

Final Draft

April 2005

CENTRAL AND SOUTHERN FLORIDA PROJECT

**COMPREHENSIVE EVERGLADES
RESTORATION PLAN**



Programmatic Regulations

Pre-CERP Baseline



**U.S. Army Corps of Engineers
Jacksonville District**



**South Florida Water
Management District**

TABLE OF CONTENTS

1.0	Introduction.....	1
2.0	Goals and Purposes of the Plan.....	1
3.0	Integrated Framework for Assuring the Goals and Purposes of the Plan are Achieved	2
3.1	Tools	2
3.2	Processes.....	2
3.3	Enforcement Mechanism	3
4.0	Pre-CERP Baseline Development and Approval Process	5
5.0	Purpose of the Pre-CERP Baseline	8
6.0	Relationship to Guidance Memorandum #3	8
7.0	Considerations.....	8
7.1	Statutory Requirements.....	8
7.2	Physical Conditions	9
7.3	Application Of The Pre-CERP Baseline.....	10
7.4	Instructions For Modeling The Pre-CERP Baseline Simulation	10
7.4.1	Assumptions that can be Refined and Assumptions that are Unchanging	10
7.4.2	Model Selection (including Plan Projects within the Domain that have Special Needs)	11
7.4.3	What Model Should be Used if the Proposed Component is Outside the Geographical Area of the SFWMM or Current Regional Model?	11
8.0	SFWMM Simulation of the Pre-CERP Baseline	11
8.1	Introduction.....	11
8.2	Model Description	11
8.3	Pre-CERP Baseline Model Run	17
	Appendix A Excerpt from Programmatic Regulations.....	A-1
	Appendix B Excerpt from WRDA 2000.....	B-1
	Appendix C Acronym List.....	C-1

1 **1.0 INTRODUCTION**

2
3 First authorized by Congress in 1948, the Central and Southern Florida (C&SF) Project
4 provides the South Florida ecosystem with flood control, regional water supply, prevention
5 of saltwater intrusion, preservation of fish and wildlife, recreation, and navigation. In
6 fulfilling these objectives, the project has had unintended adverse effects on the natural
7 environment that constitutes the Everglades and South Florida ecosystem. As a result, in
8 2000 Congress authorized the Comprehensive Everglades Restoration Plan (CERP) or “Plan”
9 to restore, preserve, and protect the South Florida ecosystem while providing for other water-
10 related needs of the region. CERP consists of structural and operational modifications to the
11 C&SF Project and will be implemented over a 35-year period. Together these components
12 are expected to deliver benefits to improve the ecological functioning of over 2.4 million
13 acres of the South Florida ecosystem, improve urban and agricultural water supply, improve
14 deliveries to coastal estuaries, and improve regional water quality conditions, while
15 maintaining the existing levels of flood protection.

16
17 The Water Resources Development Act of 2000 (WRDA 2000) required the Secretary of the
18 Army, with the concurrence of the Secretary of the Interior and the Governor of Florida, and
19 after notice and opportunity for public comment, to promulgate programmatic regulations to
20 ensure that the goals and purposes of the Plan are achieved and to establish the processes
21 necessary for implementing the Plan. The final programmatic regulations became effective
22 on December 12, 2003 as Title 33, Part 385 of the Code of Federal Regulations.

23
24
25 **2.0 GOALS AND PURPOSES OF THE PLAN**

26
27 WRDA 2000 approved the Plan contained in the “Final Integrated Feasibility Report and
28 Programmatic Environmental Impact Statement” dated April 1, 1999. As stated in Section
29 601(h) of WRDA 2000, “the overarching objective of the Plan is the restoration,
30 preservation, and protection of the South Florida ecosystem while providing for other water-
31 related needs of the region, including flood protection and water supply.” As approved by
32 Congress, the Plan contains 68 major components that anticipate the creation of
33 approximately 217,000 acres of reservoirs and wetland-based water treatment areas,
34 wastewater reuse plants, seepage management, and the removal of levees and canals in
35 natural areas. These components vastly increase storage and water supply for the natural
36 system, as well as for urban and agricultural needs, while continuing to fulfill the original
37 objectives of the existing Central and Southern Florida Project. The Plan will restore more
38 natural flows of water, including sheetflow; improve water quality; and establish more
39 natural hydroperiods in the South Florida ecosystem. Improvements to fish and wildlife
40 habitat, including those that benefit threatened and endangered species, are expected to occur
41 as a result of the restoration of hydrologic conditions. This will promote the recovery of
42 native flora and fauna, including threatened and endangered species.

1 WRDA 2000 requires that:

2
3 “The Plan shall be implemented to ensure the protection of water quality in,
4 the reduction of the loss of fresh water from, and the improvement of the
5 environment of the South Florida ecosystem and to achieve and maintain the
6 benefits to the natural system and human environment described in the Plan,
7 and required pursuant to this section, for as long as the project is authorized.”
8
9

10 **3.0 INTEGRATED FRAMEWORK FOR ASSURING THE GOALS** 11 **AND PURPOSES OF THE PLAN ARE ACHIEVED**

12
13 Section 601(h) of WRDA 2000 and the programmatic regulations establish an integrated
14 framework of tools, processes, and an enforcement mechanism for ensuring that the goals
15 and purposes of the Plan are achieved. This framework includes tools for planning,
16 implementation, and evaluation; a process for developing these tools in an open public
17 process, with input from other Federal, State, and local agencies; and an enforcement
18 mechanism to ensure that the requirements of the statute are carried out. Figure 1 illustrates
19 this framework.
20

21 **3.1 Tools**

22
23 WRDA 2000 establishes the following tools for ensuring that the goals and purposes of the
24 Plan are achieved:
25

- 26 • The specific planning tool established by Section 601(h) of WRDA 2000 is the
27 Project Implementation Report (PIR).
- 28 • The specific implementation tools established by Section 601(h) of WRDA 2000
29 are Project Cooperation Agreements (PCAs) and Operating Manuals.
- 30 • The specific evaluation tool established by Section 601(h) of WRDA 2000 is the
31 interim goals for evaluating the restoration success of the Plan.
- 32 • In addition to the specific planning, implementation, and evaluation tools
33 established by Section 601(h) of WRDA 2000, the programmatic regulations establish
34 additional tools, including but not limited to, Project Management Plans, Program
35 Management Plans, Comprehensive Plan Modification Reports, the Master Implementation
36 Sequencing Plan (MISP), and interim targets for evaluating progress towards achieving the
37 other water-related needs of the region.
38

39 **3.2 Processes**

40
41 The programmatic regulations establish the processes for developing these tools. Consistent
42 with Section 601(h) of WRDA 2000, the programmatic regulations were developed after
43 notice and opportunity for public comment, with the concurrence of the Secretary of the
44 Interior and the Governor, and in consultation with the Seminole Tribe of Florida, the
45 Miccosukee Tribe of Indians of Florida, the Administrator of the Environmental Protection

1 Agency, the Secretary of Commerce, the Florida Department of Environmental Protection,
2 and other Federal, State, and local agencies.

3 4 **3.3 Enforcement Mechanism**

5
6 The specific enforcement mechanism established by Section 601(h) of WRDA 2000 is the
7 “Comprehensive Everglades Restoration Plan Assurance of Project Benefits Agreement,”
8 dated January 9, 2002, between the President and the Governor, under which the State will
9 ensure by regulation or other appropriate means, that water made available by each project in
10 the Plan will not be permitted for a consumptive use or otherwise made unavailable by the
11 State until such time as sufficient reservations of water for the restoration of the natural
12 system are made under State law in accordance with the PIR and consistent with the Plan.

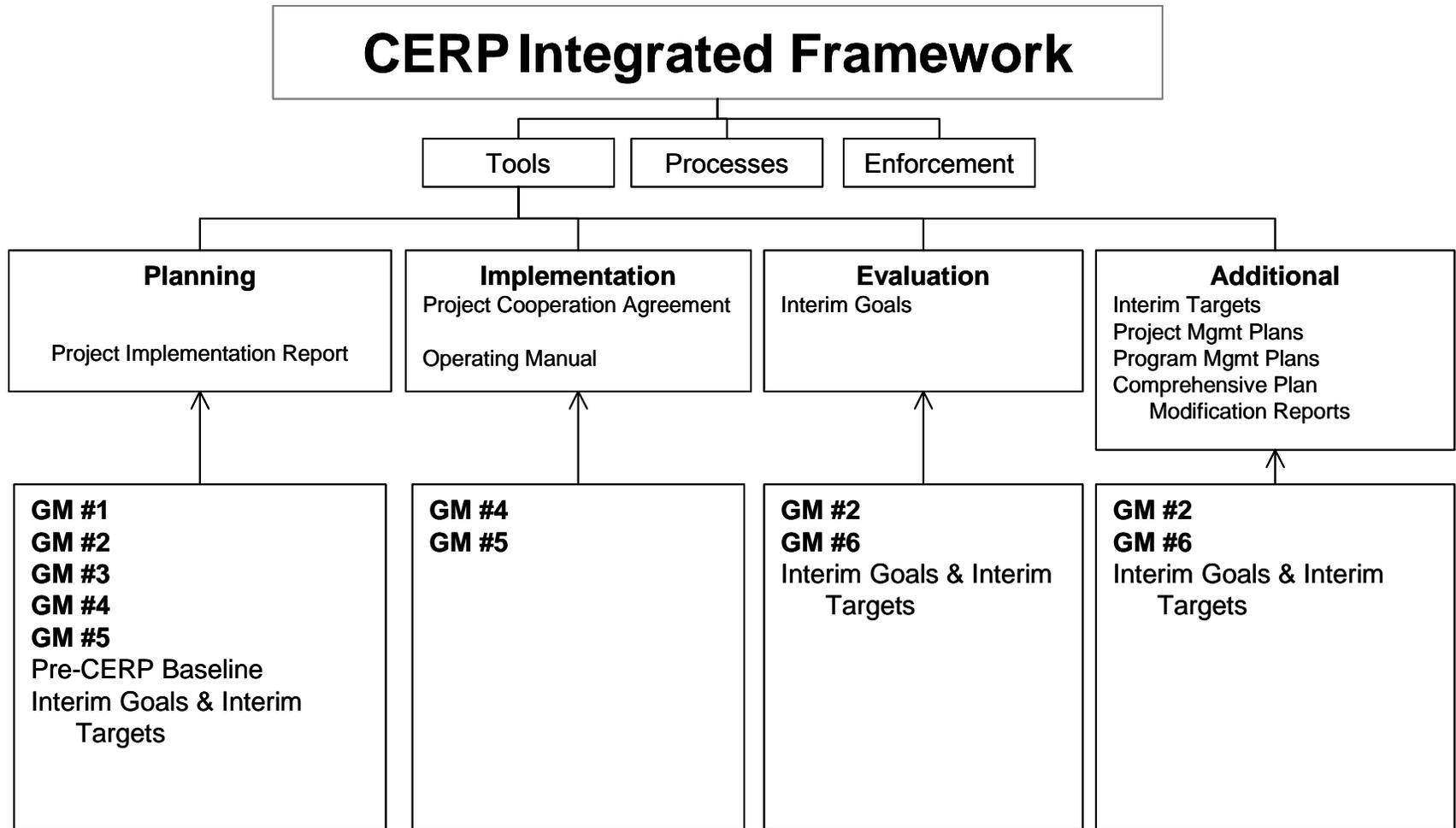


Figure 1: Framework for Assuring Goals and Purposes of the Plan Are Achieved

1
2
3
4

4.0 PRE-CERP BASELINE DEVELOPMENT AND APPROVAL PROCESS

Section 385.1 of the programmatic regulations requires the Secretary of the Army to ensure that the public understands the linkage between the processes, tools, and enforcement mechanism and can monitor the effectiveness of this integrated framework in assuring that the goals and purposes of the Plan are achieved by:

- (i) Providing for public notice and comment in the development of planning, implementation, and evaluation tools;
- (ii) Providing notice of final action on planning, evaluation, and implementation tools;
- (iii) Making available to the public on a web site or by other appropriate means final, and where appropriate, draft, copies of all planning, evaluation, and implementation tools; and
- (iv) Explaining through the programmatic regulations and by other appropriate means the process for developing the tools, the linkage between the process, tools, and enforcement mechanism, and the means by which these elements constitute an integrated framework for assuring that the goals and purposes of the Plan are achieved.

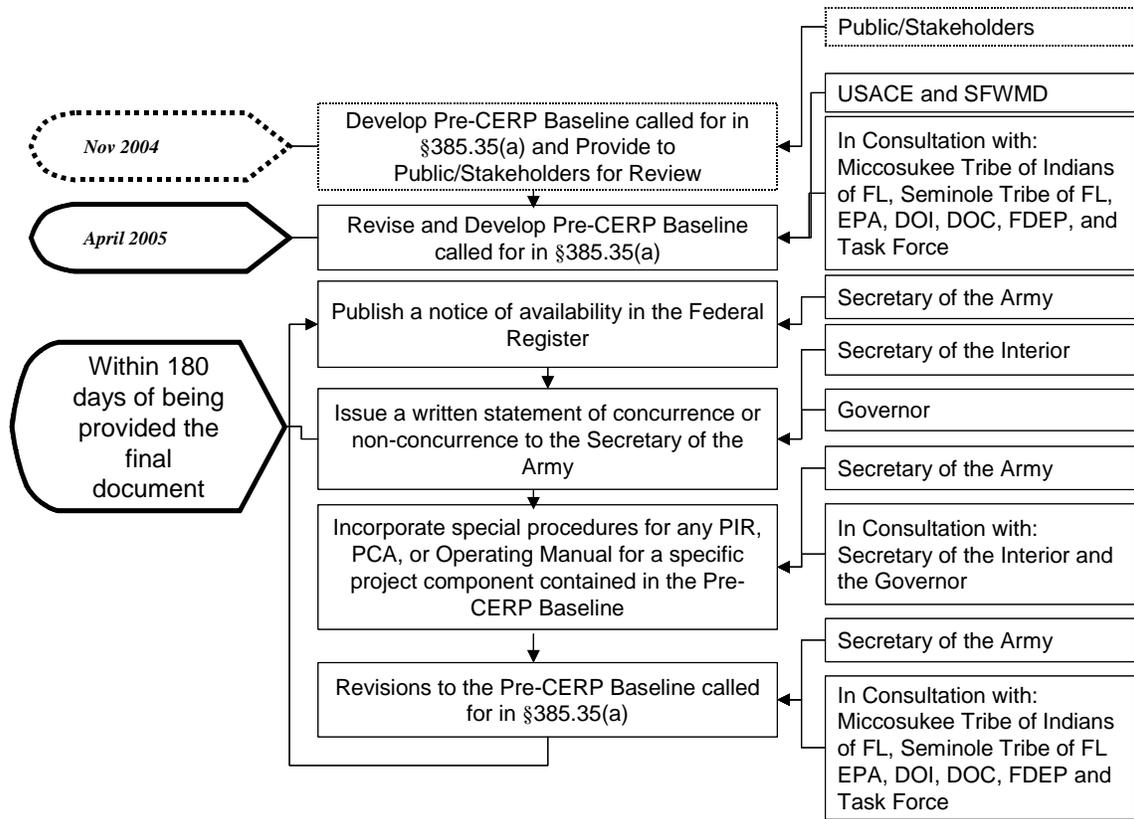
Section 385.35(a) of the programmatic regulations describes the special processes for the development of the Pre-CERP Baseline. The development process was initiated prior to the effective date of the programmatic regulations in order to layout a strategy for effectively and efficiently developing the technical work products and to elevate issues for resolution within the prescribed time frame. The programmatic regulations require that the USACE and the South Florida Water Management District (SFWMD) will, in consultation with the Department of the Interior, the Environmental Protection Agency, the Department of Commerce, the Miccosukee Tribe of Indians of Florida, the Seminole Tribe of Florida, the Florida Department of Environmental Protection, and other Federal, State, and local agencies, develop the Pre-CERP Baseline for approval by the Secretary of the Army. Figure 2 illustrates the Pre-CERP Baseline development and approval process as required in by Section 385.35(a) of the programmatic regulations.

The USACE and the SFWMD began the development process by inviting all of the governmental entities that would be consulting on the documents to participate on a team responsible for developing the Pre-CERP Baseline. This interagency team was responsible for preparing the initial outline and drafting the document. This process was designed to be open and inclusive. An initial public meeting was held at SFWMD headquarters in West Palm Beach to invite the public to participate in the process and present the strategy for developing the Pre-CERP Baseline. Information about the work of the teams (meeting summaries and initial work products) was posted on the CERP website (www.evergladesplan.org). Throughout the yearlong development process briefings were conducted for the SFWMD Water Resources Advisory Commission and the South Florida Ecosystem Restoration Task Force. In October 2004, an In-Progress Review meeting was held with USACE South Atlantic Division and Headquarters and the Office to the Assistant

1 Secretary of the Army to review the draft work products, resolve issues, and request direction
2 from USACE management.

3
4 As part of the consultation process required by the programmatic regulations, a draft of this
5 document was made available for review by agencies and the public in November 2004. The
6 review period for the agencies and the public remained open until January 2005. Meetings
7 were also held with stakeholder groups during this period. Consultation meetings were held
8 with the Seminole Tribe of Florida and the Miccosukee Tribe of Indians of Florida. The
9 USACE and the SFWMD will also consult with the South Florida Ecosystem Restoration
10 Task Force at their meetings in December 2004 and January 2005. Comments were received
11 from a number of agencies, stakeholder groups, and individuals. These comments were
12 posted on the CERP web site. The USACE and SFWMD then prepared this final draft
13 document on the Pre-CERP Baseline. All of the comments were reviewed and considered in
14 the preparation of this document. In accordance with the programmatic regulations, this Pre-
15 CERP Baseline document is being submitted to the Secretary of the Army for approval and
16 concurrence by the Secretary of the Interior and the Governor.

17
18



1
2
3
4

Figure 2: Pre-CERP Baseline Approval Process

1 **5.0 PURPOSE OF THE PRE-CERP BASELINE**

2
3 The Pre-CERP Baseline is a description of assumed hydrologic conditions on the date of
4 enactment of WRDA 2000 (December 11, 2000), including a simulation of these conditions,
5 which has been developed to satisfy the requirements of the programmatic regulations as a
6 tool in the implementation of the Savings Clause (Section 601(h)(5) of the Water Resources
7 Development Act of 2000). The programmatic regulations define the Pre-CERP Baseline as:

8
9 “...the hydrologic conditions in the South Florida ecosystem on the date of
10 enactment of WRDA 2000, as modeled by using a multi-year period of record
11 based on assumptions such as land use, population, water demand, water
12 quality, and assumed operations of the Central and Southern Florida Project.”

13
14 This document provides a description of the model assumptions necessary to simulate the
15 pre-CERP hydrologic conditions. It also provides the results of a South Florida Water
16 Management Model (SFWMM v. 5.4) simulation based on these assumptions. It is expected
17 that each Project Delivery Team may need to simulate the Pre-CERP Baseline assumptions
18 using the best available modeling tools for their project. Guidance on the selection of models
19 for the simulation of the Pre-CERP Baseline is provided in Section 7.

20
21 The full text of the Programmatic regulations regarding the Pre-CERP Baseline is provided
22 in Appendix A.

23
24
25 **6.0 RELATIONSHIP TO GUIDANCE MEMORANDUM #3**

26
27 In addition to the Pre-CERP Baseline described above, the programmatic regulations also
28 require a guidance memorandum entitled, “Instructions relevant to Project Implementation
29 Reports for identifying if an elimination or transfer of existing legal sources of water will
30 occur as a result of implementation of the Plan.” This guidance memorandum, known as
31 Guidance Memorandum #3, explains how the USACE and the SFWMD will use the Pre-
32 CERP Baseline along with other tools and information in determining whether or not existing
33 legal sources have been eliminated or transferred and whether levels of service for flood
34 protection will be reduced by the implementation of the Plan. The Pre-CERP Baseline is to
35 be used by the Project Delivery Team in accordance with Guidance Memorandum #3.

36
37
38 **7.0 CONSIDERATIONS**

39
40 **7.1 Statutory Requirements**

41
42 WRDA 2000 contains specific provisions within the Assurance of Project Benefits section
43 known as the Savings Clause (see Appendix B). The Savings Clause prohibits the elimination
44 or transfer of existing legal sources of water as a result of implementation of the Plan, until a
45 new source of comparable quantity and quality as that available on the date of enactment of
46 WRDA 2000 (December 11, 2000) is available. The Savings Clause further requires that

1 levels for service of flood protection that were in accordance with applicable law and in
2 existence as of the date of enactment of WRDA 2000 will not be reduced by Plan projects.
3 The programmatic regulations require that the Pre-CERP Baseline be used in undertaking
4 both these determinations. Specifically, the Pre-CERP Baseline is to be used as part of the
5 analysis for determining if an existing legal source has been eliminated or transferred as a
6 result of project implementation. In addition, the operating conditions in the Pre-CERP
7 Baseline are to be considered in demonstrating that levels of service for flood protection have
8 not been reduced by implementation of the Plan.

9
10 In addition to the Savings Clause protections found in WRDA 2000, there are several
11 existing legal entitlements that must be considered in the Savings Clause analysis. First,
12 water rights of the Seminole Tribe of Florida and Miccosukee Tribe of Indians of Florida are
13 integral parts of the management of water supply within the broad framework of ecosystem
14 restoration. The legal sources of water to the Miccosukee Tribe, and the allocations or
15 entitlements to the Seminole Tribe are protected through Federal and State law. Secondly,
16 Minimum Deliveries for Everglades National Park (ENP) is an existing statutory entitlement
17 that has established a minimum delivery of water for ENP and therefore must also be
18 considered in the Savings Clause analysis. These concepts and requirements are explained
19 more fully in Guidance Memorandum #3.

20 21 **7.2 Physical Conditions**

22
23 One major consideration in developing assumptions for the Pre-CERP Baseline model run is
24 the selection of the appropriate physical conditions used to simulate the C&SF Project
25 system. As set forth in the programmatic regulations, the Pre-CERP Baseline represents the
26 assumed hydrologic conditions in the South Florida ecosystem as of the date of enactment of
27 WRDA 2000. For this reason, the assumptions selected for the model run represent as closely
28 as possible the actual conditions in place in the system at that time. Besides such things as
29 land use and land cover, physical conditions include the structures and water management
30 system operational rules, regulations and schedules that were in place and functioning as of
31 the date of enactment of WRDA 2000.

32
33 Water Supply deliveries from the regional system to the Lake Worth Drainage District
34 (LWDD) are simulated by estimating the quantity of water required to maintain the specified
35 maintenance levels within LWDD, after accounting for local sources such as rainfall, and
36 recharge. The model does not explicitly simulate the permitted, surface water volumes of
37 regional deliveries to LWDD. The differences between the simulated surface water deliveries
38 in the South Florida Water Management Model and the permitted demands are deemed to be
39 within the acceptable range of model accuracy.

40
41 For south Miami-Dade County, the operations assumed in the modeling are the Interim
42 Structural Operating Plan of 2001. Only operational conditions associated with approved
43 Federal, State, and local public works projects were included as assumptions in the model
44 run. These assumptions include approved discharge rates into the secondary and tertiary
45 canal network. Operational changes or structures that were authorized but not fully
46 operational were not included in the assumptions for the baseline because they are not

1 representative of the condition that existed as of that date. Water supply for urban needs is
2 based upon actual wellfield pumpage data. Water supply for agricultural needs are estimated
3 using Agricultural Field Scale Irrigation Requirements Simulation (AFSIRS) modeling and
4 existing planted acreages. The physical conditions included as assumptions for the model run
5 are found in Section 8.2.
6

7 **7.3 Application Of The Pre-CERP Baseline**

8

9 In many cases, the existing legal sources and levels of service for flood protection that
10 existed in December 2000 will be altered or changed before a CERP project is implemented.
11 These changes may result from actions by Federal, State and local governments – actions that
12 are wholly outside the Plan process. These “intervening” non-Plan conditions, brought about
13 by the implementation and operation of non-Plan actions after December 2000, but before a
14 Plan project becomes operational, will change the hydrologic conditions from those reflected
15 in the Pre-CERP Baseline. Guidance Memorandum #3 provides examples of these
16 intervening non-Plan conditions and guidance as to the analyses to be applied when the Pre-
17 CERP Baseline conditions have been altered.
18

19 **7.4 Instructions For Modeling The Pre-CERP Baseline Simulation**

20

21 **7.4.1 Assumptions that can be Refined and Assumptions that are** 22 **Unchanging**

23

24 The Pre-CERP Baseline assumptions are based on features such as consumptive uses, land
25 cover, land use, water supply, and structural operations that best represent actual December
26 2000 conditions. As such, these Pre-CERP Baseline assumptions are not updatable.
27

28 It is recognized that the models used to simulate the Pre-CERP Baseline will evolve through
29 the Plan planning horizon. As the planning evaluation models evolve, the Pre-CERP Baseline
30 should be simulated using the latest tools in order to permit model-to- model comparisons
31 with project planning simulations. Examples of model input data that can be updated in the
32 Pre-CERP Baseline simulations include:
33

- 34 i. Model input files that use programs or models to estimate parameter
35 values can be updated as new methods are demonstrated to provide
36 improved results (e.g. evapotranspiration calculated using AFSIRS,
37 Lake Okeechobee inflows calculated using UKISS model).
- 38 ii. Model input files that use interpolation methods to assign field data to
39 model grid cells (topography, rainfall, aquifer properties, etc) can be
40 updated if new interpolation methods are demonstrated to be more
41 accurate or if interpolation is necessary to accommodate new model
42 resolutions.
- 43 iii. Extended period of simulation that includes post-2000 climatic data as it
44 becomes available.
45

1 While the Pre-CERP Baseline simulation may be updated with the commencement of project
2 planning, project determinations with respect to the Savings Clause will not be retroactively
3 affected by an updated Pre-CERP Baseline.
4

5 **7.4.2 Model Selection (including Plan Projects within the Domain** 6 **that have Special Needs)** 7

8 The Pre-CERP Baseline consists of a set of conditions that represent December 2000. Based
9 on the features of the proposed project and its hydrologic connectivity to the regional system,
10 the Pre-CERP Baseline conditions can be modeled using regional models, site-specific
11 models, or a combination of the two types of models. The Project Delivery Team for each
12 CERP project shall select the appropriate model for the Pre-CERP Baseline simulation for
13 their project. Project teams should use the same model and version as the one selected for
14 planning evaluations and benefit analysis to ensure consistency. Models selected to simulate
15 the Pre-CERP Baseline should be capable of simulating various hydrologic conditions
16 representative of both intra- and inter-annual variations. All model simulations of the Pre-
17 CERP Baseline should be archived for future reference. The archive should include model
18 input, output, source code, and documentation.
19

20 **7.4.3 What Model Should be Used if the Proposed Component is** 21 **Outside the Geographical Area of the SFWMM or Current** 22 **Regional Model?** 23

24 For projects that fall outside geographical area of the existing regional model, currently
25 version 5.4 of the SFWMM, Project Delivery Team may use their professional judgment
26 about what model is appropriate. If using a different model, it should use the same set of
27 assumptions and meet the above model selection guidance.
28
29

30 **8.0 SFWMM SIMULATION OF THE PRE-CERP BASELINE** 31

32 **8.1 Introduction** 33

34 Although Project Delivery Teams can use a variety of models to simulate the Pre-CERP
35 Baseline, as discussed above, the SFWMM application was included in this document to
36 fulfill the Pre-CERP Baseline modeling requirements in the programmatic regulations.
37

38 **8.2 Model Description** 39

40 The SFWMM is a regional-scale computer model that simulates the hydrology and the
41 management of the water resources system from Lake Okeechobee to Florida Bay (Figure 3).
42 It covers an area of 7,600 square miles using a grid of 2-mile x 2-mile cells. The model
43 includes inflows from the Kissimmee River, and both runoff and demands in the
44 Caloosahatchee River and St. Lucie Canal basins. The SFWMM simulates the major
45 components of the hydrologic cycle in South Florida including rainfall, evapotranspiration,

1 infiltration, overland and groundwater flow, canal flow, canal-groundwater seepage, levee
2 seepage and groundwater pumping. It “operates” the C&SF Project water management
3 control structures according to specific operational rules.
4

5 The model requires input data, termed “assumptions”, that govern the outputs, or results, of a
6 given model simulation. Many types of data are needed to run the model, including the
7 following:
8

- 9 • Topography (ground elevation data)
- 10 • Rainfall
- 11 • Evapotranspiration rates
- 12 • Sea level data
- 13 • Land use
- 14 • Vegetation types
- 15 • Irrigation and agricultural demands
- 16 • Municipal and industrial water supply demands
- 17 • C&SF Project water management system structures, operational rules,
18 regulations and schedules
- 19 • Canal stages and flows
20

21 Table 1 is the assumptions used in the Pre-CERP Baseline model. The SFWMM simulates
22 conditions based on these assumptions for the South Florida ecosystem to establish the Pre-
23 CERP Baseline for areas within the model domain. The SFWMM may be used to provide
24 boundary conditions, or hydrologic inputs, to other subregional hydrologic models that will
25 be used on a project-by-project basis in the application of the Pre-CERP Baseline.
26
27

Table 1: SFWMM Pre-CERP Baseline Assumptions

Feature	Pre-CERP Baseline SFWMM Assumptions
<i>Regional Input Data</i>	
Climate	<ul style="list-style-type: none"> • The climatic period of record is from 1965 to 2000. • Rainfall estimates for 1965-2000 • Evapotranspiration methods for 1965-2000
Topography	<p>Updated November 2001 and September 2003 using latest available information (in NGVD 29 datum). Nov 2001 update (Documented in November 2001 SFWMD memorandum from M. Hinton to K. Tarboton) includes:</p> <ul style="list-style-type: none"> • USGS High Accuracy Elevation data from helicopter surveys collected 1999-2000 for Everglades National Park and Water Conservation Area (WCA) 3 south of Alligator Alley • USGS Lidar data (May 1999) for WCA-3A north of Alligator Alley • Stormwater Treatment Area surveys from 1990s • Aerometric Corp. 1986 survey of the 8-1/2 square mile area • Includes estimate of Everglades Agricultural Area subsidence • Other data as in SFWMM v3.7 • FWC survey 1992 for the Holey Land Wildlife Management Area. <p>September 2003 update includes:</p> <ul style="list-style-type: none"> • FWC 1992 survey data for Rotenberger Wildlife Management Area. • DHI gridded data from Kimley –Horn contracted survey of EAA, 2002-2003. Regrided to 2x2 scale for EAA outside of STAs and WMAs.
Sea Level	<ul style="list-style-type: none"> • Sea level data from six long-term NOAA stations were used to generate a historic record to use as sea level boundary conditions for the 1965 to 2000 evaluation period.
Land Use	<ul style="list-style-type: none"> • All land use has been updated using most recent FLUCCS data (1995), modified in the Lower East Coast urban areas using 2000 aerial photography (2x2 scale). <p>(Documented in August 2003 SFWMD memorandum from J. Barnes and K. Tarboton to J. Obeysekera).</p>
Natural Area Land Cover (Vegetation)	<p>Vegetation classes and their spatial distribution in the natural areas comes from the following data:</p> <ul style="list-style-type: none"> • Walsh 1995 aerial photography in Everglades National Park • Rutchey 1995 classification in WCA-3B, WCA-3A north of Alligator Alley and the Miami Canal, WCA-2A & 2B • Richardson 1990 data for Loxahatchee National Wildlife Refuge • FLUCCS 1995 for Big Cypress National Preserve, Holey Land & Rotenberger Wildlife Management Areas & WCA-3A south of Alligator Alley and the Miami Canal. (Documented in August 2003

	SFWMD memorandum from J. Barnes and K. Tarboton to J. Obeysekera).
--	--

1

<i>Lake Okeechobee Service Area</i>	
LOSA Basins	<ul style="list-style-type: none"> • Lower Istokpoga, S-4, North Lake Shore and Northeast Lake Shore demands and runoff based on AFSIRS modeling.
Lake Okeechobee	<ul style="list-style-type: none"> • Lake Okeechobee Regulation Schedule WSE according to WSE decision trees. • Lake Okeechobee Supply Side management (SSM) policy for Lake Okeechobee Service Area water restriction cutbacks as per the 1991 version of rule 40E-21 and 40E-22 (13.5 – 11.0 ft. trigger line). A 67% maximum cutback will be implemented. • Emergency flood control backpumping to Lake Okeechobee from the Everglades Agricultural Area. • Kissimmee River inflows based on interim schedule for Kissimmee Chain of Lakes using the UKISS model. • Best Management Practices runoff reduction assumed to be 0%. • Makeup water (Replacement Water Rule) target has an average of 102 KAF per year for the 36-yr period. Actual deliveries can be less due to conveyance limitations, WCAs above schedule and suspension of makeup water deliveries due to SSM.
Caloosahatchee River Basin	<ul style="list-style-type: none"> • Caloosahatchee River Basin irrigation demands and runoff were estimated using the AFSIRS method based on existing planted acreage. • Public water supply daily intake from the river is included in the analysis.
St. Lucie Canal Basin	<ul style="list-style-type: none"> • St. Lucie Canal Basin demands estimated using the AFSIRS method based on existing planted acreage. • Basin demands include the Florida Power & Light reservoir at Indiantown.
Seminole Brighton Reservation	<ul style="list-style-type: none"> • Brighton Reservation demands were estimated using the AFSIRS method based on existing planted acreage. • While the Tribe's Work Plans to date estimate demands of 2561.74 MG/M, these do not always equate to actual deliveries. Notwithstanding, tribal rights to these quantities are preserved. These quantities are the preference amount per the Compact. • The Tribe has the right to use water above the preference amount as long as there is no competing use for the water and the Tribe demonstrates a reasonable need for water without potentially causing adverse impacts to the water resources. • Supply-side management applies to this agreement, as per Table 7, Agreement C-4121 (Nov 1992).

2

<p>Seminole Big Cypress Reservation</p>	<ul style="list-style-type: none"> • Big Cypress Reservation irrigation demands and runoff were estimated using the AFSIRS method based on existing planted acreage. • The 1 in 5 demand set forth in the Seminole Compact Work Plan equals 2606 MGM. Modeled deliveries equaled 2659 MGM. For purposes of this model run the 2659 MGM figure should be used to account for Big Cypress demands. • Simulated demands in excess of historical demands are partially supplied by basin flows. Any remaining excess water is directed to S190 • Supply-side management applies to the Compact.
<p>Everglades Agricultural Area</p>	<ul style="list-style-type: none"> • Everglades Agricultural Area irrigation demands are simulated using climatic data for the 36-year period of record and a soil moisture accounting algorithm, with parameters calibrated to match historical regional supplemental deliveries from Lake Okeechobee. • Best Management Practices assumed to reduce runoff 0% annually.
<p>Everglades Construction Project Stormwater Treatment Areas</p>	<ul style="list-style-type: none"> • Stormwater Treatment Areas 1W, 5 & 6 operational. • Stormwater Treatment Area 2 complete but not connected to the regional system. • Operation of Stormwater Treatment Areas assumes 6" minimum depth during periods of drought.
<p>Holey Land Wildlife Management Area</p>	<ul style="list-style-type: none"> • As per Memorandum of Agreement between the FWC and the District.
<p>Rotenberger Wildlife Management Area</p>	<ul style="list-style-type: none"> • Interim Operational Schedule as defined in the Operation Plan for Rotenberger (SFWMD Jan 2001).
<p><i>Water Conservation Areas</i></p>	
<p>Water Conservation Area 1 (ARM Loxahatchee National Wildlife Refuge)</p>	<ul style="list-style-type: none"> • Current C&SF Regulation Schedule. Includes regulatory releases to tide through LEC canals. • No net outflow to maintain minimum stages in the LEC Service Area canals (salinity control), if water levels are less than minimum operating criteria of 14 ft. The bottom floor of the schedule (Zone C) is the area below 14 ft. Any water supply releases below the floor will be matched by an equivalent volume of inflow from upstream sources.

Water Conservation Area 2 A&B	<ul style="list-style-type: none"> • Current C&SF regulation schedule. Includes regulatory releases to tide through LEC canals. • No net outflow to maintain minimum stages in the LEC Service Area canals (salinity control), if water levels in WCA-2A are less than minimum operating criteria of 10.5 ft. Any water supply releases below the floor will be matched by an equivalent volume of inflow from upstream sources.
Water Conservation Area 3 A&B	<ul style="list-style-type: none"> • Current C&SF regulation schedule. Includes regulatory releases to tide through LEC canals. • No net outflow to maintain minimum stages in the LEC Service Area canals (salinity control), if water levels are less than minimum operating criteria of 7.5 ft in WCA-3A. Any water supply releases below the floor will be matched by an equivalent volume of inflow from upstream sources.
<i>Lower East Coast Service Areas</i>	
Public Water Supply and Irrigation	<ul style="list-style-type: none"> • Public water supply wellfield pumpage and locations are based on actual pumpage data for calendar year 2000 from the surficial aquifer. • Includes Miami-Dade County Water and Sewer Department West Wellfield Aquifer Storage and Recovery system. • Irrigation demands are based upon existing land use and calculated using AFSIRS, reduced to account for landscape and gold course areas irrigated using reuse water and landscape areas irrigated using public water supply. • Public water supply demands for Lake Worth Drainage District are not based on pumpage data but are estimated based on maintaining specified levels. Differences between simulated water deliveries and Lake Worth Drainage District permitted demands are deemed to be within the acceptable range of model accuracy.
Seminole Hollywood Reservation	<ul style="list-style-type: none"> • Hollywood Reservation demands are set forth under VI.C of the Water Rights Compact. • Tribal sources of water supply include various agreements with municipal service suppliers.
Natural Areas	<ul style="list-style-type: none"> • For the Northwest Fork of the Loxahatchee River, the District operates the G-92 structure and associated structures to provide approximately 50 cfs over Lainhart Dam to the Northwest Fork, when the District determines that water supplies are available. • Flows to Pond Apple Slough through S-13A are adjusted in the model to approximate measured flows at the structure. • Flows to Biscayne Bay are simulated through Snake Creek, North

	Bay, the Miami River, Central Bay and South Bay.
Canal Operations	<ul style="list-style-type: none"> • C&SF Project System and operating rules in effect in 2000. • Includes operations to meet control elevations in the primary coastal canals for the prevention of saltwater intrusion. • Includes existing secondary drainage/water supply system.
<i>Western Basins and Big Cypress National Preserve</i>	
Western Basins	<ul style="list-style-type: none"> • Estimated and updated historical inflows from western basins at two locations: G-136 and G-406. The G-406 location represents potential inflow from the C-139 Basin into STA 5. Data for the period 1978 - 2000 is the same as the data used for the C-139 Basin Rule development. <p>(Documented in June 2002 SFWMD memorandum from L. Cadavid and L. Brion to J. Obeysekera).</p>
Big Cypress National Preserve	<ul style="list-style-type: none"> • Tamiami Trail culverts are not modeled in SFWMM due to the coarse (2x2 mile) model resolution.
<i>Everglades National Park and Florida Bay</i>	
Everglades National Park	<ul style="list-style-type: none"> • Water deliveries to Everglades National Park are based on the Interim Structural Operating Plan (ISOP) 2001.
<i>Region-Wide Water Management and Related Operations</i>	
Water Management Rules	<ul style="list-style-type: none"> • The existing condition reflects the existing water shortage policies in 2000 as reflected in the 1991 version of the South Florida Water Management District rule 40E-21. • The impacts of declarations of water shortages on utility water use reflect assumptions contained in the Lower East Coast Regional Water Supply Plan (May 2000).

1
2
3
4
5
6
7
8
9

8.3 Pre-CERP Baseline Model Run

Model version 5.4 was used for the Pre-CERP Baseline model run. The model results are posted at the CERP System Modeling webpage at:

http://modeling.cerpzone.org/cerp_recover/pmviewer/pmviewer.jsp.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

APPENDIX A
EXCERPT FROM PROGRAMMATIC REGULATIONS

Section 385.35 - Achievement of the Benefits of the Plan

(a) Pre-CERP baseline water availability and quality.

(1) Not later than six months after the effective date of the regulations of this part, USACE and the South Florida Water Management District shall, in consultation with the Department of the Interior, the Miccosukee Tribe of Indians of Florida, the Seminole Tribe of Florida, the Environmental Protection Agency, the Department of Commerce, the Florida Department of Environmental Protection, and other Federal, State, and local agencies, develop for approval by the Secretary of the Army, the Pre-CERP Baseline to be used to aid the USACE and the South Florida Water Management District in determining if existing legal sources of water will be eliminated or transferred as a result of project implementation as described in section 385.36 and memorialize the Pre-CERP Baseline in an appropriate document. The USACE and the South Florida Water Management District shall consult with the South Florida Ecosystem Restoration Task Force in the development of the Pre-CERP Baseline.

(i) The Pre-CERP Baseline may express the quantity, timing, and distribution of water in stage duration curves; exceedance frequency curves; quantities available in average, wet, and dry years; or any other method which is based on the best available science.

(ii) The Pre-CERP Baseline shall include appropriate documentation that includes a description of the assumptions used to develop the Pre-CERP Baseline.

(iii) In addition to the development of the Pre-CERP Baseline, the USACE and the South Florida Water Management District shall conduct other analyses that they deem necessary to determine if an existing legal source of water has been eliminated or transferred or if a new source of water is of comparable quality to that which has been eliminated or transferred in accordance with section 385.36.

(2) In accordance with section 385.18, the USACE and the South Florida Water Management District shall provide opportunities for the public to review and comment on the Pre-CERP Baseline.

(3) The Pre-CERP Baseline shall be developed with the concurrence of the Secretary of the Interior and the Governor. Within 180 days of being provided the Pre-CERP Baseline, or such shorter period that the Secretary of the Interior and the Governor may agree to, the Secretary of the Interior and the Governor shall provide the Secretary of the Army with a written statement of concurrence or non-concurrence with the Pre-CERP Baseline. A failure to provide a written statement of concurrence or non-concurrence within such time frame shall be deemed as meeting the concurrency process of this section. A copy of any concurrency or non-concurrency statements shall be made a part of the administrative record and referenced in the final determination of the Pre-CERP Baseline. Any non-concurrency statement shall specifically detail the reason or reasons for the non-concurrence.

(4) Nothing in this paragraph is intended to, or shall it be interpreted to,

1 reserve or allocate water or to prescribe the process for reserving or allocating water or
2 for water management under Florida law. Nothing in this section is intended to, nor shall
3 it be interpreted to, prescribe any process of Florida law.
4

5 (b) Identification of water made available and water to be reserved or allocated for the
6 natural system.

7 (1) Initial modeling showed that most of the water generated by the Plan would go
8 to the natural system in order to attain restoration goals, and the remainder of the water
9 would go for use in the human environment. The USACE, the South Florida Water
10 Management District, and other Non-Federal sponsors shall ensure that Project
11 Implementation Reports identify the appropriate quantity, timing, and distribution of
12 water to be dedicated and managed for the natural system that is necessary to meet the
13 restoration goals of the Plan. In accordance with the “Comprehensive Everglades
14 Restoration Plan Assurance of Project Benefits Agreement,” dated January 9, 2002
15 pursuant to section 601(h)(2) of WRDA 2000, the South Florida Water Management
16 District or the Florida Department of Environmental Protection shall make sufficient
17 reservations of water for the natural system under State law in accordance with the
18 Project Implementation Report for that project and consistent with the Plan before water
19 made available by a project is permitted for a consumptive use or otherwise made
20 unavailable. In accordance with section 385.31(c), the USACE and the South Florida
21 Water Management District shall, in consultation with the Department of the Interior, the
22 Environmental Protection Agency, the Department of Commerce, the Miccosukee Tribe
23 of Indians of Florida, the Seminole Tribe of Florida, the Florida Department of
24 Environmental Protection, and other Federal, State, and local agencies, determine the
25 total quantity of water that is expected to be generated by implementation of the Plan,
26 including the quantity expected to be generated for the natural system to attain restoration
27 goals as well as the quantity expected to be generated for use in the human environment,
28 and shall periodically update that estimate, as appropriate, based on new information
29 resulting from changed or unforeseen circumstances, new scientific or technical
30 information, new or updated models, or information developed through the adaptive
31 assessment principles contained in the Plan, or future authorized changes to the Plan
32 integrated into the implementation of the Plan.

33 (2) Each Project Implementation Report shall take into account the availability of
34 Pre-CERP Baseline water and previously reserved water as well as the estimated total
35 quantity of water that is necessary for restoration for the natural system and the quantity
36 of water anticipated to be made available from future projects in identifying the
37 appropriate quantity, timing, and distribution of water dedicated and managed for the
38 natural system, determining whether improvements in water quality are necessary to
39 ensure that water delivered to the natural system meets applicable water quality
40 standards; and identifying the amount of water for the natural system necessary to
41 implement, under State law, the provisions of section 601(h)(4)(A)(iii)(V) of WRDA
42 2000.

43 (3) Section 601(h)(3)(C)(i)(I) of WRDA 2000 requires the regulations of this part
44 to establish a process for development of Project Implementation Reports, Project
45 Cooperation Agreements, and Operating Manuals that ensure that the goals and
46 objectives of the Plan are achieved. Section 601(h)(4)(A)(iii)(IV) of WRDA 2000

1 provides that Project Implementation Reports shall identify the appropriate quantity,
2 timing, and distribution of water dedicated and managed for the natural system. Section
3 601(h)(4)(A)(iii)(V) of WRDA 2000 provides that Project Implementation Reports shall
4 identify the amount of water to be reserved or allocated for the natural system necessary
5 to implement, under State law, the provisions of section 601(h)(4)(A)(iii)(IV) and (VI) of
6 WRDA 2000. To implement these provisions and section 385.5, the USACE and the
7 South Florida Water Management District shall develop a guidance memorandum in
8 accordance with section 385.5 for approval by the Secretary of the Army, with the
9 concurrence of the Secretary of the Interior and the Governor. The guidance
10 memorandum shall provide a process to be used in the preparation of Project
11 Implementation Reports for identifying the appropriate quantity, timing, and distribution
12 of water dedicated and managed for the natural system; determining the quantity, timing
13 and distribution of water made available for other water-related needs of the region;
14 determining whether improvements in water quality are necessary to ensure that water
15 delivered by the Plan meets applicable water quality standards; and identifying the
16 amount of water for the natural system necessary to implement, under State law, the
17 provisions of section 601(h)(4)(A)(iii) of WRDA 2000.

18 (i) The guidance memorandum shall generally be based on using a system-
19 wide analysis of the water made available and may express the quantity, timing
20 and distribution of water in stage duration curves; exceedance frequency curves;
21 quantities available in average, wet, and dry years; or any other method which is
22 based on the best available science. The guidance memorandum shall also provide
23 for projects that are hydrologically separate from the rest of the system. The
24 guidance memorandum also shall address procedures for determining whether
25 improvements in water quality are necessary to ensure that water delivered to the
26 natural system meets applicable water quality standards. These procedures shall
27 ensure that any features to improve water quality are implemented in a manner
28 consistent with the cost sharing provisions of WRDA 1996 and WRDA 2000.

29 (ii) The guidance memorandum shall generally take into account the
30 natural fluctuation of water made available in any given year based on an
31 appropriate period of record; the objective of restoration of the natural system; the
32 need for protection of existing uses transferred to new sources; contingencies for
33 drought protection; the need to identify the additional quantity, timing, and
34 distribution of water made available by a new project component while
35 maintaining a system- wide perspective on the amount of water made available by
36 the Plan; and the need to determine whether improvements in water quality are
37 necessary to ensure that water delivered by the Plan meets applicable water
38 quality standards.

39 (iii) Project Implementation Reports approved before the date of
40 promulgation of these regulations or the development of the guidance
41 memorandum may use whatever method the USACE and the non-Federal sponsor
42 deem is reasonable and consistent with the provisions of section 601 of WRDA
43 2000.

44 (iv) Nothing in this paragraph is intended to, or shall it be interpreted to,
45 reserve or allocate water or to prescribe the process for reserving or allocating

1 water or for water management under Florida law. Nothing in this section is
2 intended to, nor shall it be interpreted to, prescribe any process of Florida law.

3 (c) Procedures in event that the project does not perform as expected. The Project
4 Implementation Report shall include a plan for operations of the project in the event that
5 the project fails to provide the quantity, timing, or distribution of water described in the
6 Project Implementation Report. Such plan shall take into account the specific authorized
7 purposes of the project and the goals and purposes of the Plan and shall also provide for
8 undertaking management actions in accordance with section 385.31(d).

9

10 **Section 385.37 - Flood Protection**

11

12 (a) General. In accordance with Section 601 of WRDA 2000, flood protection, consistent
13 with restoration, preservation, and p of the natural system, is a purpose of the Plan.

14 (b) Existing flood protection. Each Project Implementation Report shall include
15 appropriate analyses, and consider the operational conditions included in the Pre-CERP
16 Baseline developed pursuant to 385.35(a), to demonstrate that the levels of service for
17 flood protection that:

18 (1) Were in existence on the date of enactment of Section 601 of WRDA 2000;
19 and

20 (2) Are in accordance with applicable law, will not be reduced by implementation
21 of the project.

22 (c) Improved and new flood protection. The overarching objective of the Plan is the
23 restoration, preservation, and protection of the South Florida Ecosystem while providing
24 for other water-related needs of the region, including water supply and flood protection.
25 As appropriate, the USACE and the Non-Federal sponsor shall consider opportunities to
26 provide additional flood protection, consistent with restoration of the natural system, and
27 the provision of Section 60(f)(2)(B) of WRDA 2000.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

APPENDIX B
EXCERPT FROM WRDA 2000

WRDA 2000, Section 601(h)(5) Savings Clause. –

(A) NO ELIMINATION OR TRANSFER. – Until a new source of water supply of comparable quantity and quality as that available on the date of enactment of this Act is available to replace the water to be lost as a result of implementation of the Plan, the Secretary and the non-Federal sponsor shall not eliminate or transfer existing legal sources of water, including those for –

- (i) An agricultural or urban water supply
- (ii) Allocation or entitlement to the Seminole Indian Tribe of Florida under section 7 of the Seminole Indian Land Claims Settlement Act of 1987 (25 U.S.C. 1772e);
- (iii) The Miccosukee Tribe of Indians of Florida
- (iv) Water supply for Everglades National Park; or
- (v) Water supply for fish and wildlife.

(B) MAINTENANCE OF FLOOD PROTECTION. – Implementation of the Plan shall not reduce levels of service for flood protection that are –

- (i) In existence on the date of enactment of this Act; and
- (ii) In accordance with applicable law.

(C) NO EFFECT ON TRIBAL COMPACT. – Nothing in this section amends, alters, prevents, or otherwise abrogates rights of the Seminole Tribe of Florida under the compact among the Seminole Tribe of Florida, the State, and the South Florida Water Management District, defining the scope and use of water rights of the Seminole Tribe of Florida, as codified by section 7 of the Seminole Indian Land Claims Settlement Act of 1987 (25 U.S.C. 1772e)

**APPENDIX C
ACRONYM LIST**

1		
2		
3		
4		
5	AFB	Alternative Formulation Briefing
6	ASA(CW)	Assistant Secretary of the Army(Civil Works)
7	CERP	Comprehensive Everglades Restoration Plan
8	CE/ICA	Cost Effectiveness/Incremental Cost Analysis
9	C&SF	Central and Southern Florida
10	DCP	Drought Contingency Plan
11	DE	District Engineer
12	EA	Environmental Assessment
13	EFH	Essential Fish Habitat
14	EIS	Environmental Impact Statement
15	EA	Environmental Assessment
16	EM	Engineering Manual
17	ER	Engineering Regulation
18	FDEP	Florida Department of Environmental Protection
19	F.S.	Florida Statutes
20	FSM	Feasibility Scoping Meeting
21	FWC	Florida Fish and Wildlife Conservation Commission
22	FWS	[United States] Fish and Wildlife Service
23	GM	Guidance Memorandum[a]
24	HQ	Headquarters
25	ICA	Incremental Cost Analysis
26	IPR	In-Progress Review
27	LERRD	Lands, easements, rights-of-way, relocations, and disposal areas
28	MAP	Monitoring and Assessment Plan
29	M-CACES	Micro-Computer Aided Cost Engineering System
30	MPMP	Master Program Management Plan
31	NAI	Next-added increment
32	NED	National Economic Development
33	NEPA	National Environmental Policy Act
34	NER	National Ecosystem Restoration
35	NMFS	National Marine Fisheries Service
36	NOAA	National Oceanic and Atmospheric Administration
37	OASA(CW)	Office of the Assistant Secretary of the Army (Civil Works)
38	OMRR&R	Operation, Maintenance, Repair, Rehabilitation, and Replacement
39	OTMP	Operational Testing and Monitoring Phase
40	PIR	Project Implementation Report
41	POM	Project Operating Manual
42	RECOVER	REstoration COordination and VERification
43	SAD	South Atlantic Division
44	SAJ	South Atlantic—Jacksonville [District]
45	SFWMD	South Florida Water Management District
46	SFWMM	South Florida Water Management Model

1	SOM	System Operating Manual
2	SPF	Standard Project Flood
3	SPS	Standard Project Storm
4	USACE	United States Army Corps of Engineers
5	WCDSAP	Water Control Data Acquisition System Plan
6	WCDS	Water Control Data System
7	WCM	Water Control Manual
8	WRDA	Water Resources Development Act
9	WQC	Water Control Certification
10		