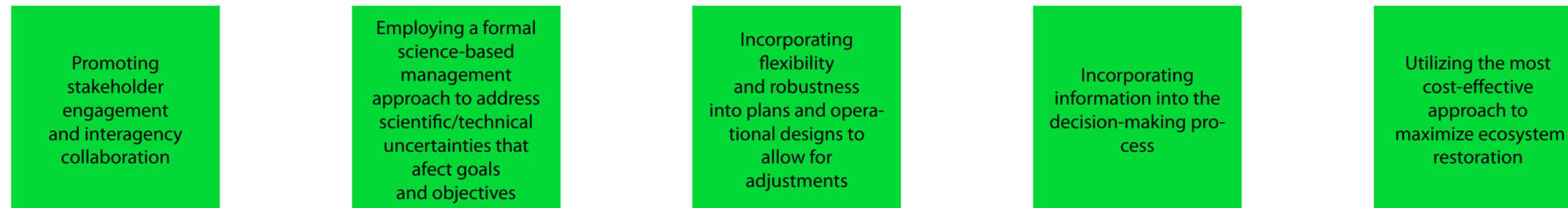
The Guide identifies (1) the activities required to implement adaptive management at the program and project levels; (2) the significance of those activities; (3) how the activities should be implemented within the existing planning and implementation process; and (4) who should conduct the activities.



The CERP Adaptive Management Program

The Principles of CERP Adaptive Management

The adaptive management approach for CERP is based on the following principles:



How CERP Adaptive Management Works

The USACE Six-Step Planning Process governs program and project planning for CERP. This planning process includes traditional plan formulation as well as engineering/design, construction, operations and maintenance. Nine activities have been developed to explain how adaptive management principles are being incorporated into the Plan (see Figure 1). These adaptive management activities supplement the Six-Step Planning Process by providing a process to manage risk associated with key uncertainties. They should not be viewed as an additional set of tasks to be completed during the planning process. Instead, the activities highlight how adaptive management principles are incorporated into each step of program/project implementation to increase efficiency and effectiveness.

CERP Program-level - At the program-level, adaptive management principles have been integrated into the Plan. One example of the use of adaptive management at the program level is the Adaptive Assessment and Monitoring (AA&M) program. The AA&M program is a rigorous system-wide/regional monitoring and assessment program that analyzes the performance of the Plan as it is implemented. Monitoring and assessment are used to address uncertainties, verify hypotheses, and provide information to managers, PDTs and stakeholders regarding ecosystem responses to current system operations and CERP implementation. This information is then used to make decisions about whether and how to adjust the Plan. Adjustments can be made to monitoring and assessment, CERP project components, and/or project sequencing or operations.

CERP Project-level - Until recently, CERP projects have used adaptive management in different ways. Based on new guidance, adaptive management plans are required for all USACE restoration projects. The scope and scale of a project's adaptive management plan will be based on the scientific, technical, and/or policy aspects of that specific project. Some adaptive management plans may be extremely simple while others will be complex. The Guide was developed to help CERP PDTs apply adaptive management principles consistently by providing guidance within the context of the USACE Six-Step Planning Process and the project life-cycle.

Iteration - Although the nine adaptive management activities are listed in numeric order, they do not have to be implemented in a linear fashion. Instead, implementation should be iterative such that new information is utilized by the project/program and used to inform decision-making at any stage in its life-cycle. Planning and implementation in the context of complexity and uncertainty often require an iterative approach to achieve a successful outcome.

