

RECOVER's Initial Comprehensive Everglades Restoration Plan Update Report



**RESTORATION COORDINATION AND VERIFICATION
(RECOVER)**

**COMPREHENSIVE EVERGLADES
RESTORATION PLAN**

CENTRAL AND SOUTHERN FLORIDA PROJECT

Executive Summary

The U.S. Army Corps of Engineers and the South Florida Water Management District are the implementing agencies for the Comprehensive Everglades Restoration Plan (CERP). The Corps and the SFWMD are partners with many federal, state and local agencies and tribal governments in the implementation of the CERP. CERP intends to restore the natural quantity, quality, timing, and distribution of water in South Florida in an effort to increase the total spatial extent of natural areas; improve habitat and functional quality; improve native plant and animal species abundance and diversity; increase availability of fresh water; reduce flood damages; provide recreational and navigation opportunities; and protect cultural and archeological resources and values.

As activities to implement CERP progress, updated and improved predictive tools and other technical information will be periodically integrated into the Plan. This Initial CERP Update (ICU), prepared by CERP's Restoration Coordination and Verification team (RECOVER), presents an opportunity to determine CERP's performance using this updated information and offers a basis for CERP decision makers in evaluating whether the goals and purposes of the Plan are being achieved, as required by the Programmatic Regulations.

The modeling for the CERP was last simulated in 1998 during the Central and Southern Florida Project Comprehensive Review Study (Restudy) with the best modeling tools and data available at the time. Since then, modeling tools and our understanding of the ecosystem have improved. The purpose of the ICU was to re-simulate the CERP, using all components as defined in the Restudy's *Final Integrated Feasibility Report and Programmatic Environmental Impact Statement* (USACE and SFWMD, April 1999), with updated models and input data. The ICU identifies three general categories of information that were incorporated since the Restudy:

1. Predictive tools – models and performance measures
2. Data – model input
3. Planning assumptions – 2000 existing condition, 2050 future without CERP condition, and 2050 future with CERP condition

Predictive models are tools that help make more informed decisions about proposed management actions by allowing the simulation of the future effects of those actions. Simulations are based on what is known about existing conditions and processes, and on assumptions about how it is expected they will change in the future. The ICU documents the updates to the primary hydrologic models used to predict CERP performance, the South Florida Water Management Model (SFWMM) and the related Natural System Model (NSM). In addition to updates related to these hydrologic models, the ICU Report also contains both performance measures and targets that have been revised based on continued research in the South Florida ecosystem and improved understanding of species and ecosystem requirements. These performance measures determine how well a model simulation performs with respect to researched, approved and desirable restoration targets.

Today's computer models produce output that appears deceptively certain, but the simulation of current and future conditions is only as good as the information put into the model and the ability

of the model to represent the driving relationships and processes. Therefore, it is important to update models and input data for proposed actions, like CERP, that are planned and implemented over long periods of time, as new information becomes available. The ICU incorporates recent climatic information, topography, and land use projections, among other things. It is also important to keep in mind that while models are powerful tools, they are simplifications of reality. What happens in the real world will not correspond on a one-to-one basis with what is predicted, and, in fact, may be quite different; this is why a strong adaptive management program was developed for CERP implementation.

The model input data along with new information regarding other state and federal projects in South Florida was also used to update the planning assumptions for different modeling scenarios. The ICU report considers two modeling scenarios, the 2000 existing condition, and the 2050 future without CERP condition in addition to the modeled with CERP condition (termed CERPA). A key principle in performing ICU model simulations was to retain original Restudy definitions of CERP component projects and to stay as close as possible to the assumptions made in the original CERP modeling. This was done in order to understand the new tools (SFWMM v5.4 and NSM v4.6) and how the older model operations and assumptions “fit” this new tool.

Although the new version of the SFWMM is a more robust and accurate tool than that used during the Restudy, this initial CERP simulation may not provide the “best” simulation of the CERP. During the development of the CERP, more than 20 model simulations were performed and evaluated, each with the objective of improving the performance of the Plan. This type of optimizing, or iteratively maximizing the performance of CERP projects with the new tool has not been done in the Initial CERP Update.

RECOVER’s Evaluation Team analyzed the planning scenarios to evaluate the CERP with the revised simulation tools and new technical information. Performance for each region of the South Florida ecosystem was compared to the 2050 future without CERP condition and restoration targets for the areas in question. This performance was then related back to the Restudy.

As expected, the hydrologic results of ICU modeling differ from those seen in the 1998 Restudy modeling. The CERPA simulation exhibits some of the same shortfalls (which this technical update was never intended to correct) and strengths as those found during the Restudy. Additionally, there were areas identified in which CERPA performance was improved over Restudy performance, and areas that have reduced performance.

While it is RECOVER’s recommendation that further work be undertaken to improve the modeled performance of CERPA through operational optimization, RECOVER work products are not self-executing and the ICU Report is not a decision document. It is offered to decision-makers within the U.S. Army Corps of Engineers and South Florida Water Management District for their consideration in determining the future course of action taken to improve CERP performance as it is currently simulated in CERPA.