

**February 2007**

**FINAL DRAFT  
2006 SYSTEM STATUS REPORT**

**PILOT ASSESSMENT REPORTS FOR THE  
MONITORING AND ASSESSMENT PLAN  
MODULES**

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## 1.0 INTRODUCTION

The 2006 Assessment Team (AT) System Status Report (SSR)–Pilot Assessment represents the initial application of the Comprehensive Everglades Restoration Plan (CERP or Plan) *Monitoring and Assessment Plan (MAP), Part 2: 2006 Assessment Strategy for the MAP* developed by REstoration COordination and VERification (RECOVER) for analyzing monitoring data from the *MAP, Part 1: Monitoring and Supporting Research*. As such, it represents a “test of concept” of the guidance concepts and strategy that will be used for assessing the success of the Plan. The “test of concept” involves each MAP module completing a detailed analysis of one hypothesis cluster. The remaining analyses of all other MAP module activities can be found in the 2006 SSR–Module Report. This assessment is not intended to provide a comprehensive assessment of the ecological condition nor status of the MAP modules or the south Florida ecosystem as a whole.

This initial assessment focuses on the following objectives:

- Conducting a test of concept of the assessment process outlined in the MAP, Part 2 and coordination using example hypothesis clusters (see below) for the Southern Estuaries (SE), Northern Estuaries (NE), Greater Everglades (GE), and Lake Okeechobee (LO).
- Assess the ability to detect change by evaluating sampling design, data quality objectives (DQOs), variability, power analysis, and relevant spatiotemporal patterns.
- Establish reference conditions (*i.e.*, evaluating MAP and non-MAP databases, and experimental data).
- Characterize the status of monitoring and data availability and sharing for the MAP modules as a whole.
- Evaluate and provide recommendations on data acquisition, dissemination, and management.
- Provide recommendations on the assessment process and coordination among principal investigators (PIs), participating agencies, members of the RECOVER AT and RECOVER Leadership Group, and the National Research Council (NRC).

It is important to recognize the limitations of this 2006 SSR-Pilot Assessment. It is not intended to provide a comprehensive assessment of the status and condition of the individual MAP modules or the south Florida ecosystem. Because many of the data sets are limited to a few years, estimates of baseline or reference condition for many hypotheses and associated performance measures (PMs) remain uncertain. Consequently, this report will not make conclusions or recommendations regarding “success” in achieving CERP restoration goals until more data becomes available for conducting trend and uncertainty analyses. Nevertheless, the analyses that comprise this assessment have resulted in recommendations for improving the MAP, Part 1 and 2.

## 1.1 Context for the Pilot System-Wide Status Report

CERP is the largest environmental restoration effort ever pursued and documenting the success of the Plan relies on the MAP as the basis of assessing performance. The MAP includes specific PMs developed to quantify ecological responses to restoration efforts, and thereby measure the effectiveness of individual projects in meeting established restoration targets or goals. The combined response from the full set of PMs will be used to evaluate the overall success of the CERP.

The MAP, Part 2 provides for the assessment guidance process to be employed by the PIs and Module Groups to assess CERP performance. The principal audience for this document includes RECOVER, the AT, the Integrative Assessment Sub-team (IAT), the MAP module groups, and PIs who have responsibility for interpreting data collected as part of the MAP (Part 1) and preparing annual reports on their findings.

RECOVER will use the assessment process outlined in the MAP, Part 2 to assess CERP progress and satisfy CERP reporting requirements. RECOVER technical reports will also provide an analysis of measured and anticipated ecosystem responses and whether the responses are due to internal structural or operational components, or are external to the Plan. These technical reports will also be used and referenced by the United States Army Corps of Engineers (Corps) and the South Florida Water Management District (SFWMD) when preparing assessment reports pursuant to the Programmatic Regulations set forth in the Water Resources Development Act of 2000 (Section 601(h)(3)) (WRDA 2000). The technical reports and key indicators assessments will be the source of information in preparing a proposed CERP “Report Card” to be issued to the public, agencies, legislature, and other stakeholders.

The SSR plays an important role within CERP; it is designed to assess and document progress towards meeting PM targets and interim and long-term goals. On a biennial basis, the MAP module reports will be summarized and multiple years of data compiled to create an annual SSR that will address the overall status of the system relative to system level hypotheses, PMs, and restoration goals. The SSR provides the interface between the science of the restoration (*e.g.*, MAP PIs and MAP modules) and provides information to the NRC, Interim Goals and Targets (IG/IT) Report, CERP Report Card, and constitutes a major component of the RECOVER Technical Report mandated by the Programmatic Regulations.

The SSR represents the accumulation of multiple years of data on the status and trends of PMs critical to the restoration, and will be used to provide information to the NRC, IG/IT report, CERP Report Cards to the public, and a major component of the RECOVER Technical Report mandated by the Programmatic Regulations. The SSR will provide the following: 1) a synthesis of findings across modules and across years to provide a holistic description of the status of the system; 2) an evaluation of the results in relationship to supporting system-level hypotheses and achieving system-wide IGs; 3) a summary of those changes that are consistent with goals and hypotheses and those that are not; 4) a discussion of why the goals and hypotheses are not being achieved; 5) the identification of major unanticipated findings that may need attention and correction, and 6) identify issues relevant to the Adaptive Management (AM) Program in CERP.

When identifying issues relevant to AM, the SSR must address two factors: a clear description of the problem, and an analysis and interpretation that indicates the potential causes of the problem. This information will be provided to the System Planning and Operations Team (SPOT), which is responsible for formulating options to address unforeseen problems that arise during implementation. The reporting of this information could require the PIs and MAP Module Leads to re-evaluate the conceptual ecological models (CEMs), the driver–stressor–effects pathways, and associated PMs in order to provide a plausible explanation for the observed results.

## **1.2 Environmental Characteristics of the 2005-2006 Water Year**

Recognizing hydrology’s significance to the entire South Florida ecosystem, the following is a brief summary of the hydrologic data and analysis for Water Year 2006 (WY2006) (May 1, 2005—April 30, 2006). Details of WY 2006 hydrology are available in the 2006 *South Florida Environmental Report–Volume I* including a discussion on the active 2005 hurricane season (Section 9). The website for a PDF version of this report is: <http://www.sfwmd.gov/sfer>.

The hydrology of South Florida in WY2006 can be summarized as a wetter than average year with two peaks in rainfall and surface water flows in many areas, June and October 24 2005. Even though WY rainfall was higher than average, there were significantly dry months, January and March 2006 in most areas, and December 2005 and April 2006 in some areas. Drier winter and spring months dampened out the hydrologic impact of the high summer and fall rainfall. The combined impact of the 2004 and 2005 hurricane season on LO was significant. LO annual inflow of 3,707,764 acre-feet (ac-ft) and outflow of 4,034,447 ac-ft were the maximum on record since 1972. The high stage and volume of LO resulted in high discharge through the St. Lucie Canal (907,187 ac-ft) and the Caloosahatchee River (2,175,467 ac-ft). Inflows into and outflows from Water Conservation Area (WCA) 3 were higher than average. Everglades National Park (ENP) inflows were more than two times those of WY2005.

	WY2006	WY2005	Historical Average	WY2006 PET
Upper Kissimmee	52.91*	64.19*	50.09	52.43
Lower Kissimmee	48.50*	50.12*	44.45	53.79
Lake Okeechobee	47.33*	45.51	45.97	54.91
East EAA	48.24	46.16	53.48	50.72
West EAA	58.29*	52.20	54.95	52.18
WCA-1 and WCA-2	47.96	43.72	51.96	51.47
WCA-3	53.39*	40.27	51.37	51.42
Martin-St. Lucie	61.70*	56.99*	54.14	52.43
Palm Beach	57.80	50.44	61.54	51.73
Broward	56.67	42.80	58.13	51.42
Miami-Dade	57.44	43.05	57.11	52.91
East Caloosahatchee	56.91*	54.10*	50.68	54.00
Big Cypress Preserve (BCP)	58.75*	50.39	53.98	52.30
Southwest (SW) Coast	60.56*	55.05*	54.12	52.36
ENP	57.27*	40.15	55.22	52.91
District	54.72*	50.67	52.75	52.47

**Table 1.** Spatial comparison of WY2006, WY2005, historical average annual rainfall (inches) and WY2006 potential evapotranspiration (PET). (\* = above average rainfall). The examples of data in Table 1 and Figures 1-3 in Appendix A, illustrate the spatial and temporal patterns of rainfall for WY2005 and WY2006 compared to historical averages. Clearly, WY2006 was above average for precipitation reflecting the very active hurricane season in South Florida. South Florida received rainfall from four hurricanes in WY2006: Hurricane Dennis in July, Hurricane Katrina in August, Hurricane Rita in September, and Hurricane Wilma in October. The hydrologic impact of these hurricanes on the SFWMD during the WY2005 hurricane season is discussed in the 2006 SFER report.