

**Central and Southern Florida Project
Comprehensive Everglades Restoration Plan**

Report to Congress

2015

**U.S. Army Corps of Engineers
U.S. Department of the Interior**

DRAFT

October 21, 2015

AGENCY LETTERS

Section 601 of the *Water Resources Development Act (WRDA)* of 2000 approved the Comprehensive Everglades Restoration Plan (CERP), which is the framework for modifications and operational changes to the Central and Southern Florida Project 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.

Section 601(l) of *WRDA 2000* requires that the Secretaries of the Army and the Interior jointly submit a Report to Congress not less than every five years on the implementation of the plan. This report covers progress made between July 1, 2010 through June 30, 2015.

In accordance with Section 601(l)(1) of *WRDA 2000*, this report includes:

“...the determination of each Secretary, and the Administrator of the Environmental Protection Agency, concerning the benefits to the natural system and the human environment achieved as of the date of the report and whether the completed projects of the Plan are being operated in a manner that is consistent with the requirements of subsection (h)...”

Following are these determinations and a letter of support signed by the Florida Department of Environmental Protection (FDEP) and the South Florida Water Management District (SFWMD).

NOTE: THE LETTERS OF DETERMINATION WILL BE ADDED ONCE FINALIZED BY THE AGENCIES.

EXECUTIVE SUMMARY

America's Everglades: an area twice the size of New Jersey; a multifaceted mixture of dense forests and open prairies, croplands and shady swamps, rural expanses and dynamic cities; the source of water for 8.1 million residents. Unique and threatened, the Everglades is the focus of a restoration partnership between the federal government and the State of Florida.

Just a century ago, massive quantities of water flowed through the Kissimmee River floodplain into Lake Okeechobee. Then, spreading into a wide shallow sheet of water, it flowed south through vast marshes to Florida Bay. Coined the "River of Grass" for the sawgrass that flourished in its center, the Everglades is actually a mosaic of freshwater ponds, prairies, and forested uplands that supports rich plant and wildlife communities. Renowned for its wading birds and diverse wildlife, the Everglades is home to dozens of federally threatened and endangered species. Over time, the Everglades has diminished in size by about half; but it remains, even in its diminished state, one of the largest intact wetland ecosystems in the world. Its restoration is arguably the largest and most complex environmental restoration endeavor in history. Everglades restoration is a partnership between the United States of America and the State of Florida, and that partnership has produced unprecedented success over the past five years.¹

Five Years of Unprecedented Progress

The one word that characterizes Everglades restoration during the July 1, 2010-June 30, 2015 time-period covered by this report is "progress." Federal, state, local, and tribal governments, the United States Congress, the Florida Legislature, stakeholder groups, and members of the public have taken concrete, collaborative steps over the past five years to move key restoration programs and plans forward. This reporting period has been busy with new construction starts, project completions, accelerated planning efforts, and record-breaking new investments in water quality. The hope for America's Everglades is that our success will breed even more progress in the years to come.

Progress is indeed continuing beyond the end-date of this reporting period, with planning moving ahead (Loxahatchee River Watershed Restoration Project), final administrative reviews being completed (Central Everglades Planning Project), construction contracts being awarded (Indian River Lagoon South Project's C-44 Reservoir), and construction completions (Site 1 Impoundment, Phase 1, and Restoration Strategies' A-1 Flow Equalization Basin) all before the end of 2015.

Even in the wake of so much restoration progress, there is still much more to accomplish and a great sense of urgency to move restoration farther down the road. There is no greater reminder of the importance and urgency of Everglades restoration than the threats faced by the ecosystem during the past five years. Heavy rains in 2013 devastated coastal estuaries and threatened tree island habitats, while a lack of rain and freshwater flows in 2015 are contributing to declining ecological conditions in Florida Bay. Despite gains and efforts, invasive plants and animals gained a greater

¹ Section 601 of the Water Resources Development Act (WRDA) of 2000 approved the Comprehensive Everglades Restoration Plan and requires that the Secretaries of the Army and the Interior jointly submit a Report to Congress regarding implementation progress. This report is submitted pursuant to WRDA 2000 and the Programmatic Regulations (33 CFR 385.40) and covers progress made between July 1, 2010 through June 30, 2015.

foothold throughout the system in the last five years. Everglades restoration will address these and other threats, making the region healthier and more sustainable.

TO RESTORE THE EVERGLADES, WE HAVE TO GET THE WATER RIGHT

The Comprehensive Everglades Restoration Plan (CERP) focuses on “getting the water right” in the south Florida ecosystem—getting the right amount of water of the right quality to the right places at the right time. Implementing projects that capture, store, clean, and redistribute water will restore natural water flow, enhance and protect habitats, and improve our ability to retain and utilize much-needed fresh water within the ecosystem, instead of having to drain this precious resource to the Atlantic Ocean and Gulf of Mexico. How are we accomplishing these goals? By reconfiguring the water management infrastructure of an 18,000 square mile region. We plan, design, construct, and operate projects to reverse the damage the current water management system has inadvertently caused the Everglades, while continuing to serve the millions of people who reside within and visit the region.

Restoring and Protecting Estuaries and Coastal Areas

- *Challenge: Our estuaries and coastal areas currently receive too little or too much water, impacting the delicate salinity balance needed for these rich ecosystems to flourish.*
- *Solution: Storing, cleaning and distributing excess water in ways that benefit coastal ecosystems.*

Biscayne Bay: The *Biscayne Bay Coastal Wetlands Project* improves the ecology of Biscayne Bay by rehydrating coastal wetlands and flowing fresh water to the estuary over a broad area, instead of through individual drainage canals. The State of Florida expedited construction of the *Deering Estate Flow-way* has already produced ecological and hydrological improvements in the area, which in turn have produced improvements in habitat quality.

Caloosahatchee Estuary: The *Caloosahatchee River (C-43) Western Basin Storage Reservoir Project* will capture runoff from the surrounding basin and some excess water from Lake Okeechobee. When complete it will reduce the frequency of harmful discharges to the estuary during wet periods and provide a source of water during dry periods. In addition, it will improve water quality by reducing salinity and nutrient impacts to the estuary. The State has expedited the project, planning for completion of Cell 1 by 2018 and Cell 2 by 2020. The total storage capacity upon completion will be 55 billion gallons of water, enough to cover the city of Miami with 7.5 feet of water.

Herbert Hoover Dike: The Herbert Hoover Dike is a 143-mile earthen dam that surrounds Lake Okeechobee, the heart of the Kissimmee-Okeechobee-Everglades system. The *Herbert Hoover Dike Major Rehabilitation Project and Dam Safety Modification Study* are addressing seepage and stability problems through a combination of construction features and operations to prevent a potential failure during extreme high water events. Once completed, this project will provide greater water management flexibility, thus improving the amount and timing of water released to the coastal estuaries.

St. Lucie Estuary and Indian River Lagoon: The *Indian River Lagoon-South Project* addresses water flows into the estuary and lagoon and will restore native habitats and improve water quality. This project includes multiple water storage and treatment features. The U.S. Army Corps of Engineers (USACE) completed the first construction contract for the project in July 2014 (construction of the intake canal, access roads, and other preparatory work for the C-44 reservoir). The USACE also awarded the construction contract for the first of four planned water reservoirs (the C-44 reservoir) in September 2015. The South Florida Water Management District (SFWMD) is constructing associated water management features, including a large pump station to move the water (the C-44 pump station) and a treatment area to improve water quality (the C-44 stormwater treatment area or STA).

Restoring Water Flow to Everglades National Park and Florida Bay

- *Challenge: Not enough water is currently flowing to Everglades National Park and Florida Bay.*
- *Solution: Delivering larger quantities of water to these areas and preventing this water from seeping out of the system before it gets there.*

The *C-111 Spreader Canal Western Project* helps keep underground water in Everglades National Park, provides increased fresh water to Florida Bay through Taylor Slough, and restores freshwater wetlands, tidal wetlands, and coastal habitat. Completed by the SFWMD in 2012, this project enhances the habitat conditions that produced the massive colonies of wading birds that once inhabited this area.

The *Modified Water Deliveries to Everglades National Park Project* (Mod Waters) is 95% complete. This project will improve natural water flows to Shark River Slough and Everglades National Park. Flood mitigation work to protect a residential area near the project (the 8.5 Square Mile Area) will be complete in 2016. A field test of the project's features will begin in late 2015. This is the first increment of a three increment process to develop a final operational plan for Mod Waters. The first increment uses the S-356 Pump Station; it is designed to return water lost through underground seepage back to the park as well as increased flows at S-333 from WCA 3A to increase stages and flows in Northeast Shark Slough.

One of the more important accomplishments during the reporting period was completion of a new one-mile bridge on the Tamiami Trail to improve water flow under the roadway and into Everglades National Park. Built in the 1920s, U.S. Highway 41, commonly known as "Tamiami Trail," functions as a dam between the central Everglades and Everglades National Park. Replacing sections of this roadway with bridges is an important restoration feature.

In 2014, the Committee on the Independent Scientific Review of Everglades Restoration Progress (CISRERP) commended the restoration program on the one-mile bridge, referring to it as "a major step" in restoring the hydrology and ecology of Shark River Slough in Everglades National Park (NRC 2014) It also recognized the important congressional leadership necessary to move the project forward (NRC 2010).

Under a separate congressional action, the National Park Service (NPS) received authorization to construct 5.5 additional miles of bridging on Tamiami Trail. As a part of this project, in 2012, Florida Governor Rick Scott announced the state's intention to collaborate with the NPS on the construction

of a new 2.6-mile bridge. This additional bridging will provide even more water flow into Everglades National Park and will distribute that flow across a wider area to hydrate important deeper water habitats in the park. A contract award for this bridge is expected by January 2016 and a construction groundbreaking is anticipated in April 2016.

The Central Everglades Planning Project: In its 2012 report, the CISRERP noted that although the pace of ecosystem restoration had improved, the focus had been on the periphery of the remnant Everglades. Completed in 2014 and transmitted to Congress for authorization in 2015, the Central Everglades Planning Project (CEPP) addresses this concern by removing barriers to flow in the central Everglades to begin putting the “river” back into the “River of Grass.” The CEPP will bring an average of 200,000 acre-feet (enough to cover Manhattan with more than 9 feet of water) of additional water from Lake Okeechobee into the Central Everglades each year. This will reduce damaging discharges to the estuaries while returning more flow to the Everglades. The new water will eventually flow into Everglades National Park under the 2.6-mile bridge scheduled for completion in 2019. The final administrative review (*Record of Decision*) was signed August 31, 2015, just after the end of this reporting period (Darcy 2015).“

Restoring Water Quality: The *Restoration Strategies Project*

- *Challenge: Poor water quality negatively impacts native habitats and species.*
- *Solution: Cleaning water before it enters sensitive ecosystems.*

In 2012, the State of Florida, including the Florida Department of Environmental Protection (FDEP) and the SFWMD, and the U.S. Environmental Protection Agency (USEPA) reached consensus on new strategies for improving water quality in America's Everglades dubbed *Restoration Strategies* (SFWMD 2012). Under this project, the SFWMD will create more than 6,500 acres of new water treatment wetlands (STAs) and 116,000 acre-feet of additional water storage (flow equalization basins or FEBs). In 2013, the Florida Legislature unanimously voted to include the state's plan into law and committed an unprecedented recurring funding source for the duration of the program.

The *Restoration Strategies* program managed by the FDEP and the SFWMD, estimated at \$880 million, will work in conjunction with existing water treatment areas to achieve compliance with America's Everglades stringent water quality standards for the nutrient phosphorus, which is detrimental to native habitats. This program will be completed by 2025, with many features already nearing completion (the L-8 FEB and the A-1 FEB) and others about to begin construction (STA-1W Expansion #1). Project implementation milestones and their associated deadlines are mandated by legal agreements (“consent orders”) and are closely monitored by the USEPA and other federal and state agencies. Once all projects are complete and operating, the expected outcome is cleaner water that meets the established standards for total phosphorus. The CISRERP described *Restoration Strategies* as a “significant development with important implications for restoration of both water quality and flow in the Central Everglades” (NRC 2014).

TO RESTORE THE EVERGLADES, WE HAVE TO RESTORE AND PROTECT HABITATS

The *Picayune Strand Restoration Project* involves the restoration of natural water flow across 55,000 acres of habitat in western Collier County, an area nearly the size of the District of Columbia. This

area, drained in the early 1960s for residential development, was purchased by the State of Florida to be restored. The project, under lead agency USACE, includes the construction of three huge pump stations (one pump station is completed; two are currently under construction), the removal of 260 miles of roadways, the plugging of 48 miles of canals, and the construction of additional features that will facilitate the flow of water over a larger area, thus restoring native habitats. During this reporting period, Picayune Strand showed beneficially higher water levels (1 to 2 feet higher) in the constructed areas of the project. Florida panthers are increasing in numbers, wading birds are once again foraging in the area, and native vegetation is re-emerging.

The 1,660-acre *Site 1 Impoundment* captures and stores excess water and allows some of that water to soak into Florida's underground aquifers. Phase 1 will be completed by the end of 2015 and will increase the amount of water that remains in the Everglades, especially during dry periods, improving natural habitat in the Arthur R. Marshall Loxahatchee National Wildlife Refuge.

The *Kissimmee River Restoration Project* is restoring more than 40 square miles of river-floodplain ecosystem, including almost 20,000 acres of wetlands and 44 miles of historic river channel. Scheduled for completion in 2019, this project is currently over halfway done. Native plants, fish, wading birds, shorebirds, and ducks are once again thriving in the restored areas. Largemouth bass and sunfish, desired native species that had not been prevalent prior to restoration, now comprise 63 percent of fish found in the restored portions of the river. Long-legged wading bird populations, including white ibis, great egret, snowy egret, and little blue heron, have increased significantly, in some years increasing at greater than double the restoration expectation. Eight shorebird species, absent before restoration, have returned to the river and floodplain, illustrating the immediate impacts of this project.

TO RESTORE THE EVERGLADES, WE HAVE TO BE SMART, FAST, AND FOCUSED

Being Smart and Fast: Re-energizing and Refocusing the Restoration Program through Expedited Planning and Innovative Stakeholder Engagement

In October 2011, the Assistant Secretary of the Army (Civil Works), the Secretary of the Interior, the Governor of Florida, and the Executive Director of the SFWMD agreed to initiate the CEPP planning effort as part of the National Pilot Program for Feasibility Studies. This USACE program aims to expedite planning and to make the process more predictable and efficient. The size, scope, and accelerated pace of the CEPP ensured that it quickly became the dominant element of restoration planning between 2012 and 2014. The CEPP introduced an unprecedented public participation effort sponsored by the South Florida Ecosystem Restoration Task Force (Task Force). This allowed the public to provide more meaningful input into the planning process than ever before; and as a result, the CEPP earned unprecedented levels of public and stakeholder support. The CISRERP called the CEPP public process "exemplary" and recommended that it "serve as a model for future planning processes (NRC 2014)."

Being Focused: The Integrated Delivery Schedule

The Integrated Delivery Schedule (IDS) provides an overall strategy and sequence for project planning, design, and construction based on ecosystem needs, benefits, costs, and available funding.

This schedule helps restoration planners, stakeholders, and the public focus on priorities, opportunities, and challenges and provides a path forward, completing construction of projects underway and outlining the next projects to undergo planning, design, and construction. In its 2014 report, the CISRERP suggested the 2011 IDS be revisited to advance projects with the greatest potential to avert ongoing ecosystem degradation and promise the largest restoration benefits. The updated IDS will be completed by the end of 2015. The update process is utilizing the Task Force’s successful workshop model to engage the public and stakeholders.

TO RESTORE THE EVERGLADES, WE HAVE TO ADDRESS NEW THREATS

Combating Invasive Exotic Species

Florida is second only to Hawaii in the severity of the threats posed by invasive exotic species on U.S. native habitats and species due to its subtropical climate; the existence of several high volume ports of entry; and the large scale of its pet, aquarium, and ornamental plant industries. The longer we wait to address a particular invasion, and the more widespread that invasion becomes, the more expensive it is to control. In its 2014 report, the CISRERP noted excellent progress in operational coordination of the management of invasive exotic species, but suggested that strategic coordination is necessary as well as an early detection and rapid response (EDRR) system. The Task Force has since developed an *Invasive Exotic Species Strategic Action Framework* and is working with federal and state agencies, tribal and local governments, academia, and the private sector to establish an EDRR system for the south Florida ecosystem.

The Melaleuca Eradication and Other Exotic Plants Project is a joint effort between the USACE, the U.S. Department of Agriculture, the U.S. Department of the Interior, the SFWMD, and the University of Florida. This facility is part of a long-term plan to supplement existing efforts to control and reduce the most aggressive, widespread, and problematic invasive exotic plants in south Florida. Construction of the \$1.7 million Research Annex (provided through the American Recovery and Reinvestment Act of 2009) was completed on August 30, 2013, making it the first completed CERP project.

TO RESTORE THE EVERGLADES, WE MUST EVALUATE ECOSYSTEM RESPONSE AND ADAPT AS NEEDED

Ecological and Hydrological Monitoring Indicates Evidence of Early Restoration Success!

A robust system-wide monitoring and assessment program is a critical component of the CERP Adaptive Management Program and of determining the success of our restoration efforts. The challenge has been to establish and maintain an effective and efficient monitoring network over the 18,000 square mile area. To accomplish this, the REStoration, COordination, and VERification (or RECOVER) Group tracks key attributes that indicate system health (“indicators”). The Task Force assists in these efforts by providing a forum to coordinate the monitoring efforts of the various agencies. To understand ecological health of the ecosystem and track our restoration progress, a System Status Report on the key indicators, and ecological “report card” on our restoration success,

is prepared every two years. Adaptive management Restoration leaders take these findings and, linking science to decision-making, work to improve the probability of restoration success.

Project monitoring indicates that implementation of restoration projects and adjustments in operations are having positive impacts on the ecosystem. For example, the Roseate Spoonbill, a threatened and endangered wading bird species, achieved improved nesting success due to favorable climatic conditions and timely and effective coordination with water management operational decisions. The combination of the C-111 Spreader Canal Western Project and extended rainfall produced longer, more ecologically beneficial, wet periods along the eastern edge of Everglades National Park. Crocodile nesting and population trends over the past two decades increased along the southwestern Florida coast due to canal plugging in that region.

TO RESTORE THE EVERGLADES, WE MUST CONTINUE TO HAVE ADEQUATE FUNDING

The current cost estimate for the CERP is \$17.6 billion at October 2014 price levels. Over \$1.2 billion dollars in funding in combined contributions from the federal and state partners has been provided in support of CERP and prospective CERP projects over the past five fiscal years (2010-2014).

During this time, the federal government expended almost \$5.35 million, while it is estimated that local sponsors spent approximately \$7.5 million on activities not related to land acquisition. Land acquisition is a major expense. As of December 31, 2014, the State of Florida has purchased approximately 55 thousand acres which are anticipated to be made available for CERP project features. Some of this land was acquired by the state using federal grant funds.

TO RESTORE THE EVERGLADES, WE MUST KEEP MOVING FORWARD

Congressional authorization is a critical step in CERP implementation. Although the *Water Resources Development Act (WRDA) of 2000* (U.S. Congress 2000) approved the overall CERP plan, individual CERP projects require congressional authorization before they can receive federal appropriations for construction. Authorization and appropriation are also necessary before the USACE can provide credit or reimbursement to its state partners for completed work. Authorization normally occurs through periodic WRDAs. During the reporting period, the *2014 Water Resources Reform and Development Act (WRRDA)* authorized four CERP projects for construction: the Caloosahatchee River (C-43) West Basin Storage Reservoir Project; the C-111 Spreader Canal Western Project; Phase 1 of the Biscayne Bay Coastal Wetlands Project; and the Broward County Water Preserve Areas Project. The Central Everglades Planning Project is awaiting authorization in 2016.

In addition to working on the projects authorized in *WRRDA 2014*, key steps in maintaining forward progress include completion of projects to the north (Kissimmee River Restoration), south (Modified Water Deliveries to Everglades National Park, Picayune Strand, C-111 South Dade, and C-111 Spreader Canal projects), east (C-44 Reservoir and STA on the St. Lucie River), and west (the first cell of the C-43 Reservoir on the Caloosahatchee River). The focus will move toward the epicenter of the Everglades as we begin the restoration of the River of Grass through the Central Everglades Planning Project. Water quality will continue being addressed through projects such as Restoration Strategies. Partner agencies will continue to focus on building CERP projects, monitoring and

adaptively managing the implementation of completed projects, and planning and designing the next generation of projects. Sustained funding at both the state and federal levels, along with timely and continuing authorizations of CERP projects in upcoming WRDA legislation, is essential to maintaining the benefits and progress documented here.

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INTRODUCTION

The *2015 Report to Congress* on the Comprehensive Everglades Restoration Plan (CERP) is the third in a series of periodic reports to fulfill the requirements of the *Water Resources Development Act (WRDA) of 2000* (U.S. Congress 2000) and the *CERP Programmatic Regulations* (33 CFR 385.40; DOD 2003). This report provides members of the U.S. Congress and other interested parties with an update on the progress of CERP over the five year reporting period (July 1, 2010 - June 30, 2015) and the accomplishments expected over the next five years. Cumulative expenditures for this cost shared program are included. It is submitted by the Secretary of the Army and the Secretary of the Interior after consultation with the Environmental Protection Agency, the Department of Commerce, the Florida Department of Environmental Protection, the South Florida Water Management District (SFWMD), other federal, state, and local agencies, and the South Florida Ecosystem Restoration Task Force (Task Force). Consultation with the Seminole Tribe of Florida was initiated and we are working to initiate consultation with the Miccosukee Tribe of Indians of Florida. The Task Force currently includes representatives of the above agencies as well as the U.S. Department of Agriculture (USDA), the U.S. Department of Justice, the U.S. Department of Transportation, Miami-Dade County, and the City of Sanibel. Additional federal, state, and local agencies are represented on the Task Force's Working Group and Science Coordination Group. Prior reports (USACE and USDOJ 2005, 2010), the *Programmatic Regulations* (DOD 2003), and other pertinent WRDA legislation are located on the official CERP website www.evergladesrestoration.gov.

Early Alterations to the Ecosystem

The Central and Southern Florida (C&SF) Project was authorized by the U.S. Congress in 1948 in response to significant flooding in south Florida. The C&SF Project addressed issues related to flood and water level control, water conservation, prevention of saltwater intrusion, and preservation of fish and wildlife. Earlier drainage projects were expanded by the federal government through the U.S. Army Corps of Engineers (USACE) in partnership with the South Florida Water Management District (SFWMD). Together, they constructed and managed a water management system consisting of more than 1,000 miles of canals, 720 miles of levees, and more than 150 water control structures – it was the largest Civil Works project of its time (Fig. XX to be added).

The C&SF Project altered significant portions of the natural system. The Kissimmee River was channelized for flood control and navigation and Lake Okeechobee was diked to prevent uncontrolled overflows from the lake. The region of the Everglades immediately south of Lake Okeechobee, now called the Everglades Agricultural Area (EAA), was drained to accommodate agricultural production. A drainage system was constructed in the lower east coast to support and enhance urban, suburban, and agricultural development. An elaborate dike system was constructed in the central portions of the historic Everglades to create the Water Conservation Areas (WCAs), vast tracts of remnant Everglades sawgrass that serve multiple water resource and environmental purposes including flood control, water supply, and deliveries of water to Everglades National Park.

Recognition of Unintended Consequences

With its complex, regional water management infrastructure, the C&SF Project has worked well to fulfill its intended purposes over the past one-half century. However, these infrastructure alterations have had unintended consequences for much of the south Florida ecosystem. The

significant reduction of natural water storage capacity, redirection of water to tide, declining water quality, and reduction of natural sheetflow in the regional system have led to substantial ecological damage to natural habitats. The human environment also suffered negative impacts in terms of drinking water supply, water quality, and recreational opportunities.

The ability to restore the health of the remaining Everglades ecosystem and achieve sustainability in water resources for all needs depends on successful implementation of restoration projects. The *Central and Southern Florida Project Comprehensive Review Study Final Integrated Feasibility Report and Programmatic Environmental Impact Statement* (Restudy)(USACE and SFWMD 1999) was authorized and modified under WRDA 1992 (U.S. Congress 1992) and WRDA 1996 (U.S. Congress 1996) to develop a recommended plan to restore the south Florida ecosystem, enhance water supplies, and maintain flood control.

The Restoration Plan

The *WRDA 2000* approved the CERP, the Restudy's final report dated April 1, 1999, as "a framework for modifications and operational changes" to the C&SF Project "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" (USACE and SFWMD 1999).

The CERP is the largest environmental restoration program in history. It builds upon and complements other state and federal initiatives to revitalize south Florida's ecosystem. The plan is composed of a series of projects designed to address four major characteristics of water flow: quantity, quality, timing, and distribution. Because of their size and complexity, several projects have multiple components. In total, 68 individual components comprise more than 50 projects in the plan.

Implementing the Plan

The USACE is the lead federal agency responsible for undertaking implementation of the CERP, as established in *WRDA 2000*, in partnership with the U.S. Department of the Interior (USDOI), the SFWMD (lead non-federal sponsor), the State of Florida, and other local sponsors. In addition, the Task Force is charged with coordinating the development of consistent policies, strategies, plans, programs, project activities, and priorities for addressing restoration, preservation, and protection of the south Florida ecosystem.

CERP projects authorized under *WRDA 2007* and currently under construction are referred to as **Generation 1** projects. **Generation 2** projects were authorized under the *Water Resources Reform and Development Act (WRRDA) of 2014* and are currently being designed, with some project features undergoing expedited construction by the SFWMD. The Central Everglades Planning Project (CEPP), a suite of CERP projects focused on the heart of the Everglades, has an authorized Chiefs Report and was provided to Congress for future consideration.

The full suite of benefits from CERP implementation assumed the successful completion of other restoration projects: Foundation Projects, Critical Projects, and Restoration Strategies. The **Foundation Projects** were authorized with the goal of correcting prior environmental damage while also enhancing water supply and flood mitigation. The Everglades and South Florida projects, more commonly known as **Critical Projects**, were authorized in *WRDA 1996* and are smaller restoration

projects that will produce “independent, immediate, and substantial restoration, preservation, and protection benefits.” **Restoration Strategies** is the Everglades water quality program being implemented by the State of Florida to achieve compliance with Everglades water quality standards (SFWMD 2012).

Restoration Results

Successful restoration of the natural system of south Florida will be achieved by restoring hydrological and biological characteristics that both defined the original pre-drainage greater Everglades and made it unique among the world’s wetlands. The defining characteristics of the original Everglades include sheetflow, low levels of nutrients in freshwater wetlands, healthy productive estuaries, resilient plant communities, and an abundance of native wildlife. Results are already being seen that reflect these defining characteristics of the historic Everglades.

The ongoing recovery of the Kissimmee River stands as a shining example of a large-scale restoration effort producing quantifiable and readily identifiable ecological benefits. Throughout the 24 miles of river restored thus far, historical wetland and floodplain defining vegetation has staged a significant comeback. Waterfowl has returned in numbers and diversity far beyond that expected. Fish and other aquatic wildlife have flourished with increased diversity and numbers. The sheet flow of water across more than 15,000 acres of restored floodplain has improved water quality in the river and Lake Okeechobee.

Early stages of the Picayune Strand Restoration Project are showing similar results. The advance work completed by the SFWMD on the Prairie Canal has demonstrated positive impacts to vegetation and wildlife. The Picayune Strand Restoration Project provides key wildlife corridors for panthers and other species between the Big Cypress National Preserve, Fakahatchee Strand Preserve State Park, Collier-Seminole State Park, South Belle Meade State Conservation and Recreation Lands, Rookery Bay National Estuarine Research Reserve, Ten Thousand Islands National Wildlife Refuge, Everglades National Park, and Florida Panther National Wildlife Refuge.

Additionally, completed portions of the Biscayne Bay Coastal Wetlands Project Phase 1 and the C-111 Spreader Canal Western Project, both of which had early construction work completed in 2012 by the SFWMD, have restored more natural flows and are showing positive impacts on native vegetation and wildlife. Other smaller projects, such as the Taylor Creek/Nubbin Slough STA and Lake Trafford restoration, as well as projects completed by the SFWMD outside of CERP (Acme Basin B, Lakeside Ranch STA, and Lakes Park) are also demonstrating the beneficial effects of restoration efforts on water quantity, quality, timing, and distribution and the resulting benefits for wildlife in both species diversity and sheer numbers of individuals.

The Restoration Coordination and Verification (RECOVER) team is tracking the ecosystem’s response to project implementation. These efforts complement the regional hydrological, meteorological, and water quality monitoring overseen by the SFWMD. RECOVER’s monitoring program has documented improvements in the following areas as a result of operational changes and restoration projects being constructed and becoming operational over the past five years:

- Florida Bay/Southern Coastal Systems: Roseate spoonbill nesting improved, most likely due to improvements in coordination with water management operational decisions and favorable climatic conditions.
- Everglades National Park: Hydroperiods were 50 days longer (on an annual average basis) along the eastern edge of Everglades National Park as a result of the C-111 Spreader Canal Western Project and extended rainfall.
- Cape Sable: Crocodile nesting and population trends increased along the southwestern Florida coast due to the installation/repair of canal plugs for the National Park Service's Cape Sable Canals Dam Restoration Project.

Independent Scientific Reviews and Response

In accordance with *WRDA 2000*, the National Research Council (NRC) Committee on Independent Scientific Review of Everglades Restoration Progress (CISRERP) was convened to conduct biennial reviews of the CERP. The CISRERP is composed of a diverse team of internationally recognized experts in ecosystem restoration science. During the reporting period, the committee completed three reports (NRC 2010, 2012, 2014), which are summarized later in this document. Everglades restoration accomplishments noted by the CISRERP and agency activities conducted in response to recommendations by the CISRERP are noted throughout this report.

ACCOMPLISHMENTS 2010-2015

This report provides a synopsis of all current CERP projects and other federal and state restoration activities that support or complement CERP. Progress made during the reporting period and anticipated next steps are highlighted in the tables below. Table 2-1 includes CERP projects with activity during the reporting period. Table 2-2 includes Foundation Projects, Critical Projects, and other federal and state non-CERP initiatives. Brief descriptions of each project are available in the section following the tables.

TABLE 2-1: CERP PROGRESS, 2010-2015		
CERP Project*	Progress 2010-2015	Next Steps
COMPLETED		
Aquifer Storage and Recovery (ASR) Pilot Projects	<ul style="list-style-type: none"> • Conducted testing at Kissimmee River Pilot in 2013 • Completed testing at Hillsboro ASR Pilot in 2012 • Results of testing incorporated into a Technical Data Report finalized in 2013 (USACE and SFWMD 2013) 	<ul style="list-style-type: none"> • The Kissimmee and Hillsboro ASR pilot systems are now functional and available for operation
ASR Regional Study	<ul style="list-style-type: none"> • Incorporated ASR Pilot Project test results and technical data report findings • Hydrogeological modeling of well sites completed 2013 • Peer review of draft study conducted by National Research Council (NRC) in April 2015 • Final report completed June 2015 (USACE and SFWMD 2015) 	<ul style="list-style-type: none"> • Will be utilized in the future planning and implementation of ASR systems • The NRC recommended phased implementation of future ASR systems, with a focus on multi-well ASR clusters
Lakes Park Restoration Project Local Sponsor: Lee County	<ul style="list-style-type: none"> • Completed by Lee County and SFWMD February 2013 	
Melaleuca Eradication and Other Exotic Plants Generation 1	<ul style="list-style-type: none"> • Project Partnership Agreement (PPA) executed July 2010 • Mass Rearing Annex completed August 2013 • Transferred to SFWMD January 2014 	<ul style="list-style-type: none"> • Utilization of the facility for development and implementation of biological controls
UNDER CONSTRUCTION/IN PROGRESS		
Biscayne Bay Coastal Wetlands Project – Phase 1 <ul style="list-style-type: none"> • Generation 2 • State Expedited Construction 	<ul style="list-style-type: none"> • Final Project Implementation Report (PIR) March 2012 (USACE and SFWMD 2012) • Chief of Engineers’ Report May 2012 (Temple 2012a) • Record of Decision September 2012 (Darcy 2012a) 	<ul style="list-style-type: none"> • Design and construction of the L-31E Flow-way • Initiate design and construction of the Cutler Wetlands component • PPA anticipated in 2017

	<ul style="list-style-type: none"> • Authorized in WRRDA 2014 (U.S. Congress 2014) • SFWMD completed construction on four L-31E culverts (2010) and Deering Estates Flow-way (2012) • L-31E Pilot Pump Test conducted October 2014 - April 2015 	
C-111 Spreader Canal: Western Project <ul style="list-style-type: none"> • Generation 2 • State Expedited Construction 	<ul style="list-style-type: none"> • Final PIR January 2011 (USACE and SFWMD 2011) • Chief of Engineers' Report January 2012 (Temple 2012b) • Record of Decision July 2012 (Darcy 2012b) • Authorized in WRRDA 2014 (U.S. Congress 2014) • SFWMD completed construction (Frog Pond detention area, Aerojet Canal extension, earthen plugs in several canals, and associated structures) in 2012 	<ul style="list-style-type: none"> • Design of an additional structure in the lower C-111 may begin during the next reporting period, if needed • PPA anticipated in 2017
Picayune Strand Restoration Project <ul style="list-style-type: none"> • Generation 1 	<ul style="list-style-type: none"> • Merritt Pump Station completed 2014, includes plugging 13.5 miles of canal and removal of 95 miles of roadways • Faka Union Pump Station to be completed 2015, includes plugging 12 miles of canal and removal of 100 miles of roadways • Miller Pump Station construction initiated January 2014 with plugging of 13 miles of canal and removal of 65 miles of roadway 	<ul style="list-style-type: none"> • Design work and construction of flood protection features, road removal, and canal backfill • Completion of the Miller Pump Station in fall 2017 • Limited reevaluation report under preparation with completion in 2015
Site 1 Impoundment Project <ul style="list-style-type: none"> • Generation 1 	<ul style="list-style-type: none"> • PPA executed June 2010 • Phase 1 construction initiated 2010 to be completed in 2015 	<ul style="list-style-type: none"> • Completion of Phase 1
Indian River Lagoon South, Phase 1: C-44 Reservoir and STA Project <ul style="list-style-type: none"> • Generation 1 • State Expedited Construction 	<ul style="list-style-type: none"> • PPA executed September 2010 and amended in August 2014 • Contract 1 (bridge, intake canal, access roads, and C-133 Canal) completed July 2014 • Design of C-44 pump station, STA, and reservoir completed in 2014 • Construction of C-44 pump station, STA, and reservoir initiated in 2014 and 2015 	<ul style="list-style-type: none"> • Reservoir construction contract to be awarded in September 2015 • Construction completion of the C-44 reservoir (USACE), pump station and STA (SFWMD) in 2020 • Design work on the C-23/24 reservoirs and C-23/24 STA to be conducted next reporting period

<p>Lakeside Ranch STA</p> <ul style="list-style-type: none"> State Expedited Construction 	<ul style="list-style-type: none"> Components completed outside of CERP by the SFWMD Completion of Phase 1 (STA North and S-650 Pump Station) 2012 Design for Phase 2 (STA South and S-191A Pump Station) completed 2012 Design for STA South updated May 2015 	<ul style="list-style-type: none"> Construction of STA South scheduled to begin 2016
<p>WCA-3 Decompartmentalization and Sheetflow Enhancement (DECOMP) Physical Model</p> <ul style="list-style-type: none"> Generation 1 	<ul style="list-style-type: none"> Construction completed October 2013 Testing conducted November - December 2013 and November 2014 - January 2015 	<ul style="list-style-type: none"> Testing planned for October 2015 - January 2016 Removal of DECOMP structures will occur at the end of the testing
DESIGN PHASE ACTIVITIES		
<p>Broward County Water Preserves Area Project</p> <ul style="list-style-type: none"> Generation 2 State Expedited Construction 	<ul style="list-style-type: none"> Final PIR February 2012 (USACE and SFWMD 2012) Chief of Engineers Report May 2012 (Temple 2012) Record of Decision October 2012 (Darcy 2012) Authorized in WRRDA 2014 (U.S. Congress 2014) 	<ul style="list-style-type: none"> Construction by the SFWMD on the northern mitigation area Initiation of design and construction for the C-11 Impoundment Initiation of design and construction for the Seepage Management Area PPA execution anticipated in 2017
<p>Caloosahatchee River (C-43) Western Basin Storage Reservoir Project</p> <ul style="list-style-type: none"> Generation 2 State Expedited Construction 	<ul style="list-style-type: none"> Final PIR November 2010 (USACE and SFWMD 2010) Chief of Engineers Report January 2011 (Van Antwerp 2011) Authorized in WRRDA 2014 (U.S. Congress 2014) Pre-Partnership Credit Agreement #2 June 2015 Design and construction specifications for the pump station and Cell 1 of the reservoir are underway by SFWMD with award of first contract 	<ul style="list-style-type: none"> Construction of the pump station and Cell 1 with completion in 2018 and completion of cell 2 of the reservoir in the next reporting period The PPA is currently being pursued and should be finalized during the next reporting period
PLANNING PHASE		
<p>Loxahatchee River Watershed Restoration Project</p>	<ul style="list-style-type: none"> PIR reinitiated October 2014 	<ul style="list-style-type: none"> Approval of SMART (Specific, Measurable, Attainable, Risk-Informed, and Timely) planning PIR scope/schedule anticipated late 2015 Completion of PIR and initiation of design

		<ul style="list-style-type: none"> Completion anticipated for authorization in the future WRDA cycle
Central Everglades Planning Project	<ul style="list-style-type: none"> Final PIR July 2014 (USACE and SFWMD 2014) Chief of Engineers Report December 2014 Record of Decision signed and PIR transmitted to Congress August 2015 (after the reporting period)(Darcy 2015) 	<ul style="list-style-type: none"> The project is ready for authorization in the next WRDA Complete a Limited Reevaluation Report (LRR) and execute a PPA for the 1st Phase (anticipated to be CEPP South) Initiation of Old Tamiami Trail removal Initiation of design for several water control features in south, S-333 and S-356 enlargement, and WCA-3A to WCA-3B connections to move more water into eastern Shark River Slough. Initiation of an LRR and design for 2nd phase (CEPP North)
NEW EFFORT ANTICIPATED IN THE NEXT REPORTING CYCLE		
Big Cypress/L-28 Interceptor		<ul style="list-style-type: none"> Initiation of planning and design Finalization of PIR
Lake Okeechobee Watershed		<ul style="list-style-type: none"> Initiation of planning and design Finalization of PIR Completion for authorization during next reporting period

*Local sponsor is the SFWMD unless otherwise noted.

TABLE 2-2: ADDITIONAL NON-CERP PROGRESS, 2010-2015		
Non-CERP Project	Progress 2010-2015	Next Steps
COMPLETED		
Lake Trafford Restoration	<ul style="list-style-type: none"> Completed November 2010 	
Taylor Creek and Nubbin Slough: Lake Okeechobee Water Retention and Phosphorous Removal <ul style="list-style-type: none"> Critical Project 	<ul style="list-style-type: none"> Taylor Creek portion completed April 2011 Nubbin Slough STA transferred to SFWMD for Operation and Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) in March 2015 	
West Palm Beach Canal STA-1 East/C-51 West <ul style="list-style-type: none"> Foundation Project 	<ul style="list-style-type: none"> STA-1 East operational; repairs on culverts underway Completion of trash rake system Periphyton STA demonstration project completed December 2010; deconstruction completed June 2014 	<ul style="list-style-type: none"> Completion of culvert repairs anticipated in 2016
UNDER CONSTRUCTION/IN PROGRESS		

<p>C-111 South Dade Project</p> <ul style="list-style-type: none"> • Foundation Project 	<ul style="list-style-type: none"> • PCA amendment finalized August 2014, allowing construction to begin on final two components • Contract 8 plans and specifications completed 	<ul style="list-style-type: none"> • Construction Contract 8 to be awarded October 2015 • Completion of Northern Detention Area (Contract 8) • Construction of Contract 9, plugging of L-31W Canal • Completion of a Post Authorization Change Report to assess provision of permanent pumps stations and outlet for the existing interim S-332B and S-332C pump stations
<p>Herbert Hoover Dike</p> <ul style="list-style-type: none"> • Federal Project • CERP assumed this to be in place and fully functional 	<ul style="list-style-type: none"> • Dam Safety Modification Study initiated 2011 • Since 2010, 3.4 miles of toe ditch have been filled, 21.4 miles of cutoff wall installed, and 3 culverts have been removed or replaced; 14 of the 32 culverts are currently under construction or will be under construction by the end of 2015 	<ul style="list-style-type: none"> • Finalization of Dam Safety Modification Study • Replacement of the remaining culverts around the lake • Construction of an additional 6 miles of cutoff wall in the southeast corner of lake
<p>Kissimmee River Restoration</p> <ul style="list-style-type: none"> • Federal Project 	<ul style="list-style-type: none"> • Reach 4B completed 2010 • Completed modifications to CSX Railroad bridge • Completed contract to restore oxbows in reaches 2 and 3 • Completed River Acres flood protection • Initiated construction for backfilling MacArthur's Ditch • Design for backfilling Reach 2 underway, which will restore flow to 9 additional miles of river • Contract for Reach 2 backfill awarded 	<ul style="list-style-type: none"> • Completion of all remaining construction contracts • Installation of a concrete weir in the C-38 Canal to facilitate flow moving through the restored river channel and to maintain higher stages in the backfilled C-38 Canal during low flow periods • Finalization of efforts in the headwaters and implementation of the Headwaters Regulation Schedule
<p>Modified Water Deliveries to Everglades National Park</p> <ul style="list-style-type: none"> • Foundation Project 	<ul style="list-style-type: none"> • Construction of 1-mile bridge completed March 2013 • Construction of Tamiami Trail Modifications Project completed December 2013 • Operational field testing of S-356 and G-3273 relaxation initiated in 2015 	<ul style="list-style-type: none"> • Final construction contract to be awarded to complete flood mitigation work in 2015 • Completion anticipated and expected to be fully operational during the next reporting period • Land acquisition to support incremental operational testing program to be completed in 2016 • Completion of the incremental operational field testing • Development of final Combined Operations Plan, which is scheduled for completion in 2019
<p>Restoration Strategies</p> <ul style="list-style-type: none"> • State of Florida 	<ul style="list-style-type: none"> • Consensus between SFWMD and USEPA reached in 2012 on 	<ul style="list-style-type: none"> • Construction completion of the A-1 FEB (late 2015)

	<p>actions necessary to meet water quality standards (new features working in conjunction with existing STAs)</p> <ul style="list-style-type: none"> • Construction of Compartment B of STA-2 and Compartment C of STA-5/6 completed in 2014 • Initial Flooding and Optimization Compartment B of STA-2 and Compartment C of STA-5/6 completed in 2014 • Construction of two flow equalization basins (A-1 FEB and L-8 FEB) began • Modification/construction of two primary conveyance features (S-5AS and L-8 divide structure) began • Design completed for the S-375 Expansion (G-716). • Land acquisition completed for the STA-1W Expansions • Land acquisition completed for the CERP L-8 Reservoir replacement feature • STA-1W Expansion #1 design completed in June 2015 • Restoration Strategies Science Plan developed and implemented 	<ul style="list-style-type: none"> • Construction completion of the L-8 FEB (early 2016) • Construction of the S-375 water conveyance feature to begin by January 2016 • Construction of STA-1 West Expansion #1 to begin in 2016 • Construction completion of the S-5AS, L-8 Divide, and S-375 (G-716) • Design of the C-139 FEB (11,000 acre-feet of storage) will be initiated by November 2018 • Completion of the research projects described in the Restoration Strategies Science Plan • Initiation of construction for the G-341 conveyance improvements
Seminole Big Cypress Reservation Water Conservation Plan	<ul style="list-style-type: none"> • Construction of Basin 1 completed July 2008; transferred to the Seminole Tribe of Florida in 2010 • Construction of Basin 4 completed January 2013; transferred to the Seminole Tribe of Florida July 2013 • Construction contract for Basin 2 awarded September 2013 	<ul style="list-style-type: none"> • Completion of Basin 2 estimated Fall 2016
Southern Corkscrew Regional Ecosystem Watershed • Critical Project	<ul style="list-style-type: none"> • Design complete 2013 (SFWMD) • Installation of two monitoring wells 2015 (SFWMD) 	<ul style="list-style-type: none"> • Completion of construction anticipated in 2017
DESIGN PHASE		
Tamiami Trail Next Steps Project	<ul style="list-style-type: none"> • Authorized in the Consolidated Appropriations Act of 2012 (U.S. Congress 2012) • Design for 2.6 mile bridge underway 	<ul style="list-style-type: none"> • Construction of 2.6-mile bridge to be complete by 2020

Ten Mile Creek Water Preserve Area <ul style="list-style-type: none">• National Park Service• State of Florida	<ul style="list-style-type: none">• SFWMD started limited operations in 2015	<ul style="list-style-type: none">• Construction of modifications by SFWMD as a non-federal project to create a functional water storage and treatment facility
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Project Synopses

Aquifer Storage and Recovery Pilot Projects/Regional Study – The CERP envisioned extensive use of ASR wells to store large volumes of water in the deep Floridian aquifer to ensure water for the Everglades and other water resource needs in south Florida, while improving conditions in Lake Okeechobee and reduce damaging releases of fresh water to coastal estuaries. Due to uncertainties identified with ASR technology at this scale, a pilot project was constructed and tested in the Kissimmee River area of Lake Okeechobee by the Corps and along the Hillsboro Canal in central Palm Beach County by the SFWMD. Results obtained from the ASR pilot projects demonstrated successful operation and provided field data to augment eleven years of scientific and engineering studies. The National Research Council peer-reviewed the resulting *Final Technical Data Report, Aquifer Storage and Recovery Regional Study* (USACE and SFWMD 2015), which will serve as a guide for future Everglades restoration projects considering ASR. The NRC recommended a phased implementation of future ASR systems, with a focus on multi-well ASR clusters (NRC 2015).

Big Cypress L-28 Interceptor Project – This project includes the modification of levees and canals and the construction of water control structures, pumps, and STAs that will re-establish sheetflow across the Big Cypress Reservation and into the Big Cypress National Preserve, maintain flood protection on Seminole tribal lands, and ensure inflows meet applicable water quality standards. The project is proposed to include a STA located near the Miccosukee and Seminole Indian reservations in Collier and Hendry Counties. While this project has not yet been initiated, data collection and problem identification has been underway through a multi-agency effort facilitated by the Task Force. Detailed planning and development of a PIR is expected to start in the next reporting period.

Biscayne Bay Coastal Wetlands Project, Phase 1 – The goal of this project is to improve the ecology of Biscayne Bay by rehydrating coastal wetlands, reducing freshwater point source discharges, and redistributing surface water through a spreader canal system. Phase 1 includes construction of two new flow-ways (Deering Estate and L-31E Culverts), restoration of an existing flow-way (Cutler Flow-way), and construction of associated features to redistribute surface water in the near shore area of Biscayne Bay. The SFWMD has completed construction of the Deering Estates features and a portion of the L-31E culverts features. The remaining features will be constructed by the Corps and SFWMD during the next reporting period.

Broward County Water Preserve Areas Project – This project will reduce seepage WCA 3, reduce phosphorus loading to WCA 3, capture water normally lost to tide, and provide conveyance features for urban and natural system water deliveries. These functions will be achieved by diverting stormwater into two above ground impoundments. A seepage management area will connect the two impoundments. This project was authorized in WRRDA 2014 and design work will be initiated by the Corps in Fiscal Year 2016. Most of the land needed for the project has already been acquired and construction should be initiated during the next reporting period.

C-111 South Dade Project – Located in south Miami-Dade County, this project is the southern end of the C&SF project and borders the eastern edge of Everglades National Park. This project is intended to restore the wetland sloughs and prairies along the eastern boundary of Everglades National Park, improve hydrologic conditions in Taylor Slough and other adjoining areas of the park, and send more fresh water through Taylor Slough into Florida Bay, thus improving its overall health by reducing

hypersaline events. At the same time, project features will maintain flood protection for development and agricultural interests located east of the project. The project includes aboveground detention areas, associated water control features, canal plugging, and operational changes and is being designed and constructed by the Corps. All of the lands needed for the project have been provided by the SFWMD. The first of three remaining construction contracts will be initiated this fall with the rest expected during this next reporting period. The final operation plan for this project will be developed as part of the combined operational plan for the Mod Waters and C-111 project.

C-111 Spreader Canal Western Project – This project will reduce seepage losses from Everglades National Park, provide increased flows to Florida Bay via Taylor Slough, and provide for ecosystem restoration of freshwater wetlands, tidal wetlands, and near-shore habitat by restoring more natural hydrology to the area. This will enhance the restoration of conditions that produced the legendary massive flocks and colonies of wading birds that once inhabited this area. The project was authorized in WRRDA 2014 and includes an aboveground detention area, two pump stations, plugging of canals, culverts, and associated features and operational changes in south Miami-Dade County. Most of the project features have been constructed by the SFWMD in advance of authorization to jump start the recovery of the Taylor Slough area. The two remaining features will be constructed by the Corps during the next reporting period. The constructed features are already showing positive environmental benefits to the Taylor Slough area by restoring more natural water conditions and flows.

Caloosahatchee River (C-43) Western Basin Storage Reservoir Project – This project will improve the quantity, quality, and timing of water releases to the Caloosahatchee River and Estuary on Florida's west coast. The project includes a 170,000-acre-foot reservoir to capture excess C-43 Basin runoff as well as store water releases from Lake Okeechobee and then supply water to the Caloosahatchee River and Estuary when needed during the dry season. The reservoir will also help to improve water quality by reducing salinity and nutrient impacts of runoff and improving environmental water supply deliveries to the Caloosahatchee Estuary. The project was authorized in WRRDA 2014 and is being implemented at an accelerated pace by the SFWMD. Construction is starting on one cell of the reservoir this year.

Central Everglades Planning Project – The goals of the CEPP are to improve the quantity, quality, timing, and distribution of water in the Northern Estuaries, WCAs, and Everglades National Park in order to restore habitats and ecological function in the natural system. The CEPP combines several CERP components extending from Lake Okeechobee down to Everglades National Park into a comprehensive project that includes water storage, water quality treatment, conveyance, and decompartmentalization (the removal of levees and canals) in the heart of the Everglades. The primary features include storage and treatment areas to divert, store, and treat Lake Okeechobee regulatory releases, conveyance features to deliver and distribute existing flows and the redirected Lake Okeechobee water through WCA-3A, back filling portions of the Miami Canal, conveyance features to deliver and distribute water from WCA-3A to WCA-3B and Everglades National Park, and seepage management features.

Herbert Hoover Dike Project – Since 2007, the USACE has been conducting major rehabilitation of the Herbert Hoover Dike to address seepage and stability problems. The USACE is utilizing a

combination of construction features and operations to prevent a potential failure during extreme high water events. Features include cut-off walls, culvert replacement and repairs, and features along the 143-mile levee surrounding Lake Okeechobee. Thus far 21.5 miles of cut off walls have been constructed along the southeastern levee and several major culverts through the levee have been replaced. Work is continuing on an additional 6.5 miles of cutoff wall this year along with the continued replacement and/or repair of over 32 culverts in the levee. A Dam Safety Modification Study is being prepared by the Corps and should be completed in 2016. This Study will identify the remaining problems with the Dike and appropriate solutions for implementation

Indian River Lagoon South Project – This project includes the C-44 Reservoir and STA, the C-23/24 and C-25 reservoirs and STAs, the acquisition and implementation of 90,000 acres of natural storage areas, the removal of more than 7 million cubic yards of muck from the Indian River Lagoon, and the restoration of certain portions of the lower St Lucie Estuary. Current efforts are focused on the construction of the C-44 Reservoir and STA. The Corps has completed the first contract for the intake and discharge canals. The Corps will award the contract for construction of the reservoir this year while the SFWMD will award the contract for the construction of the STA and pump station. The overall project will reduce harmful freshwater inflows and generate habitat and water quality improvements in the St. Lucie Estuary and the southern Indian River Lagoon. This estuary and lagoon are one of the most diverse estuaries in the United States and improved conditions will maintain and enhance its diversity and ability to support an abundance of estuarine life and the economy that depends on it.

Kissimmee River Restoration Project – When completed, this project will have restored more than 40 square miles of river-floodplain ecosystem, including almost 20,000 acres of wetlands and 44 miles of historic river channel. Efforts include oxbow restoration, degradation of spoil mounds created when the river was channelized in the 1960s, acquisition and restoration of more than 100,000 acres of floodplain wetlands, removal of two water control structures, backfilling of 22 miles of the C-38 Canal, and improvement of conveyance and storage of water in the headwater lakes. Much of the construction effort is being accomplished by the Corps with the SFWMD acquiring the necessary lands needed for the project (over 99% of lands needed have been acquired) as well as constructing certain flood mitigation features. Thus far, the project is over 60+ percent complete with over 14 miles of river and 15,000 acres of floodplain restored. The recovery success has been phenomenal with native plants, fish, wading birds, shorebirds, and ducks are once again thriving in the areas already restored. In addition, the project is reducing flows into Lake Okeechobee during storm events and helping to improve water quality in the basin through the natural uptake of nutrients in the water. The remaining 8 miles of canal backfilling and the headwaters features will be completed in the next reporting period along with the development and implementation of a new water control plan to maximize restoration benefits.

Lake Okeechobee Watershed Project – The Lake Okeechobee Watershed project area covers approximately 1,800 square miles and incorporates the four major tributary systems that naturally drain the lower portion of the watershed into the northern portion of Lake Okeechobee. The purpose of this project is to create water storage and treatment facilities to help regulate extreme highs and lows in lake staging, reduce phosphorus loading to the lake, and reduce damaging releases to the east and west coast estuaries. In addition, this project will focus on rehydrating wetlands in and around the areas north of the lake and improve the ecological health of Lake

Istokpoga. The PIR for this project should be initiated this next reporting period by the Corps and SFWMD.

Lake Trafford Restoration Project – Lake Trafford is the largest natural lake south of Lake Okeechobee in south Florida and is located just southwest of the Lake. Lake Trafford serves as an important ecotourism resource for recreational boating and fishing. The project consisted of muck removal, removal of exotic aquatic vegetation, and restoration of native submerged aquatic vegetation. Even though this project was identified for restoration under the Critical Projects program insufficient funding authority was available under that program to complete the project. The SFWMD went ahead and completed the muck removal and restoration of the Lake. The results have been very successful with significant improvement in the overall health and condition of the Lake which has led to increased fish and wildlife productivity.

Lakes Park Restoration Project – The purpose of this project is to enhance surface water runoff quality by creating a flow-way with shallow littoral zones to enhance pollution removal. The restoration provides habitat and water quality benefits at Lakes Park and improves conditions downstream. The project includes the construction of a 40-acre marsh/flow-way in an abandoned rock mine, removal of exotic vegetation, and planting of native vegetation. While the project was identified in the Critical Projects program and CERP, the SFWMD partnered with Lee County to accelerate implementation outside of CERP. Construction has been completed and the project is providing positive benefits to the lake and downstream natural areas.

Lakeside Ranch Stormwater Treatment Area Project – This project was identified as one component of the Lake Okeechobee Watershed Project but was constructed by the SFWMD outside of CERP. The project consists of a 2,700-acre STA adjacent to Lake Okeechobee in the Taylor Creek/Nubbin Slough Basin that will provide up to 19 metric tons of phosphorus reduction annually, improving the quality of the water flowing into Lake Okeechobee. It is providing positive benefits to the health of Lake Okeechobee through the removal of nutrients from the water.

Loxahatchee River Watershed Restoration Project – The purpose of this plan is to restore and sustain the overall quantity, quality, timing, and distribution of fresh water to the federally designated “National Wild and Scenic” Northwest Fork of the Loxahatchee River. This project also seeks to restore, sustain, and reconnect the area’s wetlands that form the historic headwaters for the river and northeastern Everglades. This project was originally identified as the North Palm Beach County Project in CERP but later renamed to recognize the main focus area of the Loxahatchee River. The PIR is being reinitiated by the Corps and SFWMD to address recent changes and modifications needed to the project. Project features being considered during the planning process include reservoirs, canal improvements, pump station, backfilling ditches, removing berms, and gated structures. Water storage will allow excess water to be captured and used to increase freshwater deliveries to the Northwest Fork of the Loxahatchee River during dry periods.

Melaleuca Eradication and Other Exotic Plants Project – Invasive exotic plants pose a serious threat to south Florida ecosystem restoration efforts. This project includes construction of a facility for mass rearing and dissemination of U.S. Department of Agriculture (USDA) approved biological controls for control of invasive exotic plants. The initial focus of work conducted in this facility will be the rearing and distribution of biological controls to combat melaleuca, Brazilian pepper, Australian pine, and Old World climbing fern. Construction of this project was approved by the

ASA(CW) under the Programmatic Authority provided in WRDA 2000. Construction of this facility has been completed by the Corps and the facility transferred to the SFWMD and Florida Department of Agriculture for use. Operations are already underway with the testing of biological control species. This was the first CERP project to be completed and transferred to operational status.

Modified Water Deliveries to Everglades National Park Project – The purpose of this project is to improve natural water flows to Shark River Slough and Everglades National Park. The project consists of four major components: 1) flood mitigation for the residential 8.5 Square Mile Area; 2) conveyance and seepage control features to reconnect freshwater flows and control seepage out of Everglades National Park; 3) modifications to Tamiami Trail, including construction of a 1-mile bridge, to allow increased freshwater flows south into Everglades National Park; and 4) project implementation support that focuses on monitoring and operations. The project includes the development of a Water Control Manual which prescribes the operations of the project when complete. Operations in the Mod Waters and C-111 South Dade area have been in a transitional phase since the early 1980's in attempts to improve water flow into the Park and protect endangered species that occupy the area. The latest operational changes were implemented in 2012 and labeled the Everglades Restoration Transition Plan (ERTP) to recognize the transitional nature of operations until all project features are in place. The ERTP included the continuation of bypassing flows from WCA-3A and moving more water to the east into south Dade during the Cape Sable Seaside Sparrow nesting season to help protect that species along with incorporating better water management practices for WCA-3A to benefit the Everglade Snail Kite. This plan will ultimately be replaced by a final operating plan that incorporates the features of the Mod Waters and C-111 South Dade projects. This final operating plan will be implemented in three increments with the first increment beginning in fall 2015. Each increment will increase water levels and flows in Northeast Shark River Slough while maintaining flood protection to eastern developed areas through pumping of seepage lost back into the park.

The ERTP provides for continued operation of the current water control plan for WCA-3 as it enables compliance with Section 106 of the National Historic Preservation Act (NHPA) (under 36 CFR § 800.14(b)) before an "effect determination" has concluded. Previous consultation with the Miccosukee Tribe of Indians of Florida and the Seminole Tribe of Florida determined both tribes are concerned that higher water levels in the WCAs or ENP will adversely affect cultural resources of significance. The Corps is using a Programmatic Agreement (PA) as a tool to investigate the question and make a determination. The PA outlines stipulations for investigation to understand the effects of water operations on cultural resources within the WCA. The PA is designed to provide information on historic water levels across the area and test 12-15 archaeological sites to determine if current water operations are adversely affecting significant cultural resources. Previous Corps studies at lakes and dams have shown that fluctuation of water can cause adverse effects to cultural resources. However given the natural fluctuation of water within the Everglades system, and historic, (pre-drainage) levels, it is not clear if there is an affect or not. No previous studies have addressed this issue. The Corps consulted with the with various parties for over 18 months and entered into this agreement with various parties that included the Seminole Tribe of Florida, Everglades National Park, the Florida State Historic Preservation Officer, and the Advisory Council on Historic Preservation.

Picayune Strand Restoration Project – This project covers more than 55,000 acres and will restore natural habitats and the region’s historic sheetflow while maintaining flood protection for neighboring communities. The project serves as an important major link connecting the Everglades National Park and the Ten Thousand Island National Wildlife Refuge to the south with the Fakahatchee Strand State Preserve to the east, the South Belle Meade State Conservation and Recreation Lands project to the west, and the Florida Panther National Wildlife Preserve to the north. By connecting this large mosaic of natural areas, historic wildlife paths and trails will be restored, especially for the Florida Panther. The project includes three pump stations, three spreader basins, 260 miles of road removal, 48 miles of canal plugging along four canals, manatee mitigation features, and flood protection features. The first component of this project, plugging of the Prairie Canal, was completed as advanced work by the SFWMD during the previous reporting period. Since then the Corps has been leading much of the construction of the major pump stations, road removal, and canal plugging. The SFWMD will be constructing the Manatee Mitigation features in the lower part of the project while the Corps finishes the pump station construction and remaining work. Currently, one pump station has been completed and the remaining two are under construction. Also, a Limited Re-evaluation Report is under preparation and nearing completion to address and overall increase in project costs. Even though the project features are just coming online, the area is already showing signs of recovery particularly along the Prairie Canal where wading birds are flourishing and plant life is recovering. Thanks to the accelerated land acquisition by the State, which is nearly complete, the Florida Panther has shown positive signs of recovery through a notable increase in the number of animals inhabiting the area as well. The overall project should be completed during the next reporting period.

Restoration Strategies – In 2012, the State of Florida and the USEPA reached a consensus on new strategies for improving water quality in America’s Everglades. Under these Restoration Strategies, the SFWMD is implementing an \$880 million technical plan to complete several projects that will create more than 6,500 acres of new STAs and 116,000 acre-feet of additional water storage through construction of FEBs (SFWMD 2012). The Restoration Strategies projects will work in conjunction with existing STAs to achieve compliance with State of Florida water quality standards. Work is already well underway with the completion of the first FEB, the A-1 FEB, scheduled for late 2015. This will be quickly followed by the completion of the L-8 FEB and then other features will rapidly be implemented as well.

Seminole Big Cypress Reservation Water Conservation Plan – The original purpose of this project was to remove phosphorus and other pollutants from water discharged from the Seminole Tribe of Florida’s Big Cypress Indian Reservation which flows to the Everglades Protection Area; to re-water the Big Cypress National Preserve; to restore native range in the Big Cypress Reservation south of the West Feeder Canal; to increase water storage capacity on the Big Cypress Reservation; and to provide improved flood control on the Big Cypress Reservation designed to mimic the historic distribution and timing of water flows. The project’s original design included irrigation cells to provide stormwater protection and water storage for agricultural irrigation; water resource areas that receive stormwater discharges to facilitate nutrient settling and nutrient uptake by vegetation to improve water quality and to improve the hydroperiod of wetlands adversely affected by the close proximity of major drainage/irrigation canals; and pump stations, canals, and culverts for local irrigation and drainage. The initial design called for six irrigation cells in Basin 1, two irrigation cells

in Basin 2, two irrigation cells in Basin 3, and one irrigation cell in Basin 4. Because of high soil porosity and seepage rates from the irrigation cells noted after completion of Basin 1, these features were eliminated from the design for Basins 2, 3, and 4. The irrigation cells in Basin 1 currently provide storm water attenuation and some water quality benefits from the settling of nutrients. Federal expenditures on the project have reached the federal funding cap set by Congress for the Critical Project Program under which this project was authorized. As a result, the Seminole Tribe of Florida has been responsible for 100% of the costs to complete Basin 2.

Site 1 Impoundment Project – The project has been divided into two phases. The Phase 1 features include the rehabilitation and improvements to the common levee bordering WCA 1, also known as the Arthur R. Marshall Loxahatchee National Wildlife Refuge, the creation of a 6 acre wildlife protection area, and other features. Phase 2 will focus on construction of the reservoir and remaining project works. The Phase 1 work will reduce the amount of seepage loss from the adjacent Refuge thus helping to increase the amount of water that remains in that natural system, especially during dry periods. Maintaining the additional water will allow for ecological habitat improvements in the refuge. The Phase 1 work will be completed in 2015. Phase 2 work has not been scheduled at this point.

Southern Corkscrew Regional Ecosystem Watershed Project – This project will restore historical sheetflow in the project area and reduce excessive freshwater discharges (which include nutrients and pollutants) to Estero Bay during the rainy season. This will have a significant benefit to the wetland areas in the watershed as well as improve conditions in Estero Bay. The project was identified under the Critical Projects Program but could not be implemented due to funding cap. The SFWMD has proceeded with implementation of this project outside of the Program at this point. They have been acquiring the necessary lands and will begin construction in the next reporting period.

Tamiami Trail Next Steps Project – This project will provide an additional 5.5 miles of bridging west of the one-mile bridge already completed under the Modified Water Deliveries to Everglades National Park Project. The project will also raise the roadway to allow higher water levels in adjacent canals allowing increased flows south into Everglades National Park. The project was authorized in 2012 as a separate project outside of Mod Waters or CERP for implementation by the Department of the Interior. The USDO I has signed an agreement for construction of the project with the Florida Department of Transportation who will handle the construction. The Governor of Florida also has committed \$90 million over the next 3 years to construct the first 2.6 mile long bridge along the western section of the Tamiami Trail that is just south of WCA 3B. An additional \$20 million has been provided through a Federal Department of Transportation TIGER grant. Initial design has been underway by the DOI and FDOT with project construction scheduled to be underway in 2016.

Taylor Creek and Nubbin Slough: Lake Okeechobee Water Retention and Phosphorus Removal Project – This project was constructed by the Corps in partnership with the SFWMD under the Critical Projects Program. This completed project consists of two STAs and associated water management features captures and treats inflows and subsequently discharges cleaner water back into Taylor Creek, Nubbin Slough, and Lake Okeechobee. The project is on the list for deauthorization and has been transferred to the SFWMD for operations.

Ten Mile Creek Water Preserve Area Project – This project includes an aboveground reservoir, an STA, and associated water management features to improve the health of the St. Lucie Estuary. The project is intended to provide seasonal and temporary storage of peak stormwater flows and to use that stored water to augment flows in the dry season to help moderate salinity levels and reduce sediment loads downstream. The project was constructed by the Corps as a part of the Critical Projects Program. The project has been under evaluation since construction completion due to concerns about the embankment design and construction. The SFWMD is initiating a limited startup of the project at lower water levels to begin obtaining benefits from the project in the basin. The SFWMD has also requested that the project be removed from the Federal program thus allowing them to modify the project sufficiently to achieve a fully functional project.

Water Conservation Area 3 Decompartmentalization and Sheetflow Enhancement Physical Model – This is a design effort that provides for the temporary installation and testing of water management features to address scientific, water flow, and water management uncertainties prior to the decompartmentalization of WCA-3. Construction of the test features was completed in 2012 and operational testing has been underway to determine the effects of alternative levels of canal plugging to reconnect WCA-3A with WCA-3B. Results of the testing are still being evaluated.

West Palm Beach Canal STA 1 East/C-51 West Project – This project captures and treats stormwater runoff from urban and agricultural areas prior to discharge into the Arthur R. Marshall Loxahatchee National Wildlife Refuge. The STA includes treatment cells, distribution cells, and associated pumps, culverts, and other water management features. The project is designed to provide water quality benefits to the refuge while maintaining flood protection for developed areas. The project was constructed by the Corps and has been transferred to SFWMD for operations. Meanwhile, the Corps continues to repair numerous culverts throughout the project area that connect the various cells of the STA. These repairs should be completed in 2016.

Projects Currently Listed for Deauthorization

The following projects that were conditionally authorized in WRDA 2000 have recently been listed for deauthorization due to lack of funding and activity over the past 6 years. In general, since a new PIR would be required prior to further work on these projects and since that new PIR would probably require Congressional authorization as well, deauthorization of these projects does not pose a problem at this time. Also, with the authorization of the Tamiami Trail Next Steps project, the CERP project for that will no longer be needed.

- North New River Improvements
- Raise And Bridge East Portion Of Tamiami Trail And Fill Miami Canal Within WCA-3
- Taylor Creek/Nubbin Slough Storage and Treatment Area
- Wastewater Reuse Technology

LAND ACQUISITION

The State of Florida, with financial assistance from the USDOJ, USDA, and local governments including St. Lucie, Martin, Palm Beach, Broward, Miami-Dade, and Lee counties, is acquiring lands needed for the CERP. Final footprints needed for each project have not yet been determined. However, to ensure the availability of lands needed for potential CERP project implementation, the state has moved forward aggressively acquiring potentially needed lands well in advance of project planning and design, and at their own risk. Acquiring this land now, rather than waiting, preserves land that otherwise might have been developed or become unavailable. The actual lands needed for a project, and any potential credits toward the non-federal sponsor's cost share, are described in final PIRs and associated plans and specifications.

Of the approximately 385,000 acres of land needed for potential CERP projects, approximately 65% (249,000 acres) have been acquired as of December 31, 2014, leaving approximately 136,000 acres that still need to be acquired. For projects with an executed PPA, non-federal funds spent on land acquisition are included in the total expenditures described in the funding section of this report.

Since 2010 (October 1, 2010 – September 30, 2015), nearly 55,000 acres have been acquired for Everglades projects.

TABLE 2-3: LAND ACQUISITION BY PROJECT

Project Name	Acreage
8.5 Square Mile Area	2,283.32
Acme Basin B Discharge	1.56
Big Cypress Basin	6.56
Big Cypress Basin Field Station	7.98
Biscayne Bay Coastal Wetlands	1,689.91
C-111 South Dade	9.74
C-111 Spreader Canal	72.68
C-18	0.63
C-2	0.01
C-4	0.75
C-4 Flood Mitigation	0.03
C-44 STA	2.76
CREW	2,237.94
Cypress Creek/Loxahatchee	1,227.85
Deer Fence	269.29
East Coast Buffer	70.00
Herbert Hoover Dike	733.39
Hillsboro Canal	3.36
Indian River Lagoon - South	1,911.82
Kissimmee Chain of Lakes	407.32
Kissimmee River	553.79
L-2W	1.03
L-31N	6.07
L-40	24.85
L-63N	1.39

Lake Hicpochee Hydrologic Enhancement, NEEPP	807.29
Lake Okeechobee & Estuary Recovery (LOER)	174.26
Lake Okeechobee Isolated Wetlands Creation & Restoration (SWAP)	428.35
Lake Okeechobee Water Retention Phosphorus Removal Project	287.17
Loxahatchee River	371.00
Loxahatchee River Watershed Restoration Project	4,253.53
Palm Beach County - Natural Lands	766.57
Picayune Strand Restoration - Fakahatchee Outside Boundary	87.18
Picayune Strand Restoration (SGGE)	11,057.34
Regulatory Mitigation Lands	1,232.08
River of Grass	18,549.65
Shingle Creek	1.20
Southern Glades	541.23
Stormwater Treatment Areas	<u>4,756.04</u>
TOTAL	54,836.91

RECOVER and CERP's SCIENCE PROGRAM

The restoration program depends on sound science to evaluate ecological health and assess ecosystem response to restoration activities. Science informs decision-making and allows for the adaptation of our restoration efforts. Long-term data that describe the ecological conditions, variability, trends, and patterns in the Everglades are fundamental to understanding how projects, once implemented, change the ecology of the Everglades. RECOVER, the scientific arm of CERP, ensures science remains a fundamental and overarching element throughout the ongoing planning and implementation of Everglades restoration. RECOVER coordinates the monitoring of ecological indicator species across the system and uses modeling and other tools to assess restoration progress.

RESPONDING TO CHANGING ECOSYSTEM NEEDS: THE ADAPTIVE MANAGEMENT PROGRAM

Adaptive management is a structured management approach that allows for learning while doing, especially for projects where risks from delays in implementation outweigh risks from project uncertainties. Adaptive management addresses uncertainties by testing hypotheses, linking science to decision making, incorporating flexible design, and adjusting project implementation, as necessary, to improve the probability of restoration success. The CERP is being planned, implemented, assessed, and refined using the principles of adaptive management. During this reporting period, project adaptive management and monitoring plans have been incorporated, as required by WRDA 2007, into the CEPP, C-111 Spreader Canal Western, and Biscayne Bay Coastal Wetlands projects. Field tests, such as the DECOMP Physical Model, use RECOVER information to establish monitoring that will be used to inform future related work.

MONITORING TO DETERMINE THE HEALTH OF THE EVERGLADES: THE SYSTEM STATUS REPORT

During the reporting period, RECOVER produced the *2012 Interim Systems Status Report (SSR)* and the *2014 SSR*, documenting the CERP Monitoring and Assessment Plan (MAP) program. The goal of the MAP is to document status and trends of the defining attributes and key indicator species of the south Florida ecosystem, as well as to address key questions (uncertainties) about achieving ecosystem restoration goals. A comprehensive understanding of the system enables the successful use of adaptive management principles to track and guide restoration activities to ultimately achieve restoration success.

The past five water years have been dry, which has benefited the Northern Estuaries and Lake Okeechobee but continued to negatively impact the central Everglades and southern coastal areas. In the north, we have seen improvements that likely indicate how the ecosystem will respond in the future once CERP restoration projects are in place to maintain ecosystem resilience in all climatic periods (sequence of wet years or dry years). In the south, the drought has continued to impact the central Everglades wetlands hydrology, ecosystem characteristics, flora, fauna, and landscape types, as well as salinity trends and ecology in the southern coastal areas. The few restoration projects constructed to date—Biscayne Bay Coastal Wetlands Project, C-111 Spreader Canal Western Project, and Picayune Strand Restoration Project—have begun to yield benefits in their project areas.

Some of the challenges affecting the Everglades ecosystem include:

- Hydrology remains altered across the system (too dry in the northern WCAs and in Everglades National Park, and too wet in the southern WCAs).
- The number of large tree islands, an important habitat and feature of the historic Everglades, decreased by 50% between 1954 and 2004 in Shark River Slough.
- Florida Bay salinity conditions moved farther from restoration targets over the past four years.

Certain ecosystem indicators illustrate improvements due to restoration projects being constructed and operational:

- Wetland hydrology improved due to the operational part of the Deering Estate Biscayne Bay Coastal Wetlands expedited project.
- Picayune Strand showed higher water levels near the filled Prairie Canal (1 to 2 feet higher) and vegetation is starting to show signs of improvement and moving closer to reference conditions.
- Desirable wet conditions (longer hydroperiods) were 50 days longer (on an annual average basis) along the central-eastern edge of ENP as a result of the C-111 South Dade Project.
- Roseate spoonbill nesting improved, most likely due to favorable climatic conditions and better real-time environmental coordination with water management operational decisions.
- Crocodile nesting and population trends increased over the past two decades along the southwestern Florida coast due to the Cape Sable plug restoration projects.

Lake Okeechobee

Lake Okeechobee ecology improved during the reporting period (Water Years 2009 to 2013) [a water year begins on May 1 and ends the subsequent year on April 30] due in part to operational changes and favorable climatic conditions. The current operational schedule (2008 Lake Okeechobee Regulation Schedule) was developed primarily to protect the Herbert Hoover Dike; however, its lower lake levels helped keep the lake at ecologically desirable levels (12.5 to 15.5 feet) more frequently.

Phosphorus and other nutrient concentrations decreased during the reporting period. Submerged aquatic vegetation habitat found near the shore during the summer increased by 12,200 acres and periphyton were more abundant, while algal bloom frequency slightly increased by 2.6 percent. These results suggest that Lake Okeechobee ecology will improve once more storage outside of Lake Okeechobee is available to reduce the frequency of above-average inflows during wet years and once ecologically desired water levels are incorporated as part of Lake Okeechobee operations.

Northern Estuaries

The Northern Estuaries include the Caloosahatchee River Estuary, the St. Lucie Estuary and Southern Indian River Lagoon, the Loxahatchee River Estuary, and Lake Worth Lagoon.

St. Lucie Estuary

New data indicate supplemental freshwater inflows to the St. Lucie Estuary during extremely dry years, especially when they occur back to back, may be needed to maintain healthy oyster

populations in the middle estuary. Climate (temperature and rainfall) patterns during the reporting period (Water Years 2009 to 2013) led to new findings about the distribution of flow requirements for oysters in the St. Lucie Estuary. The data also suggest that rapid drops in salinity (1 to 2 practical salinity units per day) may be detrimental to seagrass even if these decreases are within their normal tolerance ranges and that recovery can take months to years. Salinity and sediment composition are the major determinants of the species diversity of invertebrates found at the bottom of the southern Indian River Lagoon and St. Lucie Estuary.

Caloosahatchee Estuary

Data from the Caloosahatchee River Estuary indicate management activities that decrease high flow events and allow a more gradual release of water into the estuary are beneficial. Oysters typically spawn in the Caloosahatchee River Estuary from May through November, with a peak in July to August. The majority of spawning occurs during the rainy season when flows are usually the highest and salinities the lowest. New evidence also demonstrates high temperatures result in additional stress to oysters by increasing predation rates and lowering salinity tolerance.

Central and Southern Everglades

The central and southern Everglades primarily includes areas south and east of the Everglades Agricultural Area (EAA), including the WCAs and Everglades National Park. Monitoring over the past 10 years has documented *periodic* dry years that may have had a positive role in shaping ecosystem structure, providing habitat and concentrating prey for key restoration indicators such as alligators and wading birds. However, *successive* dry years (droughts) can negatively impact the system. These impacts are exacerbated by the Central and Southern Florida (C&SF) Flood Control Project, which compartmentalized the central and southern Everglades and created upstream regions that are too dry and downstream areas that are too wet. The C&SF Project also has disrupted the flow of clean water through the Everglades that defined and sustained the characteristics that make these wetlands unique in the world. Continued monitoring has revealed new information on the following.

Wading Birds and Prey Fish

- Drying events help concentrate prey fish for wading birds; however, long-term analysis shows an increased frequency of drying events leads to decreased fish biomass.
- Droughts decrease the density of larger fishes that are the preferred prey for great egrets and wood storks, but they increase the density of crayfish, the primary food for white ibis.
- Monitoring from 1986 to 2013 shows white ibises were more sensitive to hydrologic reversals than great egrets.
- The optimal water level recession rate for several wading bird species is from 5 to 7 millimeters per day.
- Linking prey performance to wading bird performance can help improve predictive tools for restoration and operational planning.
- Wading bird data were used in weekly water management operational decisions by the SFWMD and the USACE to incorporate real-time foraging conditions information.

Alligators

- Areas that experience dry downs that last longer than two months or repeated dry downs at intervals shorter than once every three to five years are not likely to support restoration population goals for alligators.

Ridge and Slough Vegetation

Hydrology is a determining factor with respect to changes in both marshes and tree islands at the population, community, and ecosystem levels, and these responses are rapid (decadal).

- Fluctuations in the hydrologic regime from 1999 to 2012:
 - resulted in below average water levels and shorter hydroperiods in Shark River Slough,
 - promoted an increase in spikerush and sawgrass cover at the expense of open water sloughs and slough vegetation in the marshes, and
 - resulted in the expansion of woody plants across the full suite of communities comprising the tree island gradient, i.e., bayhead forest, bayhead swamp, and sawgrass tail.
- Good ridge and slough vegetation and landscapes were found at mean annual slough water depths of 20 to 50 centimeters, although a large proportion of sites near the drier end of this range are conspicuously degraded
- Healthy tree islands:
 - exhibit spatial and temporal variability in plant water uptake focused in the shallow soil profile,
 - exhibit evapotranspiration that increases from wetter communities to drier communities within the tree island, and
 - actively accumulate ions in soil water of the drier, “high head” plant community.

Water Quality

- The strong relationship between periphyton downstream of inflow structures and total phosphorus concentrations in inflows from Water Year 2007 to Water Year 2011 points to the continuing relevance of nutrient inputs to Everglades ecology.

Southern Coastal Systems

The Southern Coastal Systems include Biscayne Bay, Florida Bay, the Lower Southwest Coast, the Upper Southwest Coast, and the Ten Thousand Islands. These regions have been impacted by changes in the availability, timing, and distribution of freshwater inflows. Restoration of the southern coastal systems will depend on the reestablishment of more natural flows. These productive estuaries rely on appropriate water levels and salinity regimes to support seagrass habitat and native species. Studies conducted during the reporting period provided information on these factors.

Seagrass

- The frequency of occurrence and abundance of juvenile sportfish are directly related to the amount of seagrass habitat cover.
- Seagrass species diversity is declining, with some species showing marked gains and others decreasing in spatial extent.

Salinity

- Moderate estuarine salinity is preferred by some sportfish.
- The plugging of canals near Cape Sable likely moved salinity regimes toward restoration targets, resulting in improvements in American crocodile nesting.

- Obtaining pre-drainage salinities in Florida Bay would require water levels in Shark River Slough to be 0.5 to 0.8 foot higher than the current observed levels.
- Salinity increased in Florida Bay, moving farther away from restoration targets likely due to reduced rainfall and resulting reduced inflows from the water management system.

Hydrology

- Successful nesting of Florida Bay roseate spoonbills in seven of the last eight years is due to favorable climate conditions and better coordination with water managers.
- Operation of the expedited component of the Biscayne Bay Coastal Wetlands Project yielded hydrologic improvements in the project area wetlands.

Water Quality

- Although there has not been a significant trend in overall water quality since the 2009 System Status Report, chlorophyll a has shown marked increases in waters adjacent to the southeastern Everglades (northeastern Florida Bay; and Barnes Sound/Manatee Bay/Blackwater Sound), as well as in southern Florida Bay, in Water Year 2011 through Water Year 2013. These changes may be related to climatic patterns, with unusually high dry season rainfall in recent years.

INTERIM GOALS AND TARGETS

Interim goals provide a means to evaluate the restoration success of the CERP by tracking restoration performance and progress and provides a basis for reporting that progress at specified intervals of time. During the reporting period, RECOVER made progress in evaluating the predictability of expected environmental responses through work on performance measures and models and by using the data from the MAP monitoring to refine predictive tools. The 2014 SSR provides an update on the interim goals that highlights the work accomplished, through various agency and RECOVER efforts, toward development of associated ecological models (RECOVER 2014).

Interim targets are defined as anticipated incremental improvements in water supply e.g., (agriculture and municipal/industry) and other socioeconomic indicators over the course of CERP implementation. No formal assessment of progress with regard to interim targets occurred during the reporting period because no significant restoration-related changes to inflows (e.g. structure flow), outflows (e.g., overland flow and levee seepage), and changes in storage (e.g. water levels) for each of the basins have occurred at this point.

ADDITIONAL RESTORATION SCIENCE PROGRAMS

Invasive Exotic Species

Natural systems within the Everglades are under increasing threat of invasion by nonnative species, including nonnative fish, amphibians, reptiles, and birds. Melaleuca, Old World climbing fern, Brazilian pepper, Burmese pythons and Cuban tree frogs are already established in some of the remote Everglades natural areas and Nile monitors, yellow anacondas, tegu lizards, and spectacled caiman have all been found on or near the Everglades. Although fishes and reptiles have been of primary concern, amphibians (e.g., Cuban tree frogs), birds (e.g., sacred ibis and purple swamp hens) and macroinvertebrates (e.g., island apple snails) all potentially threaten the Everglades and ecosystem restoration. Sustained invasive plant management efforts have resulted in substantial declines in some priority invasive plant species (e.g., melaleuca, and Australian pine). Integration of herbicidal control, biological controls, and prescribed fire has contributed to the success of the melaleuca regional control effort. Old World climbing fern, an aggressive invader of Everglades tree islands, continues to increase in abundance throughout the region.

In order to effectively address invasive species, the *2010 CERP Memorandum – Requirements for Project Implementation Plans and Other Implementation Documents*, the *CERP Guidance Memorandum 062.00: Invasive and Native Nuisance Species Management* (USACE and SFWMD 2012b) was developed and implemented. Some CERP projects, such as the CEPP (USACE and SFWMD 2014), have incorporated invasive species considerations into their PIRs.

In its 2014 report, the CISRERP noted excellent progress in operational coordination of the management of invasive exotic species but suggested that strategic coordination was needed to develop a comprehensive view of all nonnative species along with an early detection and rapid response (EDRR) system that addresses all parts of the greater Everglades (NRC 2014). In response, the Task Force initiated development of an *Invasive Exotic Species Strategic Action Framework* (SFERTF 2014). In light of the invasion curve (Fig. XX to be added), the Framework recognizes the longer the delay in addressing a particular invasion and the more widespread that invasion becomes, the more expensive it is to address. Current efforts are focused upon establishment of an EDRR system for the south Florida ecosystem.

In 2013, the Melaleuca Eradication and Other Exotic Plants Project became the first completed CERP project, a joint effort between the USACE, USDA, USDO, SFWMD, and University of Florida, this facility is part of a long-term plan to use biological controls to supplement existing efforts to control and reduce the most aggressive, widespread, and problematic invasive exotic plants in south Florida. The biological controls to combat melaleuca, Brazilian pepper, Australian pine, and Old World climbing fern are the focus of this system-wide approach to combat these invasive, nonnative plants.

Climate Change

Recognition is growing that Earth's global climate is warming, the rate of warming is likely to accelerate, and warmer global conditions are likely to persist well beyond 2100. CERP goals of restoring a healthy Everglades ecosystem and sustaining its unique plant and wildlife diversity must address how climate change will impact these Everglades goals. Measuring restoration success

needs to incorporate climate change considerations which can then be developed into a framework for long-term climate adaptation strategies.

The Climate Change in South Florida Technical Workshop (February 14–15, 2013) discussed the model outputs for the year 2060 scenarios using the South Florida Water Management Model (SFWMM). The output from these scenarios was compared to CERP performance indicators. To illustrate, one future scenario considered 18 inches of sea level rise, 1.5° Celsius temperature increase, and 10% decreased rainfall (with water management infrastructure and operations based on a 2010 baseline). The conclusions from this scenario workshop indicate:

- Lake Okeechobee – a two-meter decrease in average high and low water levels over multiple years would make the 100,000 acres of the lake’s marsh dry out and be prone to fires, vegetation die off, and would dramatically shape lake ecology.
- Freshwater Wetlands throughout the Everglades – major impacts to soils, vegetation, fish, wildlife, invasive species, reduced peat production, increased rate of peat loss, and fire risk would be experienced. Aquatic fish production would likely decrease, affecting wading birds and alligators. There would be increased stress on individual plant species and the vegetation community, which will make the habitat more suitable for invasive exotic species. Water level fluctuations over a wet-dry cycle would alter soil biogeochemical processes resulting in more soil oxidation, release of mercury and sulfate, and an increase of methyl mercury.
- Coastal and Marine Ecosystems – The salinity of Florida Bay will become more like the ocean with 1.5 feet of sea level rise and cause erosion of the coastal marshes. Higher summer temperatures may negatively affect seagrass habitat and fish, coral will continue to be impacted, and peat loss in freshwater wetlands due to saltwater intrusion may also result in additional nutrient impairments to Florida Bay.

Despite the challenges that may lay ahead to deal with the potential effects of climate change on the human and natural environment of south Florida, the overwhelming consensus by scientific experts is that restoration of the Everglades, as envisioned in CERP, is the best defense against adverse effects of climate change. The preservation of the water resources of south Florida, the restoration of the natural flows and functions of the south Florida ecosystem, and the increase in spatial extent of wetland and natural areas offer the best hope for a resilient Everglades ecosystem that can better adapt to future changes.

Regional Environmental Monitoring and Assessment Program

The USEPA has been conducting an assessment of the health of the Everglades over the last 20 years. The Everglades Ecosystem Assessment Program (also referred to as Regional Environmental Monitoring and Assessment Program, or REMAP) measures current and changing conditions for water quality and ecological resources. Program data addresses key questions related to water management and soil loss and tracks the effectiveness of efforts to control phosphorus (such as Restoration Strategies) and mercury.

During each sampling phase, about 125 locations are sampled in a two-week window in order to assess the entire Everglades at a point in time. In September 2014, Phase IV sampling was

conducted at 119 locations throughout the marsh. Funding support from and collaborative helicopter operations with Everglades National Park have made this effort possible. Data interpretation is ongoing, and the USEPA project report should be available next year.

FINANCIAL PROGRAM

Project/Program Funding

Over \$1.2 billion in funding, in combined contributions from the federal and state partners, has been provided in support of the CERP and prospective CERP projects over the past five fiscal years (2010-2014; Table 2-4).

Table 2-4: CERP Federal and State Enacted Funding⁽¹⁾						
Oct 1, 2010 through Sept 30, 2014						
<i>(rounded in 1,000s)</i>						
FEDERAL	FY 10	FY11	FY12	FY13	FY14	5-Yr Total
USACE ⁽²⁾	\$ 119,966	\$ 117,525	\$57,886	\$ 75,902	\$ 35,217	\$ 406,496
USACE- ARRA ⁽³⁾	\$ 86,796	-	-	-	-	\$ 86,796
USDOJ - NPS	\$ 5,198	\$ 5,150	\$ 5,101	\$ 4,854	\$ 5,130	\$ 25,433
USDOJ - FWS	\$ 3,251	\$ 3,251	\$ 3,246	\$3,029	\$ 3,246	\$ 16,023
Federal Subtotal	\$ 215,211	\$ 125,926	\$ 66,233	\$ 83,785	\$ 43,593	\$ 534,748
STATE	FY09-10	FY10-11	FY11-12	FY12-13	FY13-14	5-Yr Total
SFWMD	\$ 106,296	\$ 227,063	\$ 52,664	\$ 66,537	\$ 56,117	\$ 508,678
Florida Department of Environmental Protection	\$ 48,590	\$ 51,809	\$ 31,006	\$ 28,528	\$ 73,165	\$ 233,098
Florida Fish and Wildlife Conservation Commission	\$ 2,723	\$ 1,497	\$ 1,640	\$ 1,198	\$ 2,002	\$ 9,050
State Subtotal	\$ 157,609	\$ 280,369	\$ 85,311	\$ 96,253	\$ 131,284	\$ 750,825
TOTAL FUNDING	\$ 372,820	\$ 406,295	\$ 151,544	\$ 180,038	\$ 174,877	\$ 1,285,573
Notes:						
(1) Actual funds allocated to date, but not necessarily expended.						
(2) USACE CERP activities are funded under the overall Central and Southern Florida Project.						
(3) USACE Everglades projects funded through the American Recovery and Reinvestment Act of 2009.						

Expenditures through Fiscal Year 2014

Federal sponsor (USACE) and local sponsor creditable expenditures for CERP implementation through the end of FY14, as shown in **Table 2-5**, total approximately \$937.7 million for the USACE and \$1.054 billion for the SFWMD. The submissions of requests for work-in-kind credit from the primary non-federal sponsor normally lag, as there is a delay in compilation and submission by the SFWMD. A review and verification process also is completed by the USACE once the requests are received.

Table 2-5: Comprehensive Everglades Restoration Plan Cumulative Expenditures Through Fiscal Year 2014 (1) <i>(in thousands)</i>			
CERP	USACE	SFWMD (2)	TOTAL
Projects (3)	\$ 631,880	\$ 816,051	\$ 1,447,931
Adaptive Assessment & Monitoring	\$ 64,105	\$ 44,941	\$ 109,046
Program Coordination	\$ 241,704	\$ 183,580	\$ 425,284
Estimated Work-in-Kind, not yet submitted (4)	-	\$ 9,037	\$ 9,037
TOTAL	\$ 937,688	\$ 1,053,609	\$ 1,991,297
Cost Share Percentage (%)	47%	53%	100%
Note: (1) Actual expenditures, which is not the same as funds allocated. (2) Includes cumulative and creditable (approved) SFWMD submissions through FY12. (3) Projects total also includes CERP Feasibility Studies and Pilots (4) An estimate of the submissions expected from the SFWMD for FY13 and FY14.			

As noted above in **Table 2-5**, the costs include program coordination and adaptive assessment and monitoring. Program coordination includes providing strategic direction for the sequence of project implementation, resource allocation, and goals against which progress of the restoration is measured, and the feedback processes to identify and address any shortfalls in progress. In addition, program coordination also includes the CERP projects, which are managed at the programmatic level due to their interface with all of the projects: Master Recreation Plan, Public Outreach, Interagency Modeling Center, Information and Data Management, Quality Assurance Oversight Team, and Environmental and Economic Equity.

Cost Estimate Update

The estimated cost of CERP was based on the best available information at the time. Appropriate contingency factors were used to reflect the uncertainties inherent at that stage of the program. The cost risk associated with each feature was appraised separately and, due to the lack of design

information, was generic rather than site specific. It was anticipated that the cost of the CERP would be modified as pilot projects and individual PIRs were completed.

The cost estimate increase of \$4 billion is due to price level (inflation) adjustment from October 2009 to October 2014, changes in project scope and schedule, and new project authorizations. Updated cost estimates are also available by project in Table 2-6.

Table 2-6: Comprehensive Everglades Restoration Plan Cost Estimate Update		
	Summary (in millions)	
	October 2009 Price Level	October 2014 Price Level
Projects	\$ 12,303	\$ 16,659
Adaptive Assessment and Monitoring (AA&M)	\$ 579	\$ 157
Program Coordination	\$ 578	\$ 737
TOTAL	\$ 13,460	\$ 17,552

TABLE 2-7: UPDATED COST ESTIMATES BY CERP PROJECT⁽¹⁾

Changes in Cost Estimates (Costs in \$1,000s and Project Component Alignment per CERP Guidance Memo 002.03)							
WBS Proj #	CERP Component	Project Name	2010 Report to Congress (1 Oct 09 Price Levels)	Current Cost Estimate (1 Oct 14 Price Levels)	Difference	Difference Due to Inflation	Difference Due to Other (Scope, Authorization, etc.)
1	A, W, OPE	Lake Okeechobee Watershed	661,524	1,518,564	857,040	97,692	759,348
4a	D_P1	Caloosahatchee River (C-43) West Basin Storage Reservoir	570,484	591,902	21,418	57,525	(36,107)
4 b		Caloosahatchee Watershed	262	287	25	25	
5	D_P2	C-43 Basin Aquifer Storage and Recovery	304,185	330,259	26,074	21,705	4,369
33	PILOT	C-43 Aquifer Storage and Recovery PILOT	8,723	5,685	(3,038)	297	(3,335)
6	DDD	Caloosahatchee Back-pumping with Stormwater Treatment	114,640	124,871	10,231	8,249	1,982
7	B, UU	Indian River Lagoon - South	1,694,302	2,999,962	1,305,660	107,500	1,198,160
8	G_P1	Everglades Agricultural Area Storage Reservoir	596,439	57,670	(538,769)	39,978	(578,747)*
9	G_P2						
10	CCC	Big Cypress - L-28 Interceptor Modifications	59,098	64,370	5,272	4,253	1,019
11	RR	Flows To NW & Central WCA 3A	41,259	32,844	(8,415)	78	(8,493)*
23	EEE	Flows to Eastern Water Conservation Area	9,127	9,906	779	651	128
26	S	Central Lake Belt Storage Area	691,441	753,840	62,399	49,878	12,521
48	YY	WCA 2B Flows to Everglades National Park	109,554	119,307	9,753	5,984	3,769
12 a	SS	WCA 3 Decentralization and Sheetflow Enhancement - Part 1	145,803	129,162	(16,641)	9,488	(26,129)*
12 b	QQ_P2	WCA 3 Decentralization and Sheetflow Enhancement -- Part 2	107,811	89,285	(18,526)	7,735	(26,261)*
12 c	QQ_P3 (prev. QP2)	WCA 3 Decentralization and Sheetflow Enhancement -- Part 3	39,824	0	(39,824)	2,915	(42,739)*
	ZZ		1,112	1,219	107	53	54
14	KK	Loxahatchee National Wildlife Refuge Internal Canal Structures	10,323	11,209	886	734	152
15	DD	Modify Holey Land Wildlife Mgt. Area Operation Plan	0	0	0		
16	EE	Modify Rotenberger Wildlife Mgt. Area Operation Plan	0	0	0		
17	K_P1, GGG, X, Y, OPE	North Palm Beach County - Part 1	615,714	682,472	66,758	44,206	22,552
18	LL, K_P2	North Palm Beach County - Part 2	233,009	253,237	20,228	16,669	3,559

WBS Proj#	CERP Component	Project Name	2010 Report to Congress (1 Oct 09 Price Levels)	Current Cost Estimate (1 Oct 14 Price Levels)	Difference	Difference Due to Inflation	Difference Due to Other (Authorization, Scope, etc.)
20	V V_P1	PBC Agriculture Reserve Reservoir	124,765	137,437	12,672	9,244	3,428
21	V V_P2	PBC Agriculture Reserve Aquifer Storage & Recovery	56,542	61,413	4,871	4,039	832
3	GG	Lake Okeechobee Aquifer Storage & Recovery	1,432,270	1,556,247	123,977	112,404	11,573
32	PILOT	Lake Okeechobee ASR PILOT	44,657	31,493	(23,282)	541	(23,823)
34	PILOT	Hillsboro ASR PILOT	10,118				
40	M_P1	Site 1 Impoundment	128,350	274,930	146,580	8,288	138,292
22	M_P2	Hillsboro Aquifer Storage and Recovery	119,091	129,185	10,094	8,478	1,616
24	CC	Broward Co. Secondary Canal System	17,777	19,352	1,575	1,274	301
43	U	Everglades National Park Seepage Management	485,662	437,184	(48,478)	34,701	(83,179)*
27	FF, BB						
49	XX_P1	WPA Conveyance	357,714	390,726	33,012	20,052	12,960
25	XX_P2	North Lake Belt Storage Area	357,436	390,443	33,007	25,914	7,093
35	PILOT	Lake Belt In-Ground Reservoir Technology PILOT	29,715	32,005	2,290	1,966	324
36	PILOT	L-31 N (L-30) Seepage Management PILOT	17,146	16,336	(810)	412	(1,222)
28	FFF / OPE	Biscayne Bay Coastal Wetlands	457,627	169,692	(287,935)	17,253	(305,188)
29	WW	C-111 Spreader Canal	137,234	161,843	24,609	15,313	9,296
30	OPE	Picayune Strand Restoration	458,525	617,762	159,237	5,824	153,413
31	OPE	Florida Keys Tidal Restoration	1,427	16,400	14,973	983	13,990
38	OPE	Acme Basin B Discharge	24,241	36,039	11,798	2,044	9,754
39	OPE	Strazzulla Wetlands	67,390	93,110	25,720	6,264	19,492
45	R, Q, O	Broward County Water Preserve Areas (WPAs)	485,543	880,958	395,415	68,923	326,492
46	T	C-4 Control Structures	3,190	3,467	277	170	107
90	OPE	Miccosukee Tribe Water Management Plan	33,207	36,099	2,892	2,377	515
91	OPE	Winsberg Farm Wetlands Restoration	16,736	26,153	9,417	1,566	7,851

WBS Proj #	CERP Component	Project Name	2010 Report to Congress (1 Oct 09 Price Levels)	Current Cost Estimate (1 Oct 14 Price Levels)	Difference	Difference Due to Inflation	Difference Due to Other (Authorization, Scope etc.)
92	OPE	Restoration Of Pineland & Hardwood Hammocks in C-111 Basin	802	871	69	58	11
93	OPE	Henderson Creek - Belle Meade Restoration	5,622	7,265	1,643	472	1,171
94	OPE	Lakes Park Restoration	6,567	7,056	489	408	81
95	OPE	Melaleuca Eradication And Other Exotic Plants	3,718	4,817	1,099	9	1,090
96	OPE	Seminole Tribe Big Cypress Reservation Water Conservation Plan	102,344	111,272	8,928	7,329	1,599
97	HHH	West Miami-Dade Reuse	592,046	643,420	51,374	42,352	9,022
98	BBB	South Miami-Dade Reuse	492,183	534,965	42,782	35,222	7,560
37	PILOT	Wastewater Reuse Technology PILOT	37,049	40,052	3,003	2,507	496
	OPE	Southern CREW	53,533	59,138	5,605	3,995	1,610
	OPE	Lake Trafford Restoration	20,821	22,623	1,802	1,488	314
	FEAS	Southwest Florida Feasibility Studies	18,000	18,000	0		
	FEAS	Florida Bay Florida Keys Feasibility Study	6,500	6,500	0		
	FEAS	Comprehensive Integrated Water Quality Plan	8,100	8,100	0		
44		Aquifer Storage and Recovery Regional Study	85,806	25,141	(60,665)	2,153	(62,818)
51	QQ, II, G, V	Central Everglades Planning Project (CEPP)		1,874,972	1,874,972		1,874,972
TOTALS			12,314,088	16,658,517	4,344,429	919,638	3,424,791

* Cost changes for these projects were assigned to inflation as the only change was the re-grouping of feature

(1) AA&M and PLA costs are not reflected in this table.

THE SOUTH FLORIDA ECOSYSTEM RESTORATION TASK FORCE

The intergovernmental Task Force is the only forum that provides strategic coordination and a system-wide perspective to coordinate the separate restoration efforts being planned and implemented in south Florida. The duties of the Task Force are as follows:

- Coordinate the development of consistent policies, strategies, plans, programs, projects, activities, and priorities addressing the restoration, preservation, and protection of the South Florida Ecosystem;
- Exchange information regarding programs, projects and activities of the agencies and entities represented on the Task Force to promote ecosystem restoration and preservation;
- Facilitate the resolution of interagency and intergovernmental conflicts associated with the restoration of the South Florida Ecosystem among the agencies and entities represented on the Task Force;
- Coordinate scientific and other research associated with the restoration of the South Florida Ecosystem; and
- Provide assistance and support to agencies and entities represented on the Task Force in their restoration activities.

Four sovereign entities (federal, state, and two tribes) are represented on the Task Force. Fourteen members sit on the Task Force itself, representing seven federal departments, three state agencies/offices, two American Indian tribes, and two local governments. The Florida-based Working Group and the SCG have been established to assist the Task Force with its responsibilities. Their members include additional federal, state, and local agencies. The Task Force and Working Group establish regional and issue-based teams as needed to address pressing or area-based restoration concerns. Currently, the SFWMD's WRAC also serves as an advisory body to the Task Force.

This reporting period witnessed the development and utilization of an innovative stakeholder engagement approach. The Task Force kicked off an intensive public involvement process for the expedited planning process of the CEPP at the end of 2011 and it quickly became the dominant element of restoration planning between 2012 and 2014. The public was afforded more opportunities to provide meaningful input into the planning process than ever before and as a result, the CEPP earned unprecedented levels of public and stakeholder support. The National Research Council called the CEPP public process "exemplary" and recommended that it "serve as a model for future planning processes (NRC 2014). The stakeholder workshop model is also being utilized for the 2015 update of the Integrated Delivery Schedule (IDS).

On July 9, 2013, the Task Force directed its Working Group and SCG to develop the *Invasive Exotic Species Strategic Action Framework* for addressing the serious threats to the Everglades posed by invasive exotic plant and animal species (SFERTF 2014). The framework was developed by an extensive and diverse set of partners including members of the Task Force, Working Group, Science Coordination Group, Everglades Cooperative Invasive Species Management Area (ECISMA), and the USDO's Office of Everglades Restoration Initiatives. The Framework seeks to help decision-makers understand the connections between goals, strategies, and tactics; maximize the extent to which the current capacity for partnership is leveraged to meet common goals; help decision-makers make wise and timely investment decisions in the battle against invasive exotics; and define success and provide for

accountability. Currently, efforts are focused on the establishment of an EDRR system for the Everglades ecosystem.

PUBLIC PARTICIPATION AND STAKEHOLDER ENGAGEMENT

Public outreach is a vital part of CERP used to educate and inform stakeholders on restoration progress, while also providing a mechanism for meaningful public participation during the restoration process. The CERP planning process requires robust public participation to ensure stakeholder involvement, understanding, and support. For the CEPP alone, 74 public engagements were conducted within 29 months. The USACE, SFWMD, and Task Force have developed and implemented a wide array of creative and effective outreach programs and products, at both the program and the individual project level, for a variety of audiences. The following is a description of the major restoration forums.

CERP Project Delivery Team (PDT) Meetings

PDT meetings enable federal, state, and local agencies, and tribal governments to provide input into CERP planning efforts. Specifically, the PDT develops a program management plan (PMP) to outline the scope, activities, schedule, cost estimates, and agency responsibilities for each project. After the completion and approval of the PMP by the USACE and SFWMD, the team prepares the planning document (PIR) for each project. These forums are open to the public and advertised through CERP e-notice distribution lists, web page updates, and social media. Meeting materials are also provided online for public access.

Task Force Meetings and Stakeholder Workshops

One of the primary duties of the Task Force is to consult with, and provide recommendations to, the Secretary of the Army and the non-federal sponsor of CERP projects. CERP's Programmatic Regulations (DOD 2003) stipulate the Task Force be afforded an opportunity to provide recommendations on CERP projects and plans. Accordingly, status reports are provided to the Task Force, Working Group, and Science Coordination Group (SCG), and consultation is sought on CERP plans, reports, and other efforts. In addition to regular meetings, stakeholder workshops sponsored by the Working Group and SCG provide the public more opportunities to provide meaningful input. During the reporting period, three stakeholder workshops were held on the 2015 update of the Integrated Delivery Schedule and 16 were conducted during the expedited planning process for the CEPP. Task Force, Working Group, and SCG meetings and stakeholder workshops are open to the public and live webcasts are provided whenever possible.

SFWMD Governing Board and Water Resources Advisory Commission

The SFWMD is directed by nine Governing Board members, appointed by the Governor and confirmed by the Florida Senate, who set policy for the agency. The SFWMD's Water Resources Advisory Commission (WRAC) is an advisory body to the SFWMD Governing Board and the Task Force. It is a forum for improving public participation and decision-making about water resource issues in the south Florida ecosystem. Members are appointed to the WRAC by the SFWMD Governing Board and represent a broad range of business, agricultural, environmental, tribal, governmental, and public interests. Governing Board and WRAC meetings and workshops are open to the public.

National Environmental Policy Act

In accordance with the National Environmental Policy Act (NEPA), public comment periods and public meetings are also conducted as part of USACE's planning efforts for scoping, presenting the final array of alternatives, and draft report. In addition to standard notification through e-notice distribution lists, web page updates, and social media, public meetings and public comment periods are also announced

through news release and published in the Federal Register. Meeting materials are provided online for public access.

RECOVER

RECOVER provides essential support to the CERP in meeting its goals and purposes by applying a system-wide perspective to CERP planning and implementation. Led by the RECOVER Leadership Group consisting of ten agencies and two tribes, this multi-agency team of scientists, modelers, planners, and resource specialists organize and apply scientific and technical information in ways that are most effective in supporting the objectives of CERP. The RECOVER team conducts scientific and technical evaluations and assessments for improving CERP's ability to restore, preserve and protect the south Florida ecosystem while providing for the region's other water-related needs. RECOVER communicates and coordinates the results of these evaluations and assessments to managers, decision makers, and the public.

Coordination with Tribal Governments

The USACE and the Seminole Tribe of Florida have signed a Burial Resources Agreement which is a mutually agreed upon framework that will serve as the basis for consultation regarding the presence of burial resources within the Jacksonville District's area of action and jurisdiction for the Civil Works and Regulatory Programs. In this Agreement, the USACE, in consultation with the Seminole Tribe, will develop adaptive management plans to address uncertainty in the event of a proposed action on burial resources. It also establishes procedures that will ensure culturally sensitive treatment of burial resources pursuant to the USACE's Trust Responsibility. These procedures involve the early identification of burial resources and the processes for treatment of burial resources. The USACE will, in a timely manner, implement a concise and transparent Three-Step Process for each activity that it determines, through consultation with the Seminole Tribe, may impact burial resources. As part of the Three-Step Process, the USACE will develop by memoranda for the record (MFR), in coordination with the Seminole Tribe and other appropriate consulting parties, methods for locating burial resources, the treatment alternatives for man-induced impacts (avoidance, relocation or mitigation), and a proposed consultation schedule. Each incident will be treated on a case-by-case basis. This Burial Resources Agreement is a benchmark of a growing, positive relationship with the Seminole Tribe of Florida. By recognizing the unique Government-to-Government relationship between the U.S. Government and American Indian Tribes, the USACE will continue to give special consideration to the Tribes' environmental and cultural resources. Pursuant to the Trust Responsibility, the USACE will work collaboratively with the Seminole Tribe of Florida through open and timely communication regarding the location and treatment of burial resources within the USACE's area of action and jurisdiction for the Civil Works and Regulatory Programs.

INDEPENDENT SCIENTIFIC REVIEW

In its 2010 report, the CISRERP noted improvements since their 2008 report in restoration pace, federal and state partner relationships, and research efforts. Four CERP projects were under construction and pilot projects were addressing possibilities. They noted the pace of federal funding had increased and praised the federal government for initiating construction of the 1-Mile Tamiami Trail Bridge Project, a linchpin in the larger restoration effort. Despite the advances, the committee noted only sparse natural system restoration benefits had resulted to date. Thus, the Committee suggested increasing the pace of the CERP, if possible. The committee stated that if restoration progress continues, substantial ecological benefits to the ecosystem will increase. They noted the daunting water quality and quantity challenges facing Everglades restoration and supported the SFWMD's initiative to purchase 26,800 acres of land for additional water storage and treatment – which has occurred. The committee also recognized that 'getting the water right' – in the right amount and quality – is a formidable task that requires coordinated partnering and improved research on tradeoffs throughout the ecosystem.

In the 2012 report, CISRERP noted that the pace of ecosystem restoration had improved but the focus had been on the periphery of the remnant Everglades. They acknowledged although substantial progress had been made to reduce phosphorus, minimal progress had been made to restore hydrology. They acknowledged the declines of hydrology-dependent features (e.g., tree islands, peat, ridge and slough, and snail kites) will take long timeframes to recover. They stated declines will continue until both hydrology and water quality improvements can be addressed. In particular, production of restoration benefits within the WCAs and Everglades National Park continue to lag behind, but the CEPP is a step in the right direction. The committee reported notable progress had been made in the construction of Everglades restoration projects since the 2010 report. Significant accomplishments included Restoration Strategies to improve water quality and the CEPP as a means to expedite restoration benefits to the remnant Everglades. Regarding funding and authorization issues, the report noted declines in state funding had shifted responsibility for implementation progress to the federal government. The state has vastly outspent the federal government, so an increased level of federal funding will be necessary to maintain the pace of restoration progress. They noted the last WRDA was passed in 2007 and the lack of project authorizations could soon become a major impediment to restoration progress. In regards to science, the committee stated effective assessment of restoration progress will depend on monitoring to establish pre-project trends, followed by similar data to determine the ecological changes that can be ascribed to the project, and a comprehensive assessment of monitoring efforts is needed.

In the 2014 report, CISRERP recognized the CEPP efforts were responsive to prior recommendations to expedite restoration in the central Everglades. It was noted that CERP progress has been impeded by limited funding and infrequency of WRDA authorizations. The Committee suggested CERP planners revisit the IDS to advance projects with the greatest potential to avert ongoing ecosystem degradation and those that promise the largest restoration benefits. While restoration progress by CERP projects to date remains modest, it was noted that STA performance shows signs of improvement and climate change provides a strong incentive for accelerating restoration. It was recommended CERP planners consider implications of sea-level rise and potential hydrologic change

in system-wide planning and project prioritization by designing for flexibility in anticipation of future changes in temperature, precipitation, and sea-level rise. It was also recommended high priority be given to research needs related to climate change and Everglades restoration. Regarding invasive nonnative species, the committee noted excellent progress in operational coordination of the management of invasive species but suggested strategic coordination is needed to develop a comprehensive view of all nonnative species along with an EDRR system that addresses all parts of the greater Everglades. A system-wide mechanism for prioritizing research on and management of invasive species was recommended along with long-term monitoring and research needed to understand the potential impacts of climate change on Everglades nonnative species management. On the topic of science and decision making, the Committee stated that stable funding is needed for useful long-term system-wide monitoring, a comprehensive reevaluation of restoration-related monitoring is needed to determine its adequacy, and renewed attention to science coordination is warranted.

THE NEXT FIVE YEARS

The next CERP Five Year Report will reflect implementation of the planning achievements and construction authorizations realized during this reporting cycle. Completion of Generation 1 and Generation 2 projects currently underway will be complemented by the work beginning on additional projects, including the CEPP. Completion of Foundation Projects such as the Modified Water Deliveries to Everglades National Park, C-111 South Dade, and Kissimmee River Restoration projects will provide significant hydrological and ecological benefits to the south Florida ecosystem. Table 3-1 summarizes the progress anticipated during the next reporting period. Further details are available in the 2015 Integrated Delivery Schedule, which will be available at www.evergladesrestoration.gov once it is finalized.

Table 3-1: Anticipated Progress, 2015-2020
ANTICIPATED CONSTRUCTION COMPLETIONS
C&SF: C-111 South Dade, Contracts 8 and 9
C&SF: West Palm Beach Canal STA-1 East/C-51 West
C&SF: CERP: Biscayne Bay Coastal Wetlands Phase 1, L-31 East Flowway
C&SF: CERP: Caloosahatchee River (C-43) West Basin Storage, Pump Station, and Cell 1
C&SF: CERP: Indian River Lagoon-South, C-44 Reservoir and C-44 STA and Pump Station
C&SF: CERP: Picayune Strand
C&SF: CERP: Site 1 Impoundment, Phase 1
E&SF: Seminole Tribe Big Cypress Reservation Water Conservation Plan
Kissimmee River Restoration
Modified Water Deliveries to Everglades National Park: Final Water Control Plan for Modified Water Deliveries and C-111 South Dade projects
Restoration Strategies: L-8 FEB, S-375 Structure Expansion, S-5AS Divide Structure, L-8 Divide Structure
Tamiami Trail Next Steps, Phase 1
ANTICIPATED CONSTRUCTION UNDERWAY
C&SF: CERP: Biscayne Bay Coastal Wetlands Phase 1, Cutler Wetlands
C&SF: CERP: Broward County Water Preserve Areas, C-11 Impoundment and WCA-3A/3B Seepage Management Area
C&SF: CERP: Caloosahatchee River (C-43) West Basin, Cell 2
C&SF: CERP: Central Everglades Planning Project, South
C&SF: CERP: Indian River Lagoon-South, C-23/24 Reservoir and Pump Station
Herbert Hoover Dike
Restoration Strategies: STA-1W Expansion #1
ANTICIPATED PLANNING EFFORT COMPLETIONS
C&SF: CERP: Lake Okeechobee Watershed Project
C&SF: CERP: Loxahatchee River Watershed Restoration Project
C&SF: CERP: Western Everglades Restoration Project
ANTICIPATED PPAs
C&SF: CERP: Biscayne Bay Coastal Wetlands – Phase 1
C&SF: CERP: Broward County Water Preserve Areas
C&SF: CERP: C-111 Spreader Canal, Western
C&SF: CERP: Caloosahatchee River (C-43) West Basin Storage Reservoir
C&SF: CERP: Central Everglades Planning Project

Anticipated Science Program Efforts

TABLE 3-2: RECOVER’S ANTICIPATED EFFORTS, 2015-2020	
RECOVER MISSION AREA/PROGRAM	ANTICIPATED EFFORTS
Adaptive Management Program	<ul style="list-style-type: none"> ▪ Update the <i>2015 CERP Programmatic Adaptive Management Plan</i> (RECOVER 2015) every 3 to 5 years to incorporate new findings and inform project implementation schedules, and operations. ▪ Assist with the development of project-specific Adaptive Management (AM) plans as required by the USACE.
Adaptive Assessment and Monitoring Program	<ul style="list-style-type: none"> ▪ Provide system-wide monitoring and produce System Status Reports in 2019 to report CERP’s performance. ▪ Adjust monitoring programs and protocol to meet CERP project implementation and scientific needs particularly in light of climate change and exotic species issues. ▪ Coordinate project-specific monitoring plans with existing system-wide monitoring ▪ Improve information-exchange between scientists and managers and coordination among all south Florida scientific and restoration efforts.
Evaluation and Planning	<ul style="list-style-type: none"> ▪ Complete ecological models, hypotheses, performance measures, and interim and long-term goals currently underway. ▪ Provide scientific input for project sequencing contained in the IDS. ▪ Incorporate new guidance related to climate change into ecological planning tools and integrate applicable information into short- and long-term plans.

Looking Forward

In summary, the next five years provide an opportunity to build upon substantial recent progress. Great strides toward “getting the water right” will be made during the next reporting period: five Foundation Projects will be completed; half a dozen CERP projects will be simultaneously under construction, and planning and design will be underway for the next generation of CERP projects. Timely authorizations and funding are critical to continuing progress toward restoration of the historic River of Grass, known as America’s Everglades.

LIST OF ACRONYMS

AA&M	Adaptive assessment and monitoring
ASR	Aquifer Storage and Recovery
C&SF	Central and Southern Florida
CEPP	Central Everglades Planning Project
CERP	Comprehensive Everglades Restoration Plan
CISRERP	Committee on the Independent Scientific Review of Everglades Restoration Progress
DECOMP	Decomartmentalization and Sheetflow Enhancement
E&SF	Eastern and Southern Florida
EAA	Everglades Agricultural Area
ECISMA	Everglades Cooperative Invasive Species Management Area
EDRR	Early detection and rapid response
ENP	Everglades National Park
FDEP	Florida Department of Environmental Protection
FEB	Flow equalization basin
Framework	Invasive Exotic Species Strategic Action Framework
FY	Fiscal Year
IDS	Integrated Delivery Schedule
IPCC	Intergovernmental Panel on Climate Change
IT	Interim Target
LRR	Limited Reevaluation Report
MAP	Monitoring and Assessment Plan
MFA	Memoranda for the record
NEPA	National Environmental Policy Act
NRC	National Research Council
PDT	Project Delivery Team
PIR	Project Implementation Report
PMP	Program management plan

PPA	Project Partnership Agreement
PPCA	Pre-Partnership Credit Agreement
PSRP	Picayune Strand Restoration Project
PSU	Practical Salinity Unit
RECOVER	REstoration COordination & VERification
REMAP	Regional Environmental Monitoring and Assessment Program
Restudy	Central and Southern Florida Project Comprehensive Review Study
SCG	Science Coordination Group
SFER	South Florida Environmental Report
SFWMD	South Florida Water Management District
SFWMM	South Florida Water Management Model
SSR	Interim Systems Status Report
STA	Stormwater treatment area
Task Force	South Florida Ecosystem Restoration Task Force
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USDOJ	U.S. Department of the Interior
USEPA	U.S. Environmental Protection Agency
WCA	Water Conservation Area
WRDA	Water Resources Development Act
WRRDA	Water Resources Reform and Development Act
WRAC	Water Resources Advisory Commission

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