REPORT SUMMARY
Central and Southern Florida Project
Comprehensive Everglades Restoration Plan
C-111 Spreader Canal Western Project

Study Authority: The Comprehensive Everglades Restoration Plan (CERP) was approved in Section 601 of the Water Resources Development Act (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 C-111 Spreader Canal project that was identified in the CERP was initially authorized in the WRDA 2000, Sections 601(b)(2)(C)(x) as written below:

> *(2) SPECIFIC AUTHORIZATIONS. –*
> *(C) INITIAL PROJECTS. – The following projects are authorized for implementation, after review and approval by the Secretary, subject to the conditions stated in subparagraph (D), at a total cost of $1,100,918,000, with an estimated Federal cost of $550,459,000 and an estimated non-Federal cost of $550,459,000:*
> *(x) C-111 Spreader Canal, at a total cost of $94,035,000, with an estimated cost of $47,017,500 and an estimated non-Federal cost of $47,017,500.*

The project was subsequently split into two separate but related projects, the first that is referenced in this Summary Report being the C-111 Spreader Canal Western project. The project as now proposed would exceed the maximum project cost limitations that were previously authorized in the above paragraph. Additionally, the scope of the proposed project has been expanded to address ecological problems in Everglades

National Park, concentrating mainly on the ecological feature Taylor Slough and its downstream estuaries in Florida Bay. Due to these changes in cost, scope, and intended restoration area, the proposed C-111 Spreader Canal Western project will be recommended for authorization under the overall CERP authority in the WRDA 2000, Section 601(d)(1-2):

> *(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).*

The Project Implementation Report (PIR) for the C-111 Spreader Canal Western project contains all necessary and pertinent information required by the WRDA 2000 for the CERP. The PIR requirements from the WRDA 2000, Section 601(h)(4) are listed below:

> *(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 State Expedited Construction Program. The C-111 Spreader Canal Western project is one of the projects included in the State Expedited Construction Program. To ensure appropriate and timely coordination of Federal activities necessary to support the State Expedited Construction Program, the Administration, through the Department of the Army and the Department of Interior, has 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 C-111 Spreader Canal Western project development process and intends to begin construction on the proposed project in December 2009.

Study Purpose and Scope: In accordance with the WRDA 2000 and the Programmatic Regulations for the CERP (Section 385.26), a PIR is required to be completed prior to implementing any component of the CERP. The C-111 Spreader Canal Western project PIR contains the initial design necessary to prepare plans and specifications for construction. The PIR includes a restoration plan that will provide low risk, substantial ecological gains, and also provide opportunities to optimize features of the next PIR through the testing of project elements. The second PIR, the C-111 Spreader Canal Eastern project, will be a more comprehensive study that is intended to provide a complete solution to addressing the broader needs of the entire basin. Additionally, a Design Test is currently being implemented that should eliminate risk and uncertainty associated with utilization of Spreader Canal technology in the Eastern project.

The C-111 Spreader Canal Western project PIR is fully compatible and consistent with the CERP, and contains documentation of 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, that were conducted during the planning phase are documented and included in this PIR. This project, if constructed, will have two main structural components focused on reducing seepage out of Taylor Slough in Everglades National Park. The main structural components consist of two above-ground Detention Areas and associated pump stations that will be located along the eastern edge of Everglades National Park. Five additional project features that are proposed in the PIR will be focused on raising wetland stages in the eastern portion of the project site.

Project Location/Congressional District: The project footprint covers approximately over 252,000 acres located in Miami-Dade County in southeastern Florida. The project is area is bounded by Biscayne Bay to the east, Florida Bay to the south, to the north by the cities of Homestead and Florida City, and to the west by Everglades National Park. From

the west to the east, the natural areas of the proposed project site are identified as Everglades National Park, the Southern Glades, the Model Lands, and Biscayne Bay, with Florida Bay and its estuaries along the southern portion of these areas. Approximately 12,146 acres of land will be required in fee for project purposes, of which 9,688 acres is already owned by the SFWMD. The proposed project is located in Florida Congressional District number 25. The project location is shown in **Figure 1**.

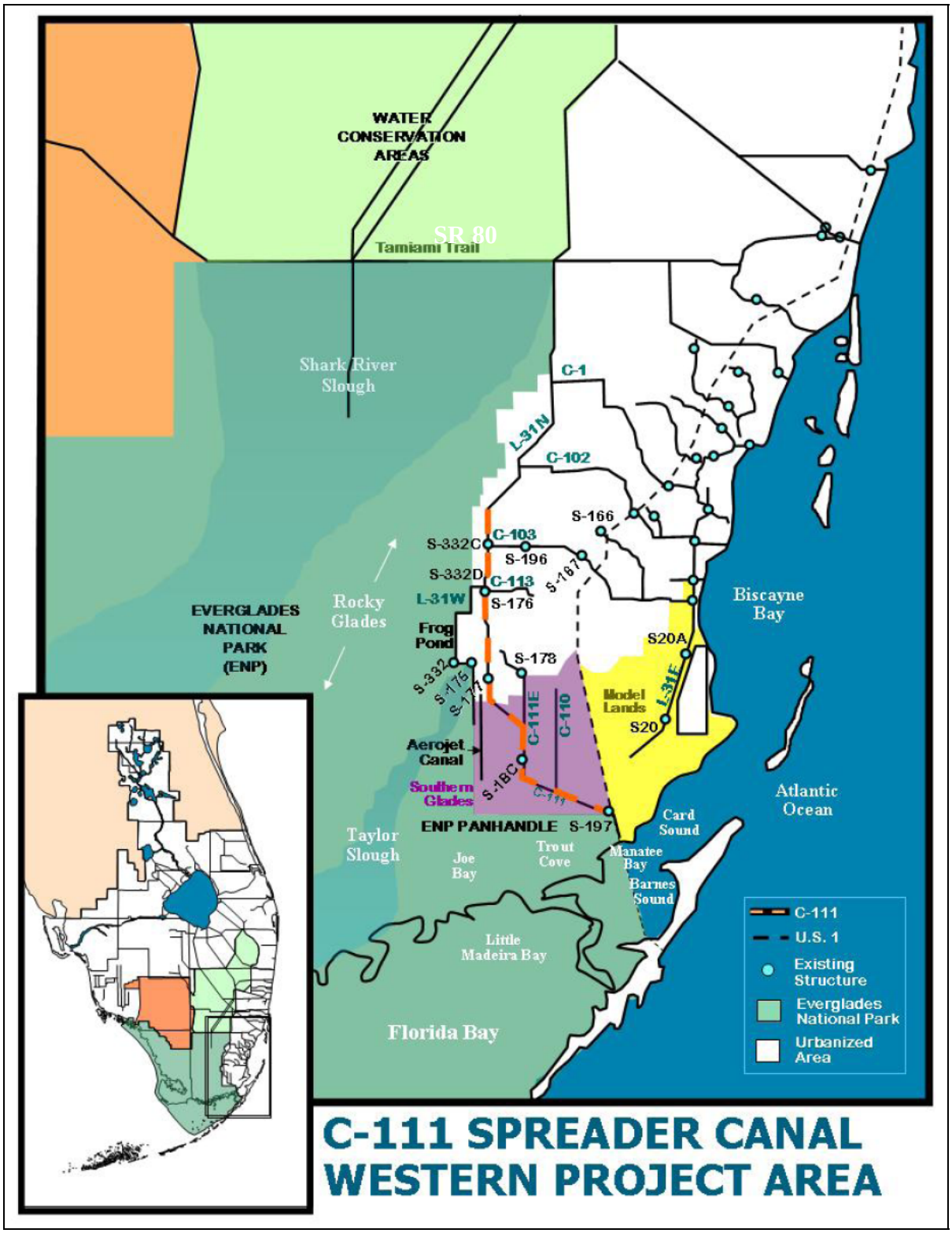

FIGURE 1: PROJECT AREA MAP

Prior Reports and Existing Water Projects: Prior projects in the study area include the 1948 Central and South Florida project, the 1962 Flood Control Act, and the C-111 Project (1994 C-1111 General Re-Evaluation Report). The C-111 Spreader Canal Western project will be minimally influenced by the Modified Water Deliveries to Everglades National Park project by receiving additional water, and will not have any associated effects with the Biscayne Bay Coastal Wetlands project that is located in close vicinity.

Federal Interest: The C-111 Spreader Canal Western project, as presented in this PIR, is one of two projects that are aimed at achieving restoration goals in the proposed project area. The proposed project would encompass a greater extent of restoration that originally envisioned under the original WRDA 2000 authorization, and provides a more comprehensive proposal for environmental restoration in the project area. With the passage of WRDA 2000, the CERP, a national priority, 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". The C-111 Spreader Canal Western project, as part of the CERP, will provide substantial environmental restoration in the study area, contributing immense improvements to the hydrology and habitat of Everglades National Park. 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 C-111 Spreader Canal Western project was also identified as the National Ecosystem Restoration plan. The Recommended Plan is both cost effective and a best buy, 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), project implementation will generate an average annual increase of approximately 5,003 habitat units. The average annual cost per average annual habitat unit for the system formulation evaluation is approximately $1,783. The area within the Caloosahatchee Estuary system beneficially affected by the project would encompass approximately 252,000 acres of waters of the United States, including navigable waters and wetlands. The cost per acre of affected habitat (based on the total area of potential benefit) for this project is $569.

STUDY OBJECTIVES

Problems and Opportunities: The ecological problems in the C-111 Spreader Canal Western project study area have been well documented, and are mainly due to man-induced conversion of land and the disruption of the natural hydrologic regime. Massive drainage features that were intended for flood control in the area have severely altered the landscape, creating undesirable conditions for many of the native species of flora and fauna. These ecological problems will be exacerbated in the future if left unchecked, and will continue to result in:

- The loss of the areal extent of freshwater wetlands;
- Reduction of foraging opportunities for natural fauna during seasonal drydowns;
- Alteration of historical flows via diversion through man-made canals;
- Conversion of freshwater, vegetative communities to salinity-dependent species as a result of saltwater intrusion ;
- Creation of a non-natural "white zone";
- Colonization of natural areas by invasive, exotic species;
- Reduction of surface and groundwater flows to estuaries;
- Increase of hypersaline estuarine and nearshore areas leading to negative effects on nursery and juvenile fish habitat; and
- Degradation of water-quality from non-point source discharges.

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

- Discourage the colonization of invasive exotic species by restoring hydroperiods to more natural conditions
- Reduce water diversions by eliminating or retarding existing drainage features
- Increase the foraging habitat of native species by reducing seasonal dry-outs
- Provide a more even distribution of freshwater flows into the estuaries
- Increase the spatial extent of freshwater wetlands

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, impact federally-listed Endangered Species, and cause unintended consequences that would impede further opportunities for restoration in the area. The project delivery team also took into consideration resource and legal and policy constraints in developing objectives and constraints for this project.

- Restore the quantity, timing, and distribution of water delivered to Florida Bay via Taylor Slough to levels nearest as possible to the pre-drainage model runs;
- Improve hydroperiods and hydropatterns in the Southern Glades and Model Lands. The hydroperiods will be improved to optimal levels to support historical vegetation patterns nearest as possible to the pre-drainage model runs; Hydropatterns will be restored to historical sloughs and associated tributaries.
- Return coastal zone salinities in western Florida Bay to levels as close as possible to pre-drainage scenario model runs by restoring upstream water levels in eastern Everglades National Park.

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

- Maintain existing (December 2000) levels of flood protection in the project area;
- Avoid impacts to the federally-listed endangered species Cape Sable seaside sparrow.
- Maintain operational flexibility for distribution of limited water resources and implementation of the Eastern PIR in accordance with IAR principles.

ALTERNATIVES

Plan Formulation Rationale: The plan formulation efforts used the Restudy as a starting point for developing management measures and the subsequent Initial Array of Alternatives. The Initial Array, including the "No Action" alternative, were then modeled and screened, leading to the formation of a Final Array of Alternatives.

The Final Array was then evaluated by utilizing a Cost Effectiveness/Incremental Cost Analysis that was based on average annual habitat unit values compared to costs. Further evaluation of the Final Array was conducted by comparing alternative consistency with objectives and constraints, the four Principles and Guidelines accounts, and effects on the environment. After evaluation and comparison, a Recommended Plan was selected the proposed project.

Evaluations of the final array of alternatives were conducted on a System-Formulation basis in the context of the rest of CERP. A separate Next-Added Increment (NAI) evaluation was not performed for this proposed project as the NAI would be equal to the System-Formulation evaluation due to the location at the terminus of the Everglades system and lack of interaction with other CERP components.

Management Measures and Alternative Plans: Management measures that would serve as the basis for alternative composition were formulated by the PDT. Basic construction features such as canals, and plugs were coalesced to form six management measures. The team determined that all six measures were feasible and would be included in some magnitude within the initial array of alternative plans. The six management measures were then used as stand-alone alternatives or combined into different configurations and settings across the proposed project area to create larger alternatives. The final management measures formulated for the initial array of alternatives are listed as follows

- Water Quality Treatment–This measure is further subdivided into three separate measures: STAs, restoration of existing sloughs to filter water, and best management practices (BMP). STAs would be constructed in areas that would receive high volumes of canal flow. Water would be retained for lengths of time sufficient to eliminate toxins and pollutants. Water would then be released back into canals for water diversion and distribution. Most

STAs would require the construction of a seepage management canal to prevent undesirable flooding that may occur.

- Water Detention Areas–Water detention areas are the foundation of a number of alternatives and would be constructed in order to retain water and create a hydraulic ridge. The detention areas would consist of above-ground impoundments surrounded by levees. Water would be pumped into the detention area and then would infiltrate into the ground. The increased groundwater filtration in the detention areas would raise the water table higher inside the detention area than in areas outside of the detention area, forming a hydraulic ridge, or a "mound" of groundwater that would be similar to building a hill out of water. By establishing the detention area between a drainage feature (canal) and an area that is being drained (wetland), the negative gradient from the drainage feature is eliminated, and the wetland is no longer drained.
- Elimination or retarding of drainage and flow barriers–Only prevalent features such as the elimination of the lower C-111 Canal and filling of the Aerojet Canal were actually termed management measures. Both complete backfilling and the plugging of drainage canals were included as management measures. For the construction of a plug, earthen material is deposited into a canal at a pre-determined width and height to adequately block the flow of water. A plug, which typically costs approximately $55,000, can be as effective as a complete backfill at less cost if the hydrogeology of the area is conducive.
- Land Conservation–Land conservation, although not active restoration, would ensure that areas were not developed and would serve as a buffer to existing natural areas.
- Operations–Changes in operations or triggers in pump stations or structures respectively would be part of every alternative. An operational alternative, comprised totally of this measure, was formulated to meet programmatic requirements.
- Spreader Canal System–Spreader canal systems were included in most of the alternatives in the initial array. Most spreader canal systems consisted of a pump station along an existing, major conveyance canal. The pump stations would discharge water into newly-constructed spreader canals, dispersing flows across large swaths of wetlands for rehydration.

A total of 22 Alternatives were developed for the Initial Array. Each alternative was then modeled and compared for performance. During this comparison, stakeholders, including the Department of the Interior, noted that the scope of individual Alternatives as well as the proposed project in whole would not be sufficient for the environmental restoration of Florida Bay. Additionally, substantial Decision Critical Uncertainties existed that were associated with the design and implementation of a Spreader Canal as well as other intended restoration features. These Uncertainties would have potentially devastating effects on private lands and the environment if realized in project implementation.

As a result, the proposed project was then split into two separate but inter-related projects, the C-111 Spreader Canal Western project and the C-111 Spreader Canal Eastern project. By splitting the project, the Team was able to eliminate Uncertainties in the first project, the Western project, while also concentrating on immediate ecological benefits to the environment. Uncertain project elements would be tested before recommendation in the future Eastern project, therefore conforming to Adaptive Restoration recommendations by the National Research Council. Also, the scope of the proposed project was revised to include areas to the west that would serve to provide restoration in Everglades National Park, and, in turn, Florida Bay.

After the project was split and the scopes were determined, new objectives were formulated specifically for the Western PIR. Six Alternatives were then formulated to form an Initial Array. Seeing opportunity for greater restoration, the Team proposed additional, identical features that would be added to each of the six alternatives in the Initial Array. As such, six additional alternatives were added to the Initial array for a total of twelve, with the original six Alternatives deemed the "C" series, and the second six Alternatives the "D" series. The alternatives were then modeled, and habitat units were calculated based on performance. After analysis, it was apparent that incremental benefits from the "D" series alternatives, relative to the corresponding "C" series alternatives, would exceed the added costs. As a result, the "C" series were screened from further consideration, with one alternative, 1C, retained as the least cost alternative. Additionally, Alternatives 4D and 5D were screened from further consideration due to unimplementability and inability to meet the primary project objectives respectively. The remaining alternatives then formed the Final Array:

TABLE 1: SUMMARY OF FINAL ARRAY OF ALTERNATIVES

No-Action	Future Without Project Condition
Alternative 1C	Includes FPDA approximately 530 acres with maximum depth of 3 feet, pump for FPDA intercepts available water.
Alternative 1D	Includes FPDA approximately 530 acres with maximum depth of 3 feet, pump for FPDA intercepts available water, plus: one new operable structure in the lower C-111, incremental operational changes at S-18C, one plug at S-20A, operational changes at S-20, and 10 plugs located in the C-110 Canal.
Alternative 2DS	Includes FPDA approximately 530 acres with maximum depth of 3 feet, pump for FPDA intercepts available water, gravity structure upstream of S-177 to discharge into approximately half of the Aerojet Canal, plus: one new operable structure in the lower C-111, incremental operational changes at S-18C, one plug at S-20A, operational changes at S-20, and 10 plugs located in the C-110 Canal
Alternative 2DL	Includes FPDA approximately 530 acres with maximum depth of 3 feet, pump for FPDA intercepts available water, gravity structure upstream of S-177 to discharge into the entire length of the Aerojet Canal, plus: one new operable structure in the lower C-111, incremental operational changes at S-18C, one plug at S-20A, operational changes at S-20, and 10 plugs located in the C-110 Canal
Alternative 3D	Includes FPDA approximately 530 acres with maximum depth of 3 feet, pump for FPDA intercepts available water, pump upstream of S-177 to discharge into Aerojet Reservoir, plus: one new operable structure in the lower C-111, incremental operational changes at S-18C, one plug at S-20A, operational changes at S-20, and 10 plugs located in the C-110 Canal.
Alternative 6D	Construct seepage barrier from northern portion of L-31W (just west of S-332D) south along FPDA to the southern end of Aerojet Canal, plus: one new operable structure in the lower C-111, incremental operational changes at S-18C, one plug at S-20A, operational changes at S-20, and 10 plugs located in the C-110 Canal.

The next step was to evaluate the final array of alternatives using ecological output measured in habitat units (HUs) and alternative 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 2**).

TABLE-2: RESULTS OF COST EFFECTIVENESS / INCREMENTAL COST ANALYSIS

Alternative	Annual Cost	Annual HU Lift	Cost Effective	Best Buy
Alternative 1C	$5,812,000	253	Yes	No
Alternative 1D	$6,793,000	881	Yes	No
Alternative 2DL	$7,373,000	3,556	Yes	No
Alternative 2DS	$7,761,000	5,003	Yes	Yes
Alternative 3D	$8,301,000	2,067	No	No
Alternative 6D	$19,404,000	9,108	Yes	Yes

Comparison of Alternatives: The Final Array was then compared mainly using the economic evaluation. In the comparison, three alternatives were eliminated from further consideration due Alternatives 1C and 1D were eliminated as these two alternatives, although cost effective, were not considered a Best Buy nor would they adequately meet the project objectives. Alternative 3D, cost effective but not a Best Buy, was also rejected as this plan was not efficient in regards to available water utilization and would also require a construction footprint in Critical Habitat for the Federally-endangered Cape Sable Seaside Sparrow. Three alternatives remained for comparison:

- No-Action alternative
- Alternative 2DS
- Alternative 6D

The three remaining alternatives were compared using the following criteria: ability to meet the project goals and constraints, risk and uncertainty, effects on the environment, Incremental Adaptive Restoration principles, Principles and Guidelines Evaluation Criteria and Accounts, and overall costs.

After a thorough comparison, Alternative 2DS was selected as the Recommended Plan for the Western PIR. Alternative 2DS is the NER plan and is both cost effective and a best buys. This Alternative is acceptable to state and local agencies as well as the public, and is also compatible with all applicable law and policy. It would do the second best job of meeting all of the project objectives when compared to the other plans in the Final Array of Alternatives. Alternative 2DS would provide for the restoration of the quantity, timing, and distribution of water delivered to Florida Bay via Taylor Slough, resulting in a return of the ecosystem to more historic conditions. Hydropatterns and hydroperiods in the Southern Glades and Model Land would be improved, resulting in the restoration of vegetation patterns in historical sloughs and associated tributaries. Additionally, salinity conditions would be improved in Little Madeira Bay and Joe Bay. Both Little Madeira

Bay and Joe Bay are main receiving waters of flows from Taylor Slough into Florida Bay.

Alternative 6D, although cost effective and a best buy, would not reasonably maximize NER benefits relative to costs. Additionally, Alternative 6D would violate two constraints, and would present a large degree of risk in regards to future restoration projects in the area.

Recommended Plan: The Recommended Plan, Alternative 2DS, will consist of two above-ground detention areas, the Frog Pond Detention Area and Aerojet Canal, which would serve to create a continuous hydraulic ridge along the eastern boundary of Everglades National Park. Five additional features would be included that would raise water levels in the eastern portion of the project area, restoring hydropatterns and hydroperiods in these wetlands.

Of the 12,146 acres of land in the project area, approximately 11,565 acres of land will be impacted by the Recommended Plan. Approximately 9,688 acres will be provided in fee and have already been purchased by the SFWMD. The remainder of the lands are included under the C&SF project, will be provided in supplemental agreement with the State of Florida and Miami-Dade County or by perpetual flowage/conservation easements by the Florida Power and Light Company. Approximately 776 acres of private lands will be acquired and provided in fee by the SFWMD. The major features of the recommended plan for the C-111 Spreader Canal Western project include:

	Plan Features
C-111 SC Western Project: Recommended Plan, Alternative 2DS	1. 590 Acre Frog Pond Detention Area (FPDA) with a maximum pool depth of 3 feet – includes pump to intercept available water
	2. Pump Upstream of S-177 to discharge into the Aerojet Canal and Connector canal between the pump and Aerojet Canal
	3. One new operable structure in the lower C-111 Canal
	4. Incremental operational changes at S-18C
	5. One plug at S-20A
	6. Operational changes at S-20
	7. 10 plugs in the C-110 Canal
	8. Recreational Components
	9. Project Monitoring Plan
	10. Draft Project Operating Manual
	11. OMRR&R

Systems/Watershed Context: The Recommended Plan for the C-111 Spreader Canal Western project was formulated to maximize system-wide benefits and is consistent with the goals and objectives of the CERP. The evaluation of project effects demonstrated

that the proposed project will benefit the Everglades ecosystem, including Florida Bay and its associated estuaries.

The sponsor, the South Florida Water Management District, is a cooperating agency under the National Environmental Policy Act (NEPA). Additionally, several agencies were requested to be cooperating agencies because of their special expertise in the subject area. An official letter inviting USFWS, U.S. Environmental Protection Agency, National Park Service, Florida Fish and Wildlife Conservation Commission, Miami-Dade County Department of Environmental Resources Management, and Florida Department of Environmental Protection to be cooperating agencies (as defined by NEPA) was sent in September 2006. None of these agencies agreed to be a cooperating agency. Although the USFWS sent a letter declining the invitation, no replies were received from the other agencies as a result of the requests. The selection of these agencies to be invited as cooperating agencies did not exclude any other agencies from full participation in the project.

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. In addition to the project-specific monitoring plan that was developed for the C-111 Spreader Canal Western project, an adaptive assessment and management program has already been implemented as part of the CERP to ensure that authorized projects are achieving the 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 were provided multiple opportunities to receive information on the project and also to provide comments and recommendations via a scoping meetings, public meeting, internet postings, teleconferences, and interagency PDT meetings.

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

- Hydrologic modeling and environmental benefits quantification;
- 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.

EXPECTED PROJECT PERFORMANCE

Project Costs: Table 3 includes a breakdown of the cost of the C-111 Spreader Canal Western project, including construction, lands and damages, pre-construction engineering and design costs, recreation and interest during construction. Cost is rounded to the nearest $1,000 and is at FY '10 price levels.

TABLE 3: PROJECT COSTS FOR THE RECOMMENDED PLAN (FY '10 PRICE LEVEL)

(Initial cost rounded to the nearest $1,000)

Construction Item	Cost
Lands & Damages	67,682,000
Elements	
08 Roads, Railroads, and Bridges	244,000
09 Channels & Canals	38,172,000
13 Pumping Plant	17,538,000
15 Floodwall Control Diversion Structure	5,485,000
14 Recreation Facilities	203,000
Sub-Total	**$129,324,000**
Planning, Engineering, and Design (PED)**	19,337,000
Construction Management (E&D, S&A)	7,410,000
Total First Cost	**$156,071,000**
Investment Costs	
Interest During Construction	
--Construction	3,770,000
--Real Estate	6,690,000
Total Investment Cost	**$166,531,000**
Average Annual Costs	
Interest and Amortization of Initial Investment	9,210,000
OMRR&R***	1,680,000
Total Average Annual Costs	**$10,890,000**

* The costs shown above are updated, detailed costs that are not equivalent to the preliminary, planning-level cost estimates utilized for the alternative comparison in Section 5 and the Economic Appendix. Costs for the Project Monitoring Plan were not included in the total project costs in accordance with current cost estimating practices.

** PED costs do not include the sunk PIR costs of $11,239,000

*** O&M Costs include the Vegetation Management Plan costs.

EQUIVALENT ANNUAL COSTS AND BENEFITS

TABLE 4: ECONOMIC COSTS AND BENEFITS OF RECOMMENDED PLAN

Item	Restoration		Recreation		Total Costs	
	Allocated Costs	Benefits	Allocated Costs	Benefits	Allocated Costs	Benefits
Investment Cost ($)						
First Cost	129,13,000		198,000		129,356,000	
Interest During Construction [3]	8,790,000		5,000		8,280,000	
Total (4.875%)						
Total (7%)						
Annual Cost ($)						
Interest and Amortization [1]			11,000		8,956,000	
OMRR&R [2]	1,201,000		25,000		1,226,000	
Monitoring Cost	3,446,665					
Subtotal (4.875%)					324,199,000	
Subtotal (7.0%)	N/A				256,000	
Annual Benefits						
Non-monetary						
Ecological Function 4 (Avg. Annual Habitat Unit)		5,003				5,003
Monetary (Recreation$)[5]				122,000		$122,000
Net Annual Recreation Benefits				16,425		16,425
Recreation Benefit-Cost Ratio				2.4 to 1		2.4 to 1
Recreation Benefit-Cost Ratio (at 7%) [6]				*** to 1		*** to 1

[1]Based 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 LERRDs and preconstruction engineering and design costs will typically be shared 50/50 by the Federal government and the non-Federal sponsor**.** However, the non-Federal sponsor has expressed its intention to construct all or part of the ecosystem restoration features in the recommended plan under its state expedited program. As such, the non-Federal sponsor would be contributing a share of costs for this project that is greater than 50 percent, and would carry over excess credits to another authorized CERP project to balance the 50-50 cost share across all projects in the CERP in accordance with Section 601 of WRDA-2000.

TABLE 5: COST SHARE TABLE FOR THE C-111 SPREADER CANAL WESTERN PROJECT - RECOMMENDED PLAN

(FY '10 PRICE LEVEL ROUNDED TO THE NEAREST $1,000)

Item	Federal Cost	Non-Federal Cost	Total
Ecosystem Restoration (ER)			
PED[1]	$ 17,786,500	$ 12,789,500	$ 30,576,000
Construction Management	$ 3,705,000	$ 3,705,000	$ 7,410,000
LER&R	$ 623,000	$ 67,059,000	$ 67,682,000
Ecosystem Restoration[2]	$ 61,439,000	$ 0	$ 61,439,000
Subtotal	$ 83,553,500	$ 83,553,500	$ 167,107,000
ER Subtotal	$ 83,553,500	$ 83,553,500	$ 167,107,000
Recreation (ER)			
PED[3]	$ -	$ 34,000	$ 34,000
Recreation	$ 102,000	$ 68,000	$ 170,000
Subtotal	$ 102,000	$ 102,000	$ 203,000
Recreation Subtotal	$ 102,000	$ 102,000	$ 203,000
Total Project Cost	$ 83,655,000	$ 83,655,000	$ 167,310,000
Total Project Level Monitoring Costs	$ 1,561,000	$ 1,561,000	$ 3,122,000
Total ESA Monitoring Costs	$ 1,149,000	$ 1,149,000	$ 2,298,000
Associated Annual Costs			
OMRR&R (non-recreation)	$ 601,000	$ 601,000	$ 1,201,000
OMRR&R (vegetation management)[4]	$ 1,552,000	$ 1,552,000	$ 3,104,000
OMRR&R (vegetation management)[4]	$ 175,000	$ 175,000	$ 350,000
OMRR&R (recreation)	$ -	$ 25,000	$ 25,000

[1]PED estimates for non-recreation components are derived directly from the cost estimating appendix. PED of the Federal Government includes development of the PIR.

[2]The ecosystem restoration construction cost and PED cost are not detailed as being shared equally due to the non-Federal Sponsor's land costs. The Federal shares were changed to bring the total project cost to a 50/50 share basis.

[3]PED is estimated based on 20% of the construction costs and is allocated 100% to the NFS as they are responsible for P&S development.

[4]OMRR&R for vegetation management is separated into two rows due to the annual costs being greater during the first 3 years of OMRR&R. After the first 3 years of OMRR&R for vegetation management the costs of continued vegetation management greatly decreases.

Note: Total costs shown are consistent with costs shown through out the report. Due to rounding to the nearest $1,000, numbers may not total correctly.

Rules which determine how project responsibilities are shared are established in federal law and related implementing policies. Section 601 of WRDA 2000 provides in-kind cost sharing credit to the non-federal sponsor for design and construction, and for the treatment of credit between projects to maintain a 50/50 cost share. The Master

Agreement, Article II.5, requires the cumulative non-Federal credited expenditures and projected contributions to the overall program construction costs to always be equal to 50 percent or greater for the non-Federal Sponsor. For any one CERP project, no reimbursement to the non-Federal Sponsor is allowable if their cost share exceeds 50 percent. However, reimbursement is allowable under the CERP program as a whole after final accounting of the CERP program is complete. The total project first cost is estimated at $156,071,000

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 State's Expedited Construction program. Initial detailed design activities were completed in July 2009. The Sponsor initiation of construction of the project is scheduled for December 2009 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 contains a recommendation 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 C-111 Spreader Canal Western 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 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 State's Expedited Construction Program project is consistent with the plan recommend in this document. The purposes of the Federal recommended plan identified in this Final PIR and the State Expedited Construction Program project are consistent. As such, the Final PIR/EIS served as the basis for the Regulatory Division's NEPA evaluation of the SFWMD's proposed State's Expedited Program 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. 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 $1,655,000 (rounded to the nearest

$1,000) 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 potential impacts to existing wetlands and unique landscape features in the project area, and any permanent loss of habitat function would be offset by the environmental gains provided by the ecosystem restoration features of the Recommended Plan. Regional Economic Development benefits will occur as the result of expenditures of construction dollars in the local economy, providing for employment, output, and employee compensation. There will be no adverse impacts on minorities or disadvantaged populations as a result of the proposed project.

Stakeholder Perspectives and Differences: Stakeholders such as non-governmental organizations and the public were given the opportunity to attend and provide their views at a scoping meeting, numerous project delivery team (PDT) meetings, and a public meeting. Stakeholders and interested parties have also been provided the opportunity to voice their comments, concerns, and issues during the Public Comment period for the Draft PIR. All of the public comment received from the advertisement of the proposed project was both positive and supportive of the restoration efforts and Recommended Plan. Additionally, the non-Federal has proactively acquired nearly all necessary lands for construction of the proposed project, and in turn the project would be implemented more than four years ahead of the previous schedule.