

REPORT SUMMARY
Central and Southern Florida Project
Comprehensive Everglades Restoration Plan
Caloosahatchee River (C-43) West Basin
Storage Reservoir Project

Study Authority: The CERP was approved in Section 601 of WRDA 2000, which states, in part:

Section 601, Water Resources Development Act of 2000

PUBLIC LAW 106-541—DEC. 11, 2000

(b) COMPREHENSIVE EVERGLADES RESTORATION PLAN.—

(1) APPROVAL

(A) IN GENERAL. —Except as modified by this section, the Plan is approved as a framework for modifications and operational changes to the Central and Southern Florida Project that are needed to restore, preserve, and protect the South Florida ecosystem while providing for other water-related needs of the region, including water supply and flood protection. The Plan shall be implemented to ensure the protection of water quality in, the reduction of the loss of fresh water from, and the improvement of the environment of the South Florida ecosystem and to achieve and maintain the benefits to the natural system and human environment described in the Plan, and required pursuant to this section, for as long as the project is authorized.

The authority for the preparation of the Caloosahatchee River (C-43) West Basin Storage Reservoir Project Implementation Report (PIR) is contained in Section 601(d) of WRDA 2000, which states:

(d) AUTHORIZATION OF FUTURE PROJECTS-

(1) IN GENERAL- Except for a project authorized by subsection (b) or (c), any project included in the Plan shall require a specific authorization by Congress.

(2) SUBMISSION OF REPORT- Before seeking congressional authorization for a project under paragraph (1), the Secretary shall submit to Congress--

(A) a description of the project; and

(B) a project implementation report for the project prepared in accordance with subsections (f) and (h).

Section 601(h)(4) of WRDA 2000 further requires that a PIR document the following:

(4) PROJECT-SPECIFIC ASSURANCES-

(A) PROJECT IMPLEMENTATION REPORTS-

- (i) IN GENERAL- The Secretary and the non-Federal sponsor shall develop project implementation reports in accordance with section 10.3.1 of the Plan.*
- (ii) COORDINATION- In developing a project implementation report, the Secretary and the non-Federal sponsor shall coordinate with appropriate Federal, State, tribal, and local governments.*
- (iii) REQUIREMENTS- A project implementation report shall--*
 - (I) be consistent with the Plan and the programmatic regulations promulgated under paragraph (3);*
 - (II) describe how each of the requirements stated in paragraph (3)(B) is satisfied;*
 - (III) comply with the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.);*
 - (IV) identify the appropriate quantity, timing, and distribution of water dedicated and managed for the natural system;*
 - (V) identify the amount of water to be reserved or allocated for the natural system necessary to implement, under State law, subclauses (IV) and (VI);*
 - (VI) comply with applicable water quality standards and applicable water quality permitting requirements under subsection (b)(2)(A)(ii);*
 - (VII) be based on the best available science; and*
 - (VIII) include an analysis concerning the cost-effectiveness and engineering feasibility of the project.*

Study Sponsor: The South Florida Water Management District (SFWMD) is the non-Federal Sponsor for the implementation of this project as part of the Comprehensive Everglades Restoration Plan (CERP). Announced in October 2004 by the Governor of Florida, the State and the SFWMD have committed over \$1.5 billion in additional funds via “certificates of participation” to accelerate design and construction activities on certain CERP projects known as the “Acceler8” program. The C-43 West Storage Reservoir project is one of the projects included in the Acceler8 program. To ensure appropriate and timely coordination of Federal activities necessary to support the Acceler8 program, the Administration through the Department of the Army and the Department of Interior have committed to align resources and workloads to produce PIRs consistent with the State of Florida’s construction schedules. The SFWMD has been involved throughout the Caloosahatchee River (C-43) West Basin Storage Reservoir PIR development process and has indicated their intent to proceed to construction.

Study Purpose and Scope: In accordance with WRDA 2000 and the Programmatic Regulations for CERP (Section 385.26), a PIR is required to be completed prior to implementing any component of CERP. The Caloosahatchee River (C-43) West Basin Storage Reservoir PIR bridges the gap between the conceptual level of detail contained in the April 1999 *Final Integrated Feasibility Report and Programmatic Environmental Impact Statement* and the detailed design necessary to prepare plans and specifications

required to proceed to construction. To address changing conditions, concerns and issues which have arisen since the Restudy analysis of the Caloosahatchee River Watershed, it is recommended that an Incremental Adaptive Restoration approach of two PIRs be used, in which the first PIR, the Caloosahatchee River (C-43) West Basin Storage Reservoir, will reaffirm and optimize the West Basin Storage Reservoir feature in the CERP and address the most immediate needs of the estuary, while ensuring that it is fully compatible and consistent with the CERP. The second PIR would be a more comprehensive study that could provide a complete solution to addressing the broader needs of the entire basin.

The Caloosahatchee River (C-43) West Basin Storage Reservoir PIR documents the planning process and all relevant assumptions and rationale for project decision making. All planning analyses, including economic, environmental, water quality, flood protection, real estate, and plan formulation, conducted during the planning phase are documented and included in this PIR. The purpose of this PIR is to reaffirm the plan identified in the 1999 Restudy Plan to determine that the project objectives and benefits have not changed and that the project can be implemented in a cost-effective manner. This project, if constructed, will have one primary structural component focused on improving environmental conditions in the Caloosahatchee River and Estuary. The structural component consists of an above ground two-cell reservoir and 1500 cfs pump station located along the Caloosahatchee River. The reservoir is designed to capture and store basin runoff and excess freshwater released from Lake Okeechobee during the wet season, and then discharge stored water to supplement flows to the Caloosahatchee Estuary during the dry season.

Project Location/Congressional District: The project footprint covers approximately 10,700 acres. Approximately 10,480 acres of land will be required in fee, approximately 20 acres of perpetual channel easement and approximately 200 acres of temporary easements for staging areas. All lands are located in Hendry County west of the city of LaBelle, Florida. The site is a few miles south of State Road (SR) 80 and approximately two miles west of SR 29. The property is predominantly owned by the SFWMD and is under a leasing agreement with Jack M. Berry, Inc. for agricultural land use. The proposed project would be of interest in Florida Congressional Districts: 14, 16 and 25. The project location is shown in **Figure 1**.

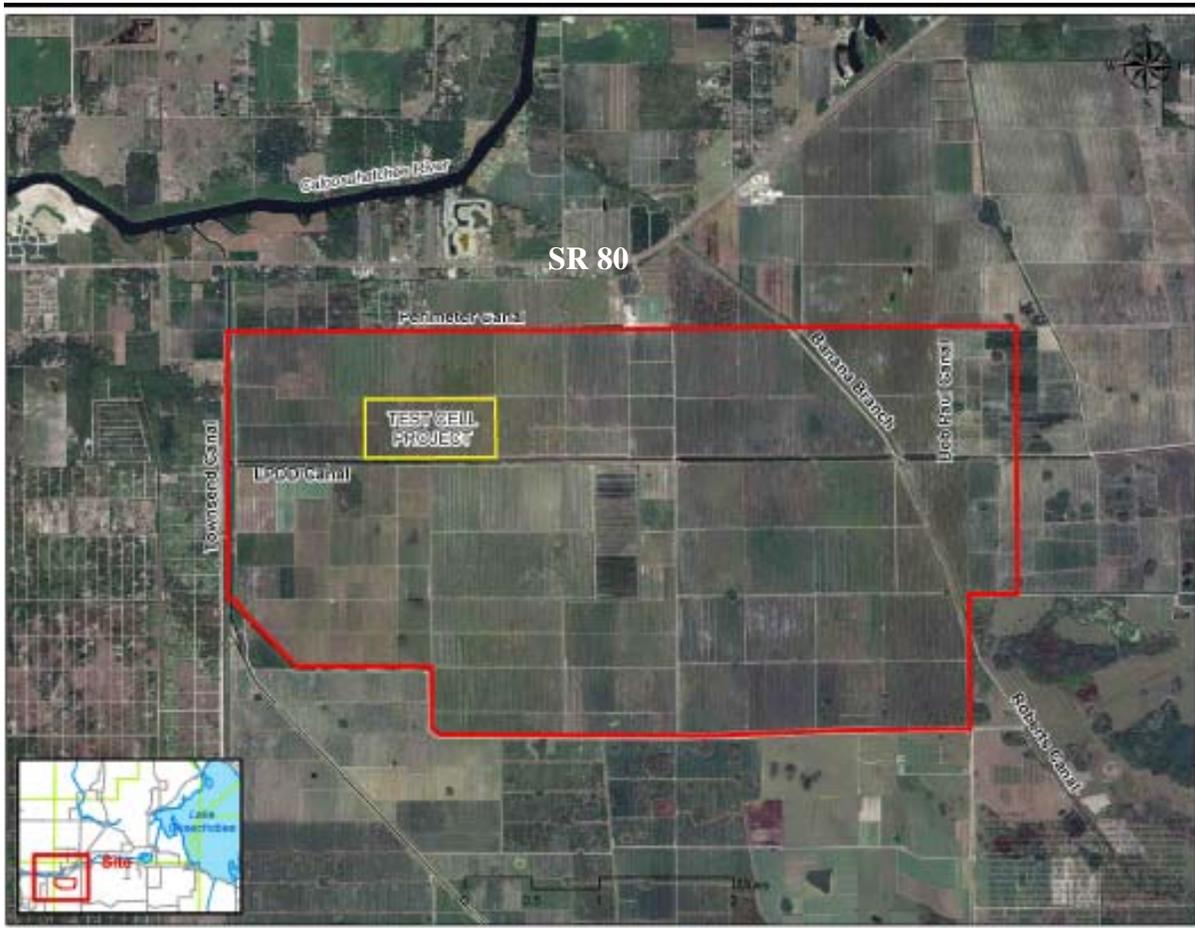


Figure 1: Project Area Map

Prior Reports and Existing Water Projects: The following prior planning efforts and reports are related to the proposed Caloosahatchee River (C-43) West Basin Storage Reservoir project: Governor’s Commission for A Sustainable South Florida Conceptual Plan (1996), the C&SF Project Comprehensive Review Study (a.k.a. *Restudy*, USACE and SFWMD, 1999), the Caloosahatchee Water Management Plan (2000) (CWMP), and the Lower West Coast Water Supply Plan (2005-2006). CWMP identified the Berry Groves site, as the ideal location for placement of a reservoir to meet the needs of the Caloosahatchee River Estuary. The CWMP identified that at a conceptual level an above ground storage reservoir located in the lower West Caloosahatchee River Basin would be adequate for ecosystem restoration of the Caloosahatchee River Estuary.

Federal Interest: The Caloosahatchee River (C-43) West Basin Storage Reservoir project, as presented in this PIR, is essentially the same project as was envisioned in the CERP, as authorized in WRDA 2000. Although there have been no changes in the project’s scope since the completion of the Central and Southern Florida Project

Comprehensive Review Study Feasibility Report in 1999 (known as the “Restudy”), the project has since been optimized for performance.

The proposed Caloosahatchee River (C-43) West Basin Storage Reservoir project is one of the components of the CERP. With the passage of WRDA 2000, the CERP was approved as a “framework for modifications and operational changes to the C&SF project that are needed to restore, preserve, and protect the south Florida ecosystem while providing for other water-related needs of the region, including water supply and flood protection”. Project lands were acquired in 1996 with funding provided by the Department of Interior to the non-Federal sponsor specifically for Everglades ecosystem restoration in accordance with Section 390 of the Federal Agriculture Improvement and Reform Act of 1996 (1996 Farm Bill). Work completed for the PIR has confirmed the federal interest in the project by demonstrating project benefits, completeness, cost effectiveness, and acceptability.

The recommend plan for the restoration of the Caloosahatchee Estuary is an increment of the National Ecosystem Restoration plan, is cost effective and provides ecosystem benefits on a system wide basis. Based on hydrodynamic and ecological modeling and evaluation for the system formulation condition (the project alternatives with the rest of CERP in place), this project implementation will generate an average annual increase of approximately 12,809 habitat units. The average annual cost per average annual habitat unit for the system formulation evaluation is approximately \$2,740. The area within the Caloosahatchee Estuary system beneficially affected by the project encompasses approximately 71,000 acres within the navigable waters of the United States and is within the navigation servitude of the United States. The cost per acre of affected habitat (based on the total area of benefit) for this project is \$7,146.

STUDY OBJECTIVES

Problems and Opportunities: The Caloosahatchee watershed has some ecological problems that are unique to the basin, as well as environmental problems that can also be found elsewhere in south Florida. Agricultural industry growth, urban development and the associated water management practices that accompany these activities have created undesirable conditions in the river and estuary. These problems are predicted to be magnified in the future. The ecological effects of these human-induced changes have generally resulted in:

- Extreme changes in salinity in the Caloosahatchee Estuary due to either excessive or little-to-no freshwater discharges over the W.P. Franklin Lock and Dam (the S-79 structure), which demarcates the division between the freshwater and tidal portions of the Caloosahatchee River.
- Loss of freshwater and marine SAV, due to salinity imbalances in the estuary.
- Truncation of estuarine extent and function due to the physical constraint of S-79 (the structure effectively blocks tidal flows upstream of that point).

- Reduction of oysters and blue crab habitat areas due to low salinity conditions in the lower estuary.
- Water quality problems in the river and estuary that are the result of pollutant laden (particularly nutrients) runoff from within the basin.
- Loss of spatial extent of wetlands and associated uplands in the Caloosahatchee Basin.
- Availability of and competition for water supply for environmental, agricultural, and urban needs during dry periods.

As a result of project implementation, there are opportunities to:

- Improve the quantity, timing and distribution of freshwater flows to the Caloosahatchee Estuary
- Improve salinity levels and salinity balance in the estuary for estuarine organisms.
- Improve water quality by reducing nutrient inflows from the Caloosahatchee Basin
- Improve the spatial extent and functional quality of habitat for estuarine biota.
- Increase plant and animal diversity and abundance, particularly increasing the spatial extent of submerged aquatic vegetation (SAV).
- Improve flood attenuation within the basin.
- Potentially provide a water supply source for agricultural and urban uses (via runoff capture and reuse methodology) once the needs of the estuary are met.

Planning Objectives: Project-specific objectives were developed by integrating the project problem statements with the overall CERP ecologic goals, which include: improving habitat function and quality, and improving native plant and animal abundance and diversity. In addition to the objectives, project constraints were developed to ensure that the proposed project would not reduce levels of service for flood protection and quantities of water available for municipal, industrial, and agricultural water supplies. The project delivery team also took into consideration resource and legal and policy constraints in developing objectives and constraints for this project.

Project Objectives

- Improve the quantity, timing, and distribution of freshwater flows to the Caloosahatchee Estuary.
- Improve water quality in the Caloosahatchee Estuary by reducing nutrient inflows from the Caloosahatchee Basin.
- Improve salinity balance in the Caloosahatchee Estuary for estuarine organisms.
- Reduce the spatial extent and duration of occurrences of extreme low and high salinities.
- Improve the spatial extent and functional quality of habitat for estuarine biota.
- Increase plant and animal diversity and abundance, particularly increasing the spatial extent of SAV.
- Increase seagrass and oyster production through improved salinity regime.

- Increase spatial extent and quality of wetlands in watershed.
- Increase suitable habitat for oysters and seagrasses in estuary.

Planning Constraints: The following constraints affecting plan formulation were identified by the project team:

- Maintain existing (Savings Clause [Section 601 (h)(5) of WRDA 2000]) levels of flood protection to agricultural and urban lands.
- Maintain levels of service for existing (Savings Clause) legal users.
- Minimize adverse socioeconomic impacts on the local and regional economies.
- Avoid or minimize impacts to navigation.
- Avoid contributing to the degradation of water quality in the estuary or any of the contributing water bodies within the basin.
- Minimize impacts that will adversely affect the tourism or recreational industries which are critical to the regional economy.

ALTERNATIVES

Plan Formulation Rationale: The plan formulation efforts reaffirmed that an above-ground storage reservoir, as originally described in the Restudy, is a cost-effective means for achieving the purposes of the project consistent with the goals and objectives of the CERP. After reaffirming that the benefits of the project could be achieved with an above-ground reservoir, formulation efforts focused on optimizing reservoir size and features on lands already acquired using DOI funds for project implementation, combined with a consideration of planning and policy constraints such as the WRDA 2000 Savings Clause.

The initial array of alternative plans used the Restudy as a starting point for optimizing the reservoir size by reviewing smaller and larger alternatives (including increased/decreased footprints, increased/decreased depths, varying infrastructure features, such as numbers of pumps and pumps sizes and different cell configurations, including the State's Acceler8 reservoir design). Various storage volumes were evaluated for the reservoir and compared to the "No Action" alternative.

After screening the initial array of alternatives, the final array of alternatives was evaluated using cost effectiveness and incremental cost analysis based on average annual habitat unit values and hydrologic benefit units. The hydrologic benefit units were used to measure the effective storage of the reservoir as well as the quantity of water retained in the natural system. The average annual habitat units were used to develop the system-wide benefits used for plan comparison and selection.

Evaluations of the final array of alternatives were conducted on a system formulation basis in the context of the rest of CERP, and the selected alternative plan (SAP) was justified on a next-added incremental (NAI) basis (as if this project was the only project to be constructed in CERP). The project described in this PIR will achieve the benefits of the project as originally described in the CERP in a cost-effective manner.

Management Measures and Alternative Plans: Management measures included both structural and non-structural elements. Management measures and subsequent alternative plans for this project were consistent with those that were produced during prior planning efforts. Screening criteria were applied to address each management measure. The screening criteria included evaluations of environmental impact and effectiveness to meet overall system-wide and project-level objective. This screening evaluation resulted in the identification of an above-ground reservoir located on the C-43 (Caloosahatchee River) adjacent to Caloosahatchee estuary as the most effective management measure for achieving project objectives (Table 1)

TABLE 1: SCREENING OF POTENTIAL MEASURES FOR USE IN THIS PROJECT

Measure	Selection for First PIR	Reason
Above Ground Reservoir Storage Areas	Yes	Primary focus of Caloosahatchee River (C-43) West Basin Storage Reservoir project is to evaluate various reservoir storage areas.
Restoration of Natural Areas	No	This measure was deferred for further consideration in later study
STAs	No	This measure was deferred for further consideration in later study. STAs may not be needed. STAs most effectively treat phosphorus, and nitrogen loading is key basin issue.
Backpumping with Stormwater Treatment	No	This measure was deferred to later study. However, this option is less likely, since current modeling shows insufficient water supply to meet all future demands.
Aquifer Storage and Recovery	No	This measure was deferred to later study.
Operation of Reservoirs	Yes	Primary focus of Caloosahatchee River (C-43) West Basin Storage Reservoir project is to evaluate various reservoir storage areas, and operational approaches
BMPs	No	Considered part of the future without project condition - will not be considered a measure in the formulation of alternative plans

The alternative described in the Restudy used the Everglades Screening Model to identify approximately 160,000 acre-feet of storage volume as the targeted amount of storage necessary to capture wet season flows and to meet dry season minimum flows in order to provide desired salinity levels in the Caloosahatchee Estuary. This project used the Restudy alternative (construction of above ground storage reservoirs totaling approximately 160,000 ac-ft) as a starting point and basis for developing project alternatives. In addition to the “No-Action” alternative, a preliminary array of six alternatives (listed below) was carried through preliminary screening. Screening indicated that an above-ground reservoir at the location previously identified best

accomplished the goals and objectives of the project. The initial array of alternatives focused on scales reservoir size on the lands already acquired.

- Alternative 1 (the no-action alternative),
- Alternative 2 (1100,000 ac-ft reservoir, 29-34 ft dam, 10-15 feet average pool depth, and 1,500 cfs pump capacity),
- Alternative 3A&B (170,000 ac-ft reservoir, 32-37 feet dam, 17-19 feet average pool depth, and 1,500 cfs pump capacity)
- Alternative 3C (170,000 ac-ft reservoir, 32-37 feet dam, 17-19 feet average pool depth, and 3,800 cfs pump capacity)
- Alternative 4A (220,000 ac-ft reservoir, 41-46 feet dam, 22-27 feet average pool depth, and 3,800 cfs pump capacity)
- Alternative 4B (220,000 ac-ft reservoir, (expanded footprint) 32-37 feet dam, 14-19 feet average pool depth, and 3,800 cfs pump capacity).

Final Array of Alternatives: After further evaluation to determine the extent to which the alternative plans would be able to meet project objectives and considering size and storage volume limitations of potential reservoir. The final structural alternatives were identified in addition to the No-Action Alternative; see **Table 2**.

TABLE 2: SUMMARY OF FINAL ARRAY OF ALTERNATIVES

Alternatives	Screening Criteria	
	Ability to Meet Project Objectives	Size Limitations due to Land Purchase
Alt 1 (No Action)	X	N/A
Alt 2 100,000 ac @ 29-34ft	✓	No
Alt 3A&B 170,000 ac @ 32-37 ft	✓	No
Alt 3C 170,000 ac @ 32-37 ft'	✓	No
Alt 4A 170,000 ac @ 41-46 ft'	✓	No
Alt 4B 220,000 ac @ 32-37 ft'	✓	Yes: Additional Lands Needed

Alternative 3A was eliminated since it is essentially the same as Alternative 3B. Alternative 4B was removed from further consideration due to real estate cost estimates that indicated total land costs would increase by approximately \$150 million resulting in a roughly \$80 million cost increase (real estate costs for the additional land area were estimated to be considerably higher based on increasing development).

The next step was to evaluate the final array of alternatives using ecological output measured in habitat units (HUs) and costs. The cost effectiveness analysis began with a

comparison of the costs and outputs of alternative plans to identify the least cost plan for every level of output considered. Alternative plans were compared to identify those that would produce greater levels of output at the same cost, or at a lesser cost, as other alternative plans. Alternative plans identified through this comparison were the cost effective alternative plans. Next, through incremental cost analysis, the cost effective alternative plans were compared to identify the most economically efficient alternative plans by examining the additional (incremental) costs for the additional (incremental) amounts of output produced by successively larger cost effective plans. The plans with the lowest incremental costs per unit of output for successively larger levels of output are the “Best Buy” plans (see Table 3).

TABLE-3: RESULTS OF COST EFFECTIVENESS ANALYSIS

Alternatives	Average Annual Cost (\$1,000)	Output (Habitat Units)	Average Cost Per Output	Cost Effective?
Without Plan	\$0	0	N/A	
Alternative 2	\$31,900	10,628	\$3,002	YES
Alternative 3B	\$35,100	12,809	\$2,740	YES
Alternative 3C	\$38,400	16,397	\$2,344	YES
Alternative 4A	\$40,600	15,907	\$2,554	NO

Note: All plans and cost effective plan arrayed by increasing output for each output category.

From the analysis of incremental cost for all of the alternatives, Alternative 3C provides the greatest HU lift while having the lowest cost per unit of output and is considered the NER plan for the project.

Comparison of Alternatives: The four final alternatives were formulated in a system formulation condition (considering the effects of alternative plans together with the rest of the CERP). The selected alternative plan was then justified in the Next Added Increment. The system formulation is required to determine the benefits of project alternatives toward the goals and objectives of the CERP. The NAI justification is necessary to determine the benefits of a project that can be achieved without other unauthorized CERP projects in place. System and project-level benefits were evaluated with the same hydrologic models that were used in the Restudy for the development of the CERP.

For each of the alternatives evaluated for this project, comparisons were made between the flow frequency distribution performance of the alternative and the target frequency distribution of the combined monthly and weekly average freshwater inflows through S-79 from the watershed and Lake Okeechobee for the nine year period of record (9 years out of the 36 year period of record containing three wet, three dry and three normal years on record).

The resulting flow frequency distributions from the analysis of Alternatives 1, 2, 3B, 3C and 4A were compared against the EST05 target flow frequency distribution for the Caloosahatchee River Estuary to determine the top performing plan. Based on this analysis, all alternatives show an improvement in hydrologic performance. As the size of the project increases the performance also increases. Of the alternatives analyzed, Alternatives 3C and 4A came closest to matching the EST05 flow frequency distribution at S-79 (providing the desired number of months where the flows at S-79 were in the 450 cfs to 2800 cfs flow range). This was expected, as they are the largest projects. These results are reflected in Table 4.

TABLE 4: PERCENT MATCH TO TARGET (EST05) AT S-79 FOR MEAN WEEKLY FLOWS

Alternative	450-800 cfs	800-2800 cfs	%POR in Desired Envelope
Target	75.0%	24.6%	99.6%
2050FWO	23.7%	21.8%	45.5%
Alt2	44.9%	23.1%	67.9%
Alt3B	50.4%	24.4%	74.8%
Alt3C	59.4%	22.9%	82.3%
Alt4A	60.7%	23.1%	83.8%

The future without project conditions (No Action Plan) would result in environmental declines within the Caloosahatchee Estuary area due to flood control and water management actions in the study area. Additionally, since the greater Fort Myers area population has already increased considerably since the CERP was approved in 2000 and is projected to continue to increase, increasing demands for freshwater will be placed on the Caloosahatchee River and its tributaries to meet competing municipal, agricultural, and environmental water supply needs in the basin. The expected result is that undesirable high salinity levels will also continue to recur in the Caloosahatchee Estuary, and those events will likely be greater in severity and duration.

Alternative 3B is recommended for implementation, rather than Alternative 3C, which has been identified as the NER alternative plan. Alternative 3B meets the policy criteria established in USACE guidance for planning in a collaboration environment. This guidance provides that any alternative plan can be selected “if it has, on balance, net beneficial effects after considering all plan effects, beneficial and adverse...” Alternative 3B is clearly of less scope and cost than Alternative 3C, reduces uncertainty and financial risk to the government, and meets the Administration’s policies for high priority outputs. Because Alternative 3B is an increment of Alternative 3C, this plan also supports adaptive implementation recommendations established by the National Research Council. The study considered various scales of reservoir storage and identified no alternative smaller than 3B which was more economical. For these reasons Alternative 3B is the recommended plan, and no ASA (CW) waiver is required

Key Assumptions: The basic assumption is that water can be captured and stored in the reservoir during the wet season and released to help meet estuary ecosystem needs during the dry season. The project was not specifically formulated for recreation, but a

recreation plan was added to the Selected Alternative Plan. System and project benefits were determined with a large scale sub-regional hydrologic model (MIKESHE).

Recommended Plan: The Recommended Plan, Alternative 3B, consists of a two-cell reservoir surrounded by a perimeter embankment and canals, providing a normal maximum storage capacity of approximately 170,000 ac-ft, and a 1500 cfs pump station, and associated features. The project site totals approximately 10,700 acres. The recommended plan will require approximately 10,480 acres of fee and 20 acres of perpetual channel easement. Approximately 200 additional acres will be required on a temporary basis during project construction for staging areas. Major features of the recommended plan for the Caloosahatchee River (C-43) West Basin Storage Reservoir project include:

- External (dam) embankments varying in height from 32-37 feet above existing grade;
- Soil-Bentonite slurry walls within and beneath the external embankments;
- An internal (dam) embankment separating the two reservoir cells with an approximate height of 31 feet above existing grade ;
- An inflow pump station consisting of diesel-powered pumps with a total pumping capacity of 1,500 cfs;
- A perimeter canal;
- A perimeter canal pump station consisting of electric-powered pumps with a total pumping capacity of 195 cfs;
- Numerous spillways, culverts, perimeter canal structures, an internal cell balancing structure, and outlet structures;

The Recommended Plan, Alternative 3B, will: 1) reduce harmful discharges to the Caloosahatchee Estuary by capturing a portion of high flow releases from Lake Okeechobee and basin runoff from the lower West Caloosahatchee River Basin during the wet season, 2) store the water till needed in a reservoir and 3) discharge stored water to supplement river flows over S-79 to Caloosahatchee Estuary during the dry season, thereby reducing stress on the natural system due to low flows which allowed increased salinity levels to occur in the estuary.

Systems/Watershed Context: The proposed Caloosahatchee River (C-43) West Basin Storage Reservoir project is one of 68 different components that comprise the CERP. The selected plan for the Caloosahatchee River (C-43) West Basin Storage Reservoir project is consistent with the 1999 Restudy Report project components originally formulated for in the CERP and was formulated to optimize system-wide benefits in furtherance of CERP goals and objectives. The evaluation of project effects demonstrated that the Caloosahatchee River (C-43) West Basin Storage Reservoir project will benefit the Caloosahatchee River watershed, including the Caloosahatchee River Estuary.

The sponsor, the South Florida Water Management District is a cooperating agency under the National Environmental Policy Act. An official letter inviting USFWS, USEPA,

ENP, FFWCC and FDEP to be cooperating agencies (as defined by NEPA) was sent in September 2006. These agencies were chosen because of their special expertise in the area. The selection of these agencies to be invited as cooperating agencies does not exclude any other agencies from full participation in the project.

None of these agencies agreed to be a cooperating agency. The USFWS sent a letter dated October 6, 2006 declining the offer. The reason given for declining the offer was "The Service must balance its role as a study team member with its statutory responsibilities to independently review this proposed action under the Fish and Wildlife Coordination Act and Endangered Species Act."

None of the other agencies replied.

Environmental Operating Principles: The proposed project is consistent with the USACE "Environmental Operating Principles" particularly with respect to the south Florida ecosystem-wide approach for plan formulation, evaluation, and selection, and a holistic consideration of water resources needs and solutions to water resources problems in the study area. The recommended plan incorporates monitoring, and CERP has an adaptive assessment and management program in place to ensure that projects, including the Caloosahatchee River (C-43) West Basin Storage Reservoir project, are achieving intended purposes. Project implementation, including plan formulation, involved collaborative interactions with the multiple agencies represented on the Project Delivery Team (PDT). Study area stakeholder groups and members of the general public have had multiple opportunities to receive information on the project and to provide comments and recommendations via public meetings, internet postings, teleconferences, and interagency PDT meetings.

Independent Technical Review (ITR)/External Peer Review: An external independent technical review (ITR) was performed by a multi-disciplinary team consisting of technical staff from the USACE Wilmington, Savannah, Walla Walla and Mobile Districts. ITR team membership and the scope of ITR work were coordinated with the USACE Ecosystem Restoration Planning Center of Expertise. Significant ITR comments raised focused on:

- Environmental benefits quantification methodology and spatial extent;
- Use of a hydrodynamic modeling tool to evaluate salinity changes in the estuary;
- Project real estate requirements; and,
- Development of project cost estimates.

In general, the ITR Team found that the information presented in the report describing the plan formulation and evaluation supported the selection of the recommended plan. All concerns resulting from ITR of the Final PIR have been resolved. In addition to the ITR certification, documentation of previous CERP External Peer Reviews and their application to the Caloosahatchee River (C-43) West Basin Storage Reservoir Project was completed as an attachment to the project's Peer Review Plan. The Peer Review Plan was submitted to the vertical team for review and approval.

EXPECTED PROJECT PERFORMANCE

Project Costs: Table 6 includes a breakdown of the cost of the Caloosahatchee River (C-43) West Basin Storage Reservoir Project including construction, lands and damages, pre-construction engineering and design costs, recreation and interest during construction. Cost is rounded to the nearest \$10,000 and is at October 2006 price levels.

TABLE 5: CALOOSAHATCHEE RIVER (C-43) WEST BASIN STORAGE RESERVOIR COSTS OCTOBER 2006 PRICE LEVELS

(INITIAL COSTS ROUNDED TO THE NEAREST \$10,000)

Ecosystem Restoration Elements	TOTALS
<u>Construction</u>	
Demolition	\$70,000
Mobilization/Demobilization	\$11,240,000
Relocations	\$1,050,000
Site Work	\$4,040,000
Reservoir (embankments, slurry wall, drains, soil cement, perimeter canal, spillways, structures, etc.)	\$250,660,000
Pumping Plants	\$72,820,000
Main Outlet Structures	\$8,250,000
Townsend Canal Improvements	\$2,000,000
Manatee Protection Structure	\$2,520,000
Recreation	\$2,520,000
Sub-Total Construction Cost	\$355,170,000
<u>Non-Construction</u>	
Lands and Damages	\$80,420,000
Planning, Engineering, and Design	\$44,650,000
Construction Management	\$27,000,000
Sub-Total Non-Construction Cost	\$152,070,000
TOTAL INITIAL COST	\$507,240,000

The estimated average annual cost for operations and maintenance is \$3,000,000 (rounded to the nearest \$10,000).

EQUIVALENT ANNUAL COSTS AND BENEFITS

**TABLE 6
ECONOMIC COSTS AND BENEFITS OF RECOMMENDED PLAN**

Item	Restoration		Recreation		Total Costs	
	Allocated Costs	Benefits	Allocated Costs	Benefits	Allocated Costs	Benefits
Investment Cost (\$)						
First Cost	507,237,000		2,972,000		510,209,000	
Interest During Construction ³	52,900,000		72,000		52,972,000	
Total (4.875%)	560,137,000		3,044,000		563,181,000	
Total (7%)	584,423,000		3,075,000		587,498,000	
Annual Cost (\$)						
Interest and Amortization ¹	321,000,000		174,000		321,174,000	
OMRR&R ²	3,000,000		25,000		3,025,000	
Monitoring Cost						
Subtotal (4.875%)	324,000,000		199,000		324,199,000	
Subtotal (7.0%)	N/A		256,000		256,000	
Annual Benefits						
Non-monetary						
Ecological Function 4 (Avg. Annual Habitat Unit for CR(C-43)WBSR)		12809				12809
Monetary (Recreation)\$⁵				359,000		359,000
Net Annual Recreation Benefits				160,000		160,000
Recreation Benefit-Cost Ratio				1.8 to 1		1.8 to 1
Recreation Benefit-Cost Ratio (at 7%) ⁶				0.7 to 1		0.7 to 1

¹Based on October 2006 price levels, 4.875 percent rate of interest, and a 40-year period of analysis.

² Operation, Maintenance, Repair, Replacement, and Rehabilitation

³ Project Based on 4 year construction schedule

⁴ Ecological Function – term used to measure the net average annual habitat units in Caloosahatchee River (C-43) West Basin Storage Reservoir project. The attributes chosen would best show the ecological response within this habitat.

⁵ Recreation Benefits reflect 2007 unit day values from EGM, 07-03

⁶ Per Executive Order 12893

Cost Sharing: The total first cost of the project, including the value of Lands, Easements, Right-of-ways, Relocations and Disposal (LERRDs) and pre-construction engineering and design costs will be shared equally between the Federal government and the non-Federal sponsor and is described in Table 7. The non-Federal sponsor will provide cash or manage a portion of construction as necessary to meet its 50 percent share of the total first cost of the project to be balanced according to Section 601 of WRDA 2000 to maintain a 50/50 cost share as measured cumulatively for the entire CERP Program. Section 601 of the WRDA of 2000 and USACE policy requires that the non-Federal sponsor must obtain and provide certification of LERRDs necessary for project implementation.

TABLE 7: COST APPORTIONMENT TABLE FOR THE CALOOSAHATCHEE RIVER (C-43) WEST BASIN STORAGE RESERVOIR (OCTOBER 2006 PRICE LEVEL ROUNDED TO THE NEAREST \$10,000)

Item	Non-Federal Cost	Federal Cost	Total Cost
PED	\$ 22,330,000	\$ 22,330,000	\$ 44,650,000
Lands & Damages*	\$ 52,490,000	\$ 27,930,000	\$ 80,420,000
Construction Management**	\$ 13,500,000	\$ 13,500,000	\$ 27,000,000
Construction Total	\$165,300,000	\$189,860,000	\$355,170,000
Total	\$253,620,000	\$ 253,620,000	\$507,240,000

Note: Total costs shown are consistent with costs shown through out the report. Due to rounding to the nearest \$10,000, numbers may not total correctly.

*Federal costs include Federal funds provided via Grant Agreement entitled Everglades Watershed Restoration-Grant Number LWCF-1 and future estimated administrative expenses of the Federal Government associated with crediting and project implementation.

**Non-Federal Cost for construction total is less than Federal Cost since consideration is given for cost already provided by the Non-Federal Sponsor.

Section 601 of the WRDA of 2000 and USACE policy requires that the non-Federal sponsor will provide LERRDs. The total first cost of the restoration features of the project, including the value of LERRDs and pre-construction engineering and design costs, will be shared equally between the Federal government and the non-Federal sponsor. The non-Federal sponsor will provide cash or manage a portion of construction as necessary to meet its 50 percent share of the total first cost of the project to be balanced according to Section 601 of WRDA 2000.

Project Implementation: The South Florida Water Management District (SFWMD) is the non-Federal sponsor for this project. The SFWMD is interested in expediting this initially authorized project and has advanced completion of the detailed design activities, including plans and specifications, in accordance with the current schedule for the Acceler8 program. Initial detailed design activities were scheduled to be completed in December 2007. The Sponsor initiation of construction of the project is scheduled for February 2008 with completion anticipated by December 2011. The SFWMD is currently funding the design and construction features in advance of Secretary of the Army's approval and Congressional appropriation of funds in anticipation of receiving credit for work performed toward their cost share on a subsequent CERP project. All detailed design and construction will be coordinated with the USACE. Crediting for work performed by the SFWMD will be subject to project authorization and adherence to USACE design standards and regulations. LERRDs will be the responsibility of the SFWMD

The PIR recommends that the non-Federal sponsor receive credit for planning, engineering, design and construction performed by it, or under contract by it, towards the implementation of the Caloosahatchee River (C-43) West Basin Storage Reservoir Project before execution of the project cooperation agreement if the Secretary of the Army determines that the work performed was for a reasonable cost, necessary and

integral to the project, and was implemented to appropriate design and construction standards.

The project will make additional water available during the dry season that is beneficial for the protection of fish and wildlife in Caloosahatchee Estuary that will be reserved or allocated for that purpose by the State of Florida in accordance with WRDA 2000.

The USACE is proceeding with two separate and independent but related actions: the planning evaluation of the Federal project and the regulatory evaluation of the SFWMD's application for a Section 404 (Clean Water Act) permit for the proposed project, both of which are described in this Final PIR/EIS. The Caloosahatchee River (C-43) West Reservoir (Acceler8 project) is consistent with the plan recommend in this document. The purposes of the Federal recommended plan identified in this Final PIR and the Acceler8 project are consistent. Therefore, it is anticipated that the Final PIR/EIS will also serve as the basis for the Regulatory Division's NEPA evaluation of the SFWMD's proposed Acceler8 project.

Operation, Maintenance, Repair, Rehabilitation, and Replacement (OMRR&R): Annual operations and maintenance (O&M) costs were estimated for the construction features of the recommended plan for Caloosahatchee River (C-43) West Basin Storage Reservoir Project. The O&M costs were determined by extrapolation from operational costs histories supplied by the SFWMD using industry standard cost data and data from past and projected cost trends. O&M activities include such items as mowing, erosion control, pump maintenance, levee road maintenance, and building maintenance. The annual Operation, Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R) costs are estimated to be \$3,000,000 (rounded to the nearest \$10,000) annually. Recreation OMRR&R costs have been estimated at approximately \$25,000 annually. The non-Federal sponsor is responsible for 100 percent of the OMRR&R recreation costs.

Key Social and Economic Factors: The design of the selected plan minimizes impacts to existing wetlands, estuary, and fish and wildlife habitat, affected by project features and includes environmentally responsible design features. No separable fish and wildlife habitat or flood damage mitigation is required. Permanent habitat losses due to wetland and upland conversion within the footprint of project features would be offset by the gain in habitat quality in the Everglades and within the C-43 (Caloosahatchee River) West Reservoir feature. There will be no adverse impacts on minority or disadvantaged populations associated with project implementation.

Stakeholder Perspectives and Differences: Stakeholders such as non-governmental organizations and the public were given the opportunity to attend and provide their views at project delivery team (PDT), Regional PDT meetings, public meetings and scoping meetings. Stakeholders and interested parties have also been provided the opportunity to voice their comments, concerns, and issues during the Public Comment periods at previous PDT and all RPDT meetings. Construction and operation of an above-ground reservoir was identified in the Restudy as a vital element to the restoration of the Caloosahatchee Estuary. Most stakeholders in the south Florida region are strongly

supportive of this project implementation and project lands have been acquired by the non-Federal sponsor via the 1996 Federal Farm Bill for this specific purpose.