City of Sanibel

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PUBLIC WORKS	472-6397

July 08, 2016

The Honorable Peter Simmons
Mayor, City of Bonita Springs
9101 Bonita Beach Road
Bonita Springs, Florida 34135

The Honorable Marni Retzer
Mayor, City of Cape Coral
1015 Cultural Park Boulevard
Cape Coral, Florida 33990

The Honorable Nick Batos
Mayor, Village of Estero
9401 Corkscrew Commons Circle #101
Estero, Florida 33928

The Honorable Randall Henderson
Mayor, City of Fort Myers
2200 Second Street
Fort Myers, Florida 33901

The Honorable Dennis C. Boback
Mayor, Town of Fort Myers Beach
2525 Estero Boulevard
Fort Myers Beach, Florida 33931

Mayors,

Enclosed you will find the third revision of the Caloosahatchee Watershed Regional Water Management Issues document (white paper). The revisions include the addition of water quality treatment components for the C-43 reservoir and accelerating the planning process for the Everglades Agricultural Area Project (EAA) providing additional storage treatment and conveyance of water south of Lake Okeechobee.

As you may recall each Lee County municipality has endorsed two versions of the white paper either through resolution or Council vote. At your earliest convenience please endorse this revised white paper and provide the approval date so our staff can include each municipal seal.

Sincerely yours,

Kevin Ruane
Mayor

Enclosure

Cc: Sanibel City Council
Judith A. Zimomra, City Manager
Kenneth B. Cuyler, City Attorney

Recycled paper

Caloosahatchee Watershed Regional Water Management Issues

Short- and Long-term Solutions for Storage and Treatment

Version 3.0

Revised: July 15, 2016

Caloosahatchee Watershed Regional Water Management Issues

ENDORSEMENTS

Prepared by:

Endorsed by:

Sanibel Captiva Conservation Foundation

Snook and Gamefish Foundation

Conservancy of Southwest Florida

Ding Darling Wildlife Society

Audubon Florida

Audubon of the Western Everglades

Audubon of Southwest Florida

CALOOSAHATCHEE WATERSHED

REGIONAL WATER MANAGEMENT ISSUES

STORAGE & TREATMENT PROGRESS SUMMARY JULY 15, 2016

Goals and Objectives

The purpose of this document is to summarize and place into context the projects and policies needed to restore freshwater flows to the Caloosahatchee River and estuary. It outlines a number of the challenges we must overcome in order to be successful in restoring the Everglades and Northern Estuaries. This document is not meant to be all-inclusive of Everglades and Northern estuaries projects; but rather its focus is on those projects that will provide the greatest short and long-term benefits to the Caloosahatchee estuary.

Introduction

The coastal communities of Lee County are routinely impacted by freshwater discharges from Lake Okeechobee and excessive stormwater runoff from the Caloosahatchee watershed. The latest event occurred during the winter and spring of 2015/16, at the peak of Southwest Florida's tourism season. A strong El Niño that developed in 2015 and extended into 2016 resulted in rainfall throughout south Florida exceeding 400% of the historic average. This resulted in water managers releasing billions of gallons of freshwater to the Caloosahatchee and St. Lucie estuaries. During the peak of the freshwater flows (late January–early February), the Caloosahatchee estuary received daily average flows exceeding 14,000 cubic feet per second (cfs) measured at the Franklin Lock (S-79). The Caloosahatchee continued to receive flows exceeding the high-flow harm threshold (2,800 cfs) through the middle of April 2016. These damaging flows were the result of runoff from the Caloosahatchee watershed and the regulatory discharges from Lake Okeechobee. As with past high-volume Lake releases in 2005-2006 and again in 2013, the excessive freshwater discharges impacted the ecology of the Caloosahatchee estuary and coastal waters of Lee County. This in turn impacted the quality of life of our residents, regional property values, revenue of area businesses, and it continues to have a lasting effect on our local economy. This problem persists because of inadequate water storage within the Kissimmee, Lake Okeechobee, and Caloosahatchee watersheds and our inability to treat and convey more water south into Everglades National Park and Florida Bay where it is desperately needed.

Flood control projects, channelization, and other land use changes that have occurred throughout Central and Southern Florida during the past century have resulted in a water management system that is very different from its original state. The highly-engineered, man-made system that exists today delivers water to the coast very quickly, with little to no treatment. This has resulted in the Caloosahatchee estuary receiving too much water during the wet season and not enough during the dry season. The water that is delivered is often laden with excessive nutrients that can stimulate harmful algal blooms. These blooms can degrade aquatic habitats and the quality of our beaches.

What is at stake?

In Lee County, tourism generates more than $3 billion annually. Real estate values in Lee County were more than $87 billion as of 2015.[1] A 2013 poll by the Lee County Visitor and Convention Bureau indicated that 94% of all visitors to Lee County identified our beaches as our most attractive asset.[2] Local water quality can influence consumer confidence, impacting tourism and our local economy. Too much or too little freshwater delivered to the coast can also effect critical estuarine resources such as seagrasses, oysters and economically important finfish and shellfish. The combined impacts on the local economy and the ecology of our waters can greatly influence the quality of life for Lee County residents and visitors.

The economic impacts can also extend beyond the borders of Lee County. Similar to the effect that the BP/Deepwater Horizon oil spill had on Florida's economy, areas that are not physically impacted by the freshwater releases from the Caloosahatchee and St. Lucie rivers can be affected indirectly. For example, when the media reports on the impacts of the freshwater discharges they often refer to the "beaches of Southwest Florida," which includes a much larger geographic area than just Lee County. A similar situation occurs on the east coast when they report on impacts from the St. Lucie River in Martin County. Lingering media reports on the internet and continually expanding distribution through social media can have a lasting impact on South Florida's tourism.

In 2015, the Florida Association of Realtors completed a study to assess the impact of water quality and clarity on property values in Lee and Martin counties from 2010 through 2013. The study determined that the ongoing problem of polluted water in the Caloosahatchee and St. Lucie rivers and estuaries has resulted in a negative impact on property values. The study determined that water quality and clarity had an impact of $541 million on Lee County's aggregate property values and $428 million on Martin County's aggregate property values.[3]

What is needed to address the problem?

A number of Everglades planning studies have been completed to date which outline many of the projects needed to restore the quality, quantity, timing and distribution of

freshwater flows to the Everglades and coastal estuaries. These studies include the Comprehensive Everglades Restoration Plan (CERP)[4], the Northern Everglades and Estuaries Protection Program (NEEPP)[5] and the River of Grass Planning Process (ROGPP)[6]. The latest planning process, the River of Grass Planning Process, outlined storage needs of approximately 1,000,000 to 1,350,000 acre-feet of water storage north and south of Lake Okeechobee (Figure 1), 200,000 acre-feet east of the Lake, and 400,000 acre-feet of storage west of the Lake.[7] Implementing this storage is critical to reducing the damaging high-flow discharges to the estuaries and providing dry-season flows to the Caloosahatchee.

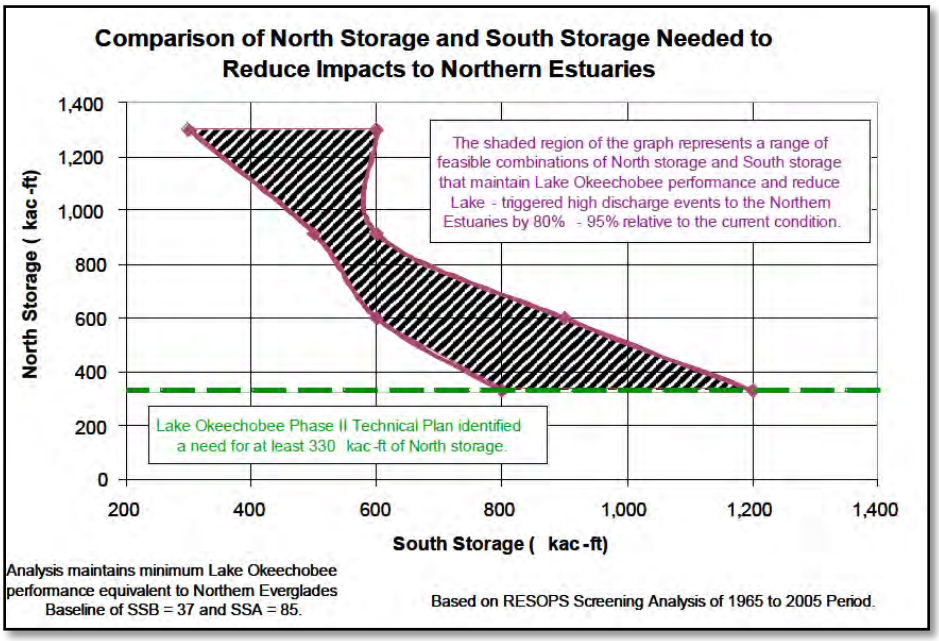

Figure 1. Comparison of north and south storage needed to reduce estuary impacts, SFWMD 2009 River of Grass Planning Project

In March 2015, the University of Florida Water Institute completed an independent study, commissioned by the Florida Legislature through the Senate Select Committee on the Indian River Lagoon and Lake Okeechobee Basin, titled "*Options to Reduce High Volume Freshwater Flows to the St. Lucie and Caloosahatchee Estuaries and Move More Water from Lake Okeechobee to the Southern Everglades*".[7] The authors of the study concluded that "...the solution to providing relief to the estuaries is enormous increases in storage and treatment of water both north and south of the lake." Their work also suggested that the state and federal governments should "accelerate funding and complete existing approved projects", but that "Existing and currently authorized storage and treatment projects are insufficient to achieve these goals." "The path forward requires significant long-term investment in the infrastructure of the South Florida hydrologic system." The study cited the most recent water storage estimates

reported by other Everglades planning efforts as 400,000 acre-feet of water in the Caloosahatchee watershed, 200,000 acre-feet in the St. Lucie watershed, and approximately 1,000,000 to 1,350,000 acre-feet of storage north and south of Lake Okeechobee. For a comprehensive overview of the projects needed to restore appropriate freshwater flows to the Northern estuaries, we direct readers to the University of Florida Water Institute's Independent Technical Review titled *Options to Reduce High Volume Freshwater Flows to the St. Lucie and Caloosahatchee Estuaries and Move More Water from Lake Okeechobee to the Southern Everglades*.[7]

How will Everglades Restoration help restore appropriate freshwater flows to the Caloosahatchee River and Estuary?

The Comprehensive Everglades Restoration Plan (CERP) is the blueprint to restore the Everglades and freshwater flows to the Northern Estuaries. The Plan was authorized by Congress in 2000 through the Water Resources and Development Act (WRDA 2000). The Plan includes a suite of projects designed to store, treat and convey freshwater south to Everglades National Park and Florida Bay; thereby, reducing the harmful freshwater flows to the estuaries.

CERP includes more than 68 civil works projects to be designed and implemented over a 30 year period. The total cost of implementing the plan was originally estimated at $8.2 billion.[8] The Plan specifies a 50/50 cost-share between the State of Florida and the federal government. The original plan called for more than 217,000 acres of new reservoirs and wetland-based treatment areas and over 300 underground aquifer storage and recovery wells.[8] As of late 2014, eight CERP projects were authorized, the majority of the land necessary for restoration projects under CERP had been acquired, and significant progress has been made on non-CERP activities including improved water deliveries to Everglades National Park.[9] As of 2010, it was estimated that CERP will take more than 30 years and cost $13.5 billion to complete.[10] More recent cost estimates have CERP costs closer to $16.4 billion.[11]

What are the challenges to restoring the Everglades and appropriate freshwater flows to the Northern Estuaries?

Restoration of the Everglades and Northern Estuaries faces a number of logistical and political challenges. Due to the large geographic scale of the project, encompassing more than 18,000 square miles and including 16 counties in central and southern Florida, it is the largest wetland restoration in the world (Figure 2). Because of its sheer size, it is also one of the most expensive restoration projects in history — currently estimated at more than $16 billion. The project crosses a number of geopolitical boundaries, resulting in diverse stakeholder participation with competing interests, often resulting in intense disagreements on the best ways to achieve restoration success. This

has led to a number of lawsuits challenging components of the restoration plan, increasing both the costs and timeframe for completing projects.

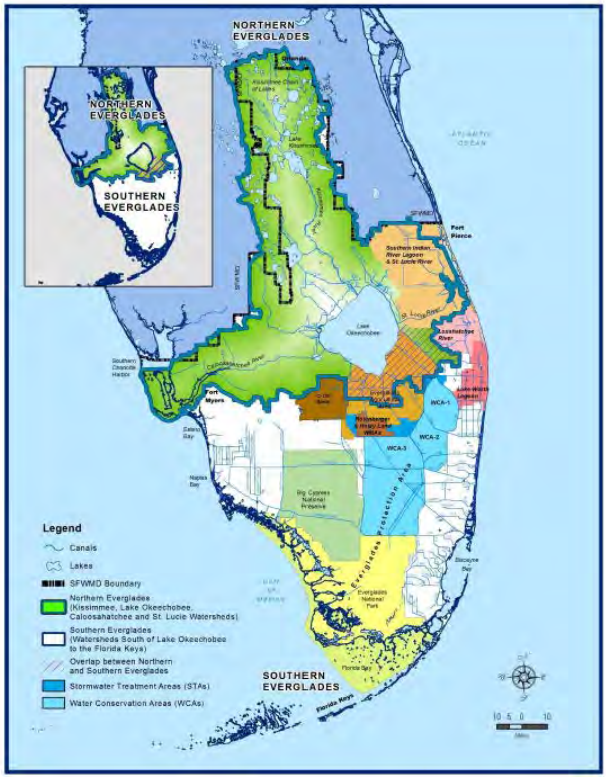

Figure 2. Map of Greater Everglades Ecosystem showing extent of the Northern Everglades, Southern Everglades, Everglades Agricultural Area (EAA), Everglades Protection Area (EPA) and Water Conservation Areas (WCAs) (SFWMD, 2015)

The Florida Everglades Forever Act (FEFA) was passed in 1994; it outlines the state government's commitment to restore the Everglades ecosystem in cooperation with the federal government's multi-billion-dollar, multi-decade Comprehensive Everglades Restoration Program.[12] The primary goals of FEFA are to improve water quality by reducing the level of phosphorus that enters the Everglades ecosystem, to increase the quantity of water in the Everglades by restoring the hydrology of the ecosystem, and to restore and protect the native plants and animals of the Everglades by stemming the invasion of exotic species of plants and animals into the ecosystem.[12] As a requirement of FEFA, water managers cannot move water south into Everglades National Park unless total phosphorus concentrations are less than or equal to 10 parts per billion (ppb).[13] This requires water managers to store and clean the water before moving it south. In addition to the regulatory constraints, there are also physical constraints to moving water south. These include flooding issues on private or tribal lands and impacts to protected species, which further limit the ability to move water south.

Because of these regulatory and physical constraints, a number of CERP and non-CERP projects must be completed prior to moving additional water south, including the Central Everglades Planning Project (CEPP),[14] Tamiami Trail Bridging,[15] Modified Water Deliveries,[16] Water Quality Restoration Strategies,[17] and construction of additional storage like the EAA Reservoirs Project and associated treatment and conveyance infrastructure.[18]

Northern Everglades and Estuaries Protection Program (NEEPP)

In 2007, the Florida Legislature expanded the Lake Okeechobee Protection Act to strengthen protection of the Northern Everglades by restoring and preserving Lake Okeechobee and the Caloosahatchee and St. Lucie rivers and estuaries through the Northern Everglades and Estuaries Protection Program.[19] The legislation expanded the use of the *Save Our Everglades Trust Fund* to include Northern Everglades restoration through 2020. The program is aimed at "improving the quality, quantity, timing and distribution of water to the natural system and to re-establish salinity regimes suitable for maintaining healthy, naturally diverse, and well-balanced estuarine ecosystems".[19]

The Northern Everglades and Estuaries Protection Program legislation requires that the three coordinating agencies, the South Florida Water Management District, the Florida Department of Environmental Protection, and the Florida Department of Agriculture and Consumer Services, draft River Watershed Protection Plans (RWPPs) for both the Caloosahatchee and St. Lucie estuaries. These plans were completed with significant stakeholder input and submitted to the Florida Legislature in March 2009.[19] The reports primarily focus on watershed activities (e.g., construction projects), the latest scientific results from the research and water quality monitoring program, and the coordinating agencies' strategies moving forward.[19] The NEEPP requires annual progress reports and three-year evaluations of the RWPPs.

River of Grass Planning Process (ROGPP)

In June 2008, Governor Charlie Crist announced that the South Florida Water Management District would begin negotiating an agreement to acquire as much as 187,000 acres of agricultural land owned by the United States Sugar Corporation for Everglades restoration. Acquiring the enormous expanse of real estate offered water managers the opportunity and flexibility to store and clean water on a scale never before contemplated to protect Florida's coastal estuaries and to better revive, restore and preserve the fabled *River of Grass*.[6]

In December 2008, following extensive negotiations, due diligence and public deliberation, the South Florida Water Management District's Governing Board voted to accept the negotiated proposal to acquire more than 180,000 acres of agricultural land for $1.34 billion, contingent upon financing and affordability.[6]

In May 2009, after gathering key input from the public, legislators and South Florida's communities and recognizing the nation's current economic climate, the South Florida Water Management District and U.S. Sugar Corporation amended the agreement providing for an initial purchase of close to 73,000 acres for $536 million, with options to purchase the remaining 107,000 acres during the next ten years when economic and financial conditions improved.[6]

In August 2010, in light of continued economic impacts, a decline in District revenues and the need to address recent federal court orders related to Everglades restoration, the Governing Board approved on August 12, 2010, a second amended and restated agreement for purchase and sale of land from the U.S. Sugar Corporation. Under the modified purchase, the District would utilize $197 million in cash on-hand to take ownership of 26,800 acres of strategically located land with high restoration potential while preserving the option to acquire 153,200 acres of additional lands, if future economic conditions allow.[6]

In May 2015, the SFWMD Governing Board voted to not exercise the U.S. Sugar option to purchase additional lands within the EAA. The Governing Board elected instead to use District resources to focus on existing projects currently underway. Because significant state and federal resources were invested in the ROGPP and issues related to the global economic downturn, a number of CERP and non-CERP projects like the C-43 Reservoir Project were significantly delayed.

What is the timeframe for completing CERP and the critical projects needed to reestablish appropriate freshwater flows to the Caloosahatchee estuary?

The timeframe for completing Everglades restoration is dependent on a number of factors, including availability of state and federal funding, the length of time needed for planning, design and engineering of projects, and land available for project construction. As of 2010, it was estimated that it will take more than 30 years to complete CERP.

The 2015 Integrated Delivery Schedule (IDS) is a planning document, which provides the Army Corps of Engineers and the South Florida Water Management District (SFWMD) a timeline for planning, design and construction of CERP and non-CERP projects.[20] Within the IDS, projects are prioritized based on ecosystem needs, benefits, their relative level of readiness, including but not limited to, level of planning and design, congressional authorization, interdependence on other projects, and funding. The IDS is meant to be a living document that can be modified as needed to meet the approved project purposes of CERP. The planning horizon for the current IDS is 2030. There is no <u>single</u> CERP or non-CERP project identified in the IDS, or otherwise, that will reestablish appropriate freshwater flows to the Caloosahatchee. Restoration is dependent on a number of different projects aimed at storing more water north of the Lake and moving

more water south and away from the Northern Estuaries. There are a number of projects in the IDS that will help to significantly reduce the frequency that the Caloosahatchee estuary receives either too much or too little freshwater.

The Water Resources and Development Act (WRRDA) is the act by which Congress authorizes large-scale infrastructure and water projects. The Army Corps must obtain authorization from Congress to construct civil works projects like those in CERP. Once a project has been authorized, the Army Corps or other federal agencies must seek appropriations from Congress to construct the projects. WRDA authorizes projects, but does not provide funding.

Funding remains the greatest limiting factor in making progress on Everglades restoration. During the 2016 Florida Legislative Session, Everglades restoration projects received historical funding levels, including a dedicated funding source through the *Legacy Florida* legislation. Legacy Florida will dedicate approximately $200 million in annual funding for Everglades projects over 20 years. A key component of the bill requires that $100 million be dedicated to funding the Comprehensive Everglades Restoration Plan (CERP). Several important Everglades and Caloosahatchee watershed projects received funding in 2016, including the C-43 Reservoir Project ($37 million), the Lake Hicpochee Restoration Project land acquisition ($16.9 million), Water Quality Restoration Strategies ($32 million), "Northern Everglades" ($56.8 million) including large dispersed water management projects such as Caulkins, Groveland, Brighton Valley, and Alico ($47.8 million), and other dispersed water storage projects ($5 million). Everglades Restoration also received an additional $7 million from Alligator Alley Toll revenue for ongoing I-75 mitigation projects. Funding totals for this legislative session included $218.8 million through Legacy Florida/Amendment 1 and $8.7 million through other revenue sources.

How important is water quality to the overall restoration strategy?

Water quality is a critical component of the Everglades and Northern Estuaries restoration strategy. The Florida Everglades Forever Act (1994) prevents water managers from discharging water into Everglades National Park if total phosphorus (TP) concentrations exceed 10 parts per billion (ppb).[13] One of the challenges to sending more water south from Lake Okeechobee is that the water quality in the Lake does not currently meet nutrient loading targets set for the Lake. Total phosphorus concentrations from the Lake Okeechobee watershed in 2015 averaged 117 ppb,[21] as a result water from the Lake cannot be directly discharged into the Everglades without first being treated.

In 2001, the Florida Department of Environmental Protection (FDEP) adopted a Total Maximum Daily Load (TMDL) for Lake Okeechobee. The TMDL load allocation for the Lake was set at 140 metric tons of phosphorus per year to achieve the TP target of 40

ppb.[22] The total phosphorus annual load for the Lake in 2015 was estimated at 450 metric tons[22], more than three times the TMDL target for the Lake. Nutrient loading to the Lake is influenced by a number of factors, including watershed landuse and associated nutrient runoff, freshwater inflow, water levels within the Lake and weather (e.g., wind). Because of the accumulation of fine sediment and muck in the lake bottom, wind events can greatly influence water quality. For example, during the 2004 and 2005 hurricane seasons a number of hurricanes passed near or directly over Lake Okeechobee.[23; 24] Wind and resulting wave action within the Lake re-suspended nutrients into the water column that were previously buried in the bottom sediments. This resulted in total phosphorus loading within the Lake reaching 960 metric tons[22], almost 7 times the TMDL target for the Lake.

In 2014, the FDEP adopted a Basin Management Action Plan (BMAP) for Lake Okeechobee. The BMAP is a regulatory document that identifies, allocates, and quantifies nutrient load reductions within the watershed to achieve compliance with the TMDL. The TMDL and BMAP for the Lake are specifically designed to address phosphorus and do not currently include requirements for reducing nitrogen loads. BMPs that are designed to remove phosphorus can remove some amount of nitrogen, but generally at significantly lower removal efficiency rates. The primary reason the TMDL and BMAP only require phosphorus reductions is because freshwater bodies like Lake Okeechobee are generally limited by phosphorus, with phosphorus being the nutrient that controls primary productivity (plankton and algae growth) within the waterbody. However, nitrogen is generally the limiting nutrient in estuaries and marine waters and is often more difficult to remove from the water column than phosphorus. Because the water from Lake Okeechobee is being directly discharged to the estuaries, and currently accounts for almost 32% of the nitrogen load to the Caloosahatchee, it may be necessary to reevaluate the Lake Okeechobee TMDL and BMAP to include additional nitrogen reductions. According to the University of Florida Water Institute study, “to achieve State water quality standards in Lake Okeechobee, the St. Lucie estuary and the Caloosahatchee estuary, more aggressive Basin Management Action Plans (BMAPs) are needed”.[7]

In 2012, the State of Florida implemented the Restoration Strategies Regional Water Quality Plan. The Plan is designed to address the quality of water discharged to the Everglades through construction of several new non-CERP projects. It will create more than 6,500 acres of new stormwater treatment areas (STAs) and 116,000 acre-feet of additional water storage through construction of flow equalization basins (FEBs). The FEBs are designed to provide a more steady flow of water to the STAs to help maintain desired water levels needed to achieve optimal water quality treatment performance.[25]

Within the Caloosahatchee watershed, in 2009 the FDEP adopted a TMDL for the tidal Caloosahatchee (downstream of S-79- Franklin Lock) and is currently in the process of drafting a TMDL for the Caloosahatchee tributaries (upstream of S-79 - Franklin Lock) (Figure 3). The TMDL for the tidal Caloosahatchee assumes that Lake Okeechobee meets its TMDL target in an attempt to allocate watershed loading. The TMDL requires responsible parties (e.g., Lee County, Cape Coral, City of Fort Myers, and others) within the tidal watershed to reduce nitrogen loading by 23% of the current load.[26] A BMAP for the tidal Caloosahatchee was adopted in 2012. It includes a list of projects identified by Lee County and other stakeholders that must be implemented in order to receive load reduction credits from FDEP towards the TMDL and be in compliance with the BMAP. [27] According to the FDEP 2015 Progress Report for the Caloosahatchee Estuary BMAP (FDEP 2016), the estimated load reduction for projects implemented by Lee County and other stakeholders total 196,484 lbs/yr of TN, or 51% of the total reduction required to meet the TMDL. FDEP is in the process of updating the Caloosahatchee watershed model to include the entire watershed. This could result in changes to the downstream loading allocation. This work is expected to be completed within the next year.

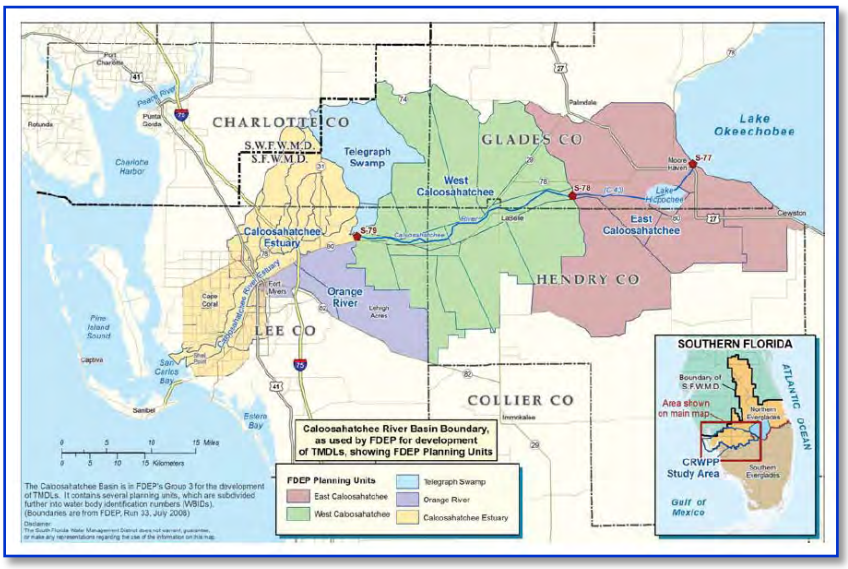

Figure 3. Caloosahatchee River Basin Boundary, SFWMD 2009

What are Lee County and the six municipalities of Lee County doing to address the problem?

Lee County and the six municipalities are working together to advocate for a comprehensive regional strategy to address Lake Okeechobee and Caloosahatchee flows. Collectively, the County and municipalities have developed a list of short-term, lower-cost strategies, as well as longer-term state and federal priorities to address water storage and treatment throughout the Kissimmee, Lake Okeechobee, and Caloosahatchee watersheds. Elected officials and staff with Lee County and the cities

are working closely with federal and state water managers and elected representatives in Tallahassee and Washington D.C. to prioritize, fund and implement projects that will address the problem. The following is a list of projects and policy changes that will provide meaningful relief to the coastal communities from the harmful discharges from Lake Okeechobee and the Caloosahatchee watershed. These projects and policy recommendations are not listed in priority order and should all be considered as priorities to address the Caloosahatchee's water management issues.

Short-term, Lower-Cost Strategies for Water Management

1. **Assess additional opportunities within the Lake Okeechobee Regulation Schedule (LOR2008) for reducing high- and low-flow impacts to the Caloosahatchee**.

    - The U.S. Army Corps of Engineers conducted an evaluation known as the Herbert Hoover Dike Dam (HHD) Safety Modification Study in order to adequately address problems with the aging dike and develop alternatives for rehabilitation.[28] The report was finalized in June 2016. In light of significant investment and improvements in the HHD, we request that the Corps make a formal determination if more operational flexibility can be used to help reduce discharges to the estuaries.

    - Reevaluate where flows to the Caloosahatchee are measured under the LORS 2008 schedule[29] to make regulatory releases more equitable. Currently, the Caloosahatchee receives the majority of freshwater discharges from Lake Okeechobee. When the Lake is in the upper bands of the LORS, freshwater flows to the Caloosahatchee are measured at the Lake at the Moore Haven S-77 structure, instead of at the Franklin Lock S-79 structure. As a result, when calculating maximum flows to the Caloosahatchee estuary these flows do not take into account watershed runoff. However, in the St. Lucie estuary the discharges from the Lake are always measured downstream of the Lake at the S-80 structure, which takes into account watershed runoff.

2. **Maximize flows through the Stormwater Treatment Areas (STAs) and Water Conservation Areas (WCAs) to the full extent possible to convey water south to minimize high-flow impacts to the coastal estuaries.**

    - During the 2013 wet season, approximately 72,000 acre-feet of water was released to the WCAs through the STAs. During the 2014 wet season,

approximately 216,000 acre-feet of water was released to the WCAs through the STAs. The increase in the volume of water conveyed south in 2014 was the result of: 1.) continued legislative funding for increased pumping and maintenance; 2.) additional capacity due to differences in regional rainfall; 3.) increased capacity in STA-1 East, STA-1 West and STA-3/4; 4.) suitable conditions and canal levels within the Everglades Agricultural Area; and 5.) improved coordination between the SFWMD and the U.S. Army Corps of Engineers. In 2015/16 a strong El Niño resulted in rainfall throughout south Florida exceeding 400% of average rainfall. This resulted in damaging high-volume freshwater releases to the estuaries. The Caloosahatchee estuary received daily average flows exceeding high-flow harm threshold of 2,800 cubic feet per second from late January through mid-April 2016. The high flow discharges were the result of both watershed runoff from the Caloosahatchee watershed and regulatory discharges from Lake Okeechobee. From May 1, 2015 through March 31, 2016, the Army Corps and SFWMD moved approximately 763,587 acre-feet south of Lake Okeechobee.[30] During this same time period discharges from the Lake were 883,903 acre-feet to Caloosahatchee and 334,427 acre-feet to the St. Lucie.[30]

- One of the major challenges to moving additional water south in the short-term is the lack of storage, treatment, and conveyance infrastructure south of Lake Okeechobee. Projects like Modified Water Deliveries (MOD Waters), the Central Everglades Planning Project (CEPP), and structural improvements along the Tamiami Trail need to be completed in order to increase conveyance capacity and eliminate impacts to tribal and agricultural lands south of the Lake. *It is important to note that these are long-term projects, not short-term lower-cost strategies.

- Another tool that is available to water managers for addressing high-flow impacts to the estuaries is to seek emergency temporary deviations from federal and state water quality criteria. Temporarily lifting restrictions that limit discharges south into Everglades National Park during extreme wet conditions and events would allow more water to move south. This engages a “shared adversity” doctrine that does not pit one ecosystem against another.

    i. On February 11, 2016, Governor Rick Scott requested that the U.S. Army Corps of Engineers take immediate action to relieve flooding of the Everglades Water Conservation Areas (WCA 3A&B) and the

releases of water from Lake Okeechobee to the Caloosahatchee and St. Lucie estuaries.[31]

ii. The Florida Department of Environmental Protection and the Florida Fish and Wildlife Conservation Commission (FWC) issued orders on February 11, 2016, that would allow the U.S. Army Corps of Engineers to move forward with this request. On February 15, 2016, the U.S. Army Corps of Engineers agreed to Governor Scott's request to raise water levels in the L-29 canal in order to move water south through Shark River Slough to ease the effects of flooding in the Everglades. The South Florida Water Management District began operation of the S-333 structure on Feb. 15, 2016, after the state received an order from the U.S. Army Corps of Engineers. This action relieved the flooding within WCA 3A&B and created additional water capacity south of the Lake.

3. **Explore additional opportunities for Dispersed Water Management projects within the Kissimmee, Lake Okeechobee, Caloosahatchee and St. Lucie watersheds.**

- Investigate the potential for additional projects based on cost/benefit analysis. Explore additional economic incentives for water storage on private lands within the Caloosahatchee basin as an interim strategy.

- As of January 2015, through cooperative agreements, use of interim lands or environmental services projects, approximately 89,200 acre-feet of water retention and storage has been made available in the greater Everglades system on public and private lands.[25]

- In order for this program to be viable and compete with regional storage facilities, these projects <u>must be cost-effective and their performance verified</u>. An overall analysis needs to be completed to verify effectiveness, along with a plan to meet the designated amount of managed storage to achieve the desired outcome.

- The University of Florida Water Institute study suggested that, "while Dispersed Water Management (DWM) on private lands may provide some benefits, DWM will fall short of providing the additional storage and treatment needed, even if fully implemented."[7]

4. **Utilize emergency storage on all public and private lands currently under contract with the SFWMD within the Kissimmee, Lake Okeechobee, St. Lucie and Caloosahatchee watersheds.**

    - Secure permits and/or authorizations well in advance of the rainy season (or other events like the 2015/16 El Niño) to provide emergency storage in the event they are needed. These sites should be utilized prior to exceeding the high flow ecological harm threshold in the Caloosahatchee (>2,800 cfs 30-day moving average).

    - The C-43 West Basin Reservoir site is a good example of where there may be opportunities for water storage on public lands. The SFWMD began site improvements on the C-43 Reservoir site in 2014. The current focus of the project is on construction of Cell 1, which occupies approximately half of the 10,500 acres purchased for the project. The SFWMD should take advantage of any remaining land available on the site that is not being used for construction or staging for Cell 1 construction to provide interim emergency storage until construction of Cell 2 is underway.

5. **Provide adaptive flexibility for water level management in the Upper Kissimmee Chain of Lakes regulation schedules to allow more water storage north of Lake Okeechobee.**

    - This action could provide multiple system benefits, including benefits to water supply, water quality, and wildlife habitat. In late 2015, the SFWMD assembled a small group of stakeholders to evaluate the benefits of holding more water in the Kissimmee Chain of Lakes (KCL) and deviating from the Fish and Wildlife Service Snail Kite Management Line. The model runs suggested very modest benefits in regards to water storage as compared to the total volume of water delivered to Lake Okeechobee. However, the modeling did show some benefits to the estuaries in regards to the timing of when the water was delivered. Any changes to the lake schedules would likely result in tradeoffs and impacts to snail kite nesting in the KCL region.

6. **Reevaluate the Caloosahatchee Minimum Flow and Level (MFL)**

    - Monitored and observed conditions since 2007, as well as a SFWMD funded study conducted by Florida Gulf Coast University (Tolley Et al., 2008), suggest that a Minimum Flow and Level (MFL) of 450 cfs measured at the Fort Myers Yacht Basin is inadequate to provide an appropriate

low-salinity zone in the upper estuary during the dry season, especially when drought conditions are present. It is critical to have an accurate salinity target for planning purposes, specifically when designing water storage projects within the Caloosahatchee watershed.

7. **Continue to investigate opportunities to improve the Adaptive Protocols for Lake Okeechobee to ensure that the Caloosahatchee receives ecologically beneficial flows needed to meet established salinity targets during the dry season when other water users are not experiencing water shortage cutbacks and no other ecosystems are being harmed.**

    - In 2014, a small SFWMD working group was assembled, including staff from Lee County, Martin County, Florida Audubon, and agricultural water supply interests, to determine if operational changes could provide additional water for all water users in the middle and upper bands of the LORS to supplement dry season flows to the Caloosahatchee. Due to the existing operational constraints no improvements to the Adaptive Protocols were achieved as a result of the exercise.

    - The Adaptive Protocols were developed and adopted principally by the SFWMD and contain protocols that reduce dry-season Okeechobee releases to the Caloosahatchee at times when the Corp schedule allows them, and when other water users still are getting 100% of demand. SFWMD should immediately revise the Adaptive Protocols to only reduce dry-season flows to the Caloosahatchee when other users are being reduced, and not before.

FEDERAL PRIORITIES

1. **Accelerate the design and planning for the "EAA Storage & ASR/Decomp Ph 2" Project and acquire the land needed to store, treat and convey additional water south to Everglades National Park and Florida Bay.**

    - The current CERP plan includes a number of projects aimed at moving additional water south and away from the Northern Estuaries. One project in particular that exists in the plan and is referenced in the Integrated Delivery Schedule (IDS) is the Everglades Agricultural Area Storage and Aquifer Storage and Recovery/Decomp phase 2 Project (EAA Storage & ASR/Decomp ph2). However, planning for the project is not scheduled to

begin until 2020, with an estimated completion date of 2026. Significant planning and design has already gone into the original *Central and Southern Florida Project EAA Storage Reservoirs Project*. A draft Project Implementation Report (PIR) was completed for this project in February 2006. The PIR prescribes an above-ground reservoir, Stormwater Treatment Area (STA), and improvements to primary and secondary canals. The reservoirs proposed in the PIR would cover approximately 31,000 acres with a storage capacity of 360,000 acre-feet water.[18]

- The EAA Reservoirs Project is anticipated to provide far-reaching benefits to the Northern Estuaries, Everglades National Park and Florida Bay. As a result, the project should be accelerated and the land needed to complete this project must be acquired as soon as possible to ensure this project moves forward.

2. **Obtain federal authorization for the Central Everglades Planning Project (CEPP) through WRRDA and secure funding for the project.**

- The CEPP expedites a sub-set of CERP projects to move additional water south. It includes projects that address seepage control along south Miami-Dade, decompartmentalization, removing impediments to flowing water south, and would move approximately 210,000 acre-feet of additional water south through the central portion of the historic Everglades. The project will lay the foundation for moving additional water south as additional storage and treatment becomes available.

- On Dec. 23, 2014, the Chief of Engineer's Report, or Chief's Report, for CEPP was signed by Lt. Gen. Thomas Bostick, USACE Commander and Chief of Engineers.[32] On Aug. 31, 2015, Assistant Secretary of the Army for Civil Works Jo-Ellen Darcy signed the Record of Decision for CEPP, signifying the completion of the final administrative review for the ecosystem restoration project's report. The report was transmitted to Congress for authorization and subsequent appropriations.

3. **Expedite repairs to the Herbert Hoover Dike to protect the communities that surround Lake Okeechobee and to provide the Army Corps with additional operational flexibility needed to help reduce damaging discharges to the estuaries.**

- The project will protect the safety of the communities around Lake Okeechobee and potentially provide some additional interim storage

within the lake to reduce peak flows to the estuaries until other CERP projects are completed.

- On February 26, 2016, Governor Rick Scott signed Executive Order 16-59, declaring a state of emergency in Lee, Martin and St. Lucie counties, following heavy rainfall that resulted in the U.S. Army Corps of Engineers frequently discharging water from Lake Okeechobee to the St. Lucie and Caloosahatchee estuaries. The Executive Order called on the Obama Administration to fully fund the more than $800 million in needed repairs to the Herbert Hoover Dike to safely hold water to reduce discharges to the estuaries.[33]

- In March 2016, Congressman Clawson sponsored federal legislation, H.R. 4667, to expedite repairs to the Herbert Hoover Dike for the purposes of public safety and to reduce harmful freshwater discharges to the estuaries. The bill would appropriate $800 million in federal funding to expedite repairs.[34]

4. **Ensure that Everglades Restoration continues to receive adequate funding from Congress to continue on pace with the State of Florida for CERP and non-CERP projects.**

    - CERP requires a 50/50 cost share between the State of Florida and the federal government. The majority of the lands needed for construction of the projects have already been purchased by the State and need federal funding to move forward with a number of the projects. One exception is the land needed for the construction of the *EAA Storage/Decomp Phase 2 Project*[20], which will likely require acquisition of additional lands to complete the project(s).

    - There are several non-CERP projects that are critical to moving more water south, including Modified Water Deliveries to Everglades National Park, Herbert Hoover Dike Rehabilitation, Tamiami Trail Next Steps, Kissimmee River Restoration, and C-111 South Dade projects.[20]

STATE PRIORITIES

1. **Accelerate the design and planning for the "EAA Storage & ASR/Decomp Ph2" Project and acquire the land needed to store, treat and convey additional water south to Everglades National Park and Florida Bay.**

    - The current CERP plan includes a number of projects aimed at moving additional water south and away from the Northern Estuaries. One project in particular that exists in the plan and is referenced in the Integrated Delivery Schedule (IDS) is the Everglades Agricultural Area Storage and Aquifer Storage and Recovery/Decomp phase 2 (EAA Storage & ASR/Decomp ph2) Project. However, planning for the project is not scheduled to begin until 2020, with an estimated completion date of 2026. Significant planning and design has already gone into the original *Central and Southern Florida Project EAA Storage Reservoirs Project*. A draft Project Implementation Report (PIR) was completed for this project in February 2006. The PIR prescribes an above-ground reservoir, Stormwater Treatment Area (STA), and improvements to primary and secondary canals. The reservoirs proposed in the PIR would cover approximately 31,000 acres with a storage capacity of 360,000 acre-feet water.[18]

    - The EAA Reservoirs Project is anticipated to provide far-reaching benefits to the Northern Estuaries, Everglades National Park and Florida Bay. As a result, the project should be accelerated and the land needed to complete this project must be acquired as soon as possible to ensure this project moves forward.

2. **Complete construction of the Caloosahatchee (C-43) West Basin Reservoir Project.**

    - As currently planned, the Reservoir will store up to 170,000 acre-feet of watershed runoff and some overflow from Lake Okeechobee.[35] It is estimated to provide approximately 38% of the total watershed storage needs of the Caloosahatchee basin. This storage is critical to providing dry season supplemental flows to help balance salinity within the estuary and to meet statutory Minimum Flow and Level (MFL) requirements established for the Caloosahatchee.

    - As currently designed, the Reservoir does not include a water quality treatment component to remove nutrients from the water prior to discharging it back into the Caloosahatchee. Because the Caloosahatchee is currently "impaired" for nutrients, it is imperative that a

water quality treatment component be added to the project to improve the quality of the water discharged back into the river. **The District should begin planning and design of a water quality treatment component immediately on land that is adjacent to the C-43 Reservoir site.** This will ensure that the water being discharged back into the Caloosahatchee meets State water quality-based effluent limits (WQBEL) and does not contribute to existing impairments within the river and estuary.

- The project is estimated to cost $600 million and is designed with two large cells, a single 1,500 cfs pump station and a number of gated overflow and discharge structures. Under CERP, the State of Florida is responsible for 50% of the total project costs. Historically, the State has generally satisfied their cost share through land acquisition; however, most of the land for the project was purchased using federal dollars. As a result, the State will be responsible for paying for at least 50% of the construction costs. The first cell is expected to provide approximately 85,000 acre-feet of storage and is estimated to cost approximately $300 million. In 2015, the State Legislature allocated $19 million towards construction and site improvements; in 2016, the State allocated $37 million towards the construction of Cell 1.

- According to the Intergraded Delivery Schedule, Cell 1 of the Reservoir is schedule to be completed in 2018 and Cell 2 is scheduled to be completed in 2020.[20] The C-43 Reservoir Project has generally received wide-spread support from stakeholder groups, including Lee County and several of the municipalities who have adopted resolutions in support of the project.[36]

3. **Complete the Lake Hicpochee Restoration Project.**

- During the 2016 Legislative Session, the Florida Legislature allocated $16.9 million to purchase an additional 2,454 acres of land on the north side of Lake Hicpochee. This land will be used as flow equalization basin (FEB) to store and treat water from the C-19 basin and help restore freshwater flows to Lake Hicpochee and the eastern Caloosahatchee sub-basin. The project has been designed and permitted and construction will begin in summer 2016.

4. **Construct the C-43 Water Quality Treatment and Demonstration Project (BOMA Property).**

- The purpose of this project is to reduce nitrogen concentrations within the Caloosahatchee River and pollutant loading to the downstream estuary. This feature, in conjunction with others within the basin, are designed to have the cumulative effect of reducing nutrient concentrations and loads significantly enough to meet water quality targets within the Caloosahatchee Estuary.[37]

- The property was acquired by the District in 2007 with a $10 million funding contribution from Lee County and the balance paid by the State of Florida. The site is 1,773 acres in size; however, per the agreement with Lee County, 1,335 acres would ultimately be used to construct a large scale water quality facility. A conceptual design study was completed in 2012 recommending a number of test projects to conduct. One of the study recommendations was to initiate nitrogen removal mesocosm and bioassay studies, which are currently under construction. It is expected that the project will be conducted in three phases:
    - Phase 1: small scale demonstrations to screen varying treatments ($1.3m);
    - Phase 2: larger demonstrations that scale up and further test effective treatments from Phase 1 ($8m);
    - Phase 3: buildout of full scale facility ($80m).

- Approximately 850 acres of the property is currently under lease as an active citrus grove. The District uses part of the site for dispersed water storage when there is excess basin runoff or discharges from Lake Okeechobee. Electric pumps have been installed in three above ground impoundments located on the site to pump water from the Caloosahatchee. There is approximately 5,250 acre-feet of storage capacity.

5. **Continue to explore cost-effective dispersed water storage within the Kissimmee, Lake Okeechobee, and Caloosahatchee basins.**

- Additional funds could be used by the SFWMD to partner with large land owners in the Kissimmee, Lake Okeechobee and Caloosahatchee basins as an interim measure to store more water on the landscape to reduce discharges to Lake Okeechobee and the estuaries. Investigate the potential for additional projects based on a sound cost/benefit analysis.

- In order for this program to be viable and compete with permanent regional storage facilities, these projects must be cost-effective and their performance must be verified. An audit needs to be conducted to verify the effectiveness of the current Dispersed Water Management Program and benefits provided to the estuaries.

6. **Implement flow monitoring within the Caloosahatchee tributaries to determine where basin stormwater runoff is originating within the watershed.**

    - During the El Niño of 2015/16, the Caloosahatchee estuary received daily average freshwater flows exceeding 14,000 cfs. The majority of the water that the Caloosahatchee received in January came from the watershed between the Moore Haven Lock (S-77) and Franklin Lock (S-79). The source of this water within the watershed remains unclear. Flow monitoring gauges within the major tributaries of the Ortona and Franklin pools would provide valuable information on the source of stormwater runoff and help identify locations where additional storage is needed. That data could also be used as part of the Caloosahatchee tributaries BMAP to identify areas where Best Management Practices (BMPs) could be implemented to reduce stormwater and nutrient runoff.

7. **Continue to support and implement ecological restoration within the Caloosahatchee River and estuary.**

    - During the past decade, the ecology of the Caloosahatchee has continued to decline as the result of water management decisions that provide either too much or too little water the estuary. More than 1,000 acres of tapegrass (*Vallisneria americana*) has been lost in the upper estuary as a result of not meeting ecologically-based salinity targets established for the estuary. In the lower estuary, oysters (*Crassostrea virginica*) and seagrasses are continually impacted by too much freshwater. Restoration success will be dependent on reestablishing hydrology and the appropriate salinity gradient throughout the estuary. Additional ecological monitoring will be necessary to ensure that biologically-based salinity targets are achieved.

    - The state has supported a number of efforts to reestablish tape grass, oysters and seagrasses throughout the estuary, but more work is needed. In 2014 and 2015, the SFWMD funded tapegrass restoration efforts in the upper estuary to reestablish a seed source. In 2015, through legislative funding provided through the Senate Select Committee on Indian River

Lagoon and Lake Okeechobee Basin, the FDEP funded the Sanibel-Captiva Conservation Foundation's restoration efforts in San Carlos Bay to establish approximately one-half acre of intertidal oyster reefs in San Carlos Bay and replant tape grass in the upper estuary.

FUTURE STATE AND FEDERAL PLANNING NEEDS

1. **Begin the process of identifying where additional storage and treatment can be constructed within the east Caloosahatchee sub-watershed.**

    - The East Caloosahatchee sub-watershed lies between structures S-77 and S-78 and has a drainage area of 198,000 acres, or 19 percent of the CRWPP study area.[37] Annually, it contributes about 233,000 acre-feet of discharge, 41 mt of TP, and 460 mt of TN.[37] The average concentration is 144 ppb for TP and 1.60 ppm for TN.[37] The average TP concentration is relatively low and the TN concentration is relatively high, compared to the overall average for the CRWPP study area.[37]

    - *The East Caloosahatchee Storage* Project (CRE 128) has been identified in the Caloosahatchee River Watershed Protection Plan as potential future storage need within the East Caloosahatchee sub-watershed.[37] The East Caloosahatchee Storage Project comprises a series of distributed reservoirs located in the East Caloosahatchee Basin, which could potentially create 100,000 acre-feet of aboveground storage.[37] The current configuration is one large reservoir with an effective area of 8,000 acres and a capacity of 70,000 acre-feet.[37] The total water quality benefit from this project is estimated to reduce TN loading by 69.1 mt/yr and TP loading by 5.16 mt/yr.[37] Because of the large volume of water the Caloosahatchee receives annually from the eastern watershed, further consideration of this project is warranted and a scoping process should begin to determine its feasibility.

    - Additional water quality treatment within the eastern Caloosahatchee watershed will likely be needed to meet TMDL requirements.

2. **Lake Okeechobee and Watershed ASR Project (Everglades Northern Storage Planning Process)**

    - The project purpose is to provide water storage and treatment to regulate extreme lake levels; reduce phosphorus loading to the Lake; and reduce freshwater discharges to the east and west coast estuaries.[19]

3. **Western Everglades Restoration Planning**

    - The project purpose is to alleviate over-drainage; improve water storage and distribution to natural areas; and improve quality of water entering the Central Everglades. [19]

OTHER REGIONAL PROJECTS AND PROGRESS

1. **Lee County Tidal Caloosahatchee Total Maximum Daily Load (TMDL) and Basin Management Plan (BMAP) Compliance.**

    - The initial total nitrogen (TN) load reduction allocated to Lee County by the Florida Department of Environmental Protection (FDEP) in the Caloosahatchee Estuary Basin BMAP is 140,853 lbs/yr. The BMAP, which was developed to address TN reductions for loading generated in the Caloosahatchee Estuary Basin, provides for phased implementation.

    - Lee County's Conservation 20/20 land buying program has acquired over 12,000 acres within the Caloosahatchee River watershed. Lee County, in partnership with other local government agencies, has constructed water quality treatment features on conservation lands. The Lee County Division of Natural Resources has successfully implemented numerous projects and activities which continue to provide significant pollutant load reduction in the watershed. As of December 2015, the combined effort of the Lee County Conservation 20/20 program and Lee County Division of Natural Resources has resulted in projects that provide 45,707 pounds per year of total nitrogen reduction in the Caloosahatchee Estuary Basin. The County has reached its goal in regard to Phase 1 of BMAP implementation, and completed and planned projects for all Caloosahatchee BMAP stakeholders account for approximately 51% of the total necessary TN reductions.

    - The Lee County Division of Natural Resources, in partnership with the University of Florida Institute of Food and Agricultural Sciences (UF/IFAS) Extension Service has implemented public education programs for do-it-yourself landscapers as well as the professional landscape community to prevent vegetative waste and fertilizer runoff pollution. Under the County's National Pollution Discharge Elimination System (NPDES) permit, the Lee County Division of Natural Resources provides public education

and regulatory enforcement for development-related activities within the County. Lee County receives 20,445 lbs/yr (15%) total nitrogen reduction credit toward the BMAP obligations for public education programs, an illicit discharge program, and existing fertilizer, irrigation, and landscaping ordinances.

2. **Support funding for the Lehigh Acres Municipal Services Improvement District GS-10 Caloosahatchee Cross Link Project.**

   - The GS-10 Caloosahatchee Cross Link project is a regional, multi-agency initiative to provide water storage and treatment within the Caloosahatchee watershed. It involves the acquisition and development of a former mine area, known as Section 10, into a shallow reservoir while creating a flow way to the Greenbriar Swamp that would be used for water treatment while restoring hydroperiods within the natural system. The project establishes connections between Lee County-owned lands and the Lehigh Acres-Municipal Services Improvement District (LA-MSID) drainage system, which has multiple outfalls to the Caloosahatchee River. The project is a stand-alone regional initiative that may also serve as a water quality treatment component for the C-43 Reservoir by taking discharge water released from the Reservoir and flowing it through the LA-MSID treatment system before final outfall to the Caloosahatchee River.

   - Benefits of the project include the addition of over 600 -2,000 acre-feet/year of storage (dependent on final project design) and the estimated nutrient reduction of 114 lb. TP/yr. and 1,200 lb. TN/yr. Additionally, the project would improve flood control in a rapidly developing urban area, restore a degraded natural system and enhance wildlife habitat. The project will assist LA-MSID and Lee County in meeting their assigned TMDL/BMAP water quality requirements.

   - A top regional priority of area stakeholders is the development of a water quality treatment component for the C-43 Reservoir. While this project may have the ability to do so, a feasibility analysis to determine the level of treatment it would actually provide and a determination of cost effectiveness will need to be completed. There is some concern for meeting the requirements of the established water reservation for the C-43 Reservoir due to potential loss of water as it flows through the proposed system. A preliminary engineering analysis has been completed to support a legislative funding request for land acquisition and design of the project. The estimated cost for the project design and permitting is $750,000 with land acquisition costs of approximately $3 million.

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Additional Resources regarding *Water Quality Restoration Strategies* are available at: http://www.sfwmd.gov/portal/page/portal/xweb%20protecting%20and%20restoring/restoration%20strategies

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Appendix A – Caloosahatchee River Watershed Projects List

FINAL (1/21/15) – Prepared by SFWMD for Caloosahatchee Community Forum

Caloosahatchee River Watershed Projects List

Information contained in the attached tables (regional projects, local projects, and on-going programs) reflects project data developed for the 2012 update of the Caloosahatchee River Watershed Protection Plan and information provided by local governments. The information has been updated to reflect project status as of summer 2014. It has also been updated to include results from implementers' individual assessments of each project's relative importance.

Project Phase has been categorized as: Near-term to reflect projects anticipated to be completed within the next 5 years, Long-term to reflect projects that are anticipated to be completed in 5 years or longer, and Ongoing to reflect activities that are anticipated to span both near- and long-term.

Category Projects which are located in or will affect more than one county have been categorized as Regional. The remaining projects are categorized as Local.

Agency reflects the principle agency(s) responsible for the implementation of the project.

Estimate Cost reflects the most current estimate provided by the agency and reflects the costs needed to complete the project.

Estimated Nutrient Removal is based on preliminary load reduction estimates from the 2012 CRWPP Update, modified as appropriate, or as provided by the agency. Estimates in the CRWPP were calculated using Southwest Florida Feasibility Study reductions for project types (i.e. filter marsh, STA, shallow water reservoir, restored wetlands etc.).

Unless otherwise noted, estimates for Nitrogen and Phosphorus removal are in metric tons per year.

Estimated Storage is described in acre-feet.

Caloosahatchee River Watershed Projects
REGIONAL PROJECTS

CRWPP ID	Project/Activity	Description	Project Status	Phase	Category/ Agency	Estimated Cost	Estimated Nutrient Removal (source)	Estimated Storage (ac-ft)
		IMMEDIATE REGIONAL PRIORITIES						
CRE-W Res	C-43 West Basin Storage Reservoir Project	CERP component involves an above-ground reservoir (170,000 ac-ft capacity) located south of the Caloosahatchee River and west of the Ortona Lock (S-78); this will comprise a significant portion of total water storage requirement for the C-43 Basin. Project is expected to provide multiple benefits including flood control, recreation, habitat enhancement and water recharge. The project will provide for timed releases of water to the estuary and will have O&M costs associated with the pumping operations.	In April 2011, a Record of Decision was issued by the USACE and an approved Project Implementation Report was submitted to the U.S. Congress. Project was authorized in June 2014. Funding to construct an interim project at the site was appropriated by the Florida Legislature in 2014.	Long-term	Regional State	$452.1m (const.)	97 mt/yr TN 8 mt/yr TP (agency)	170,000
CRE 10	C-43 Water Quality Treatment and Demonstration Project (BOMA Property)	The objective of this project is to demonstrate and implement cost effective wetland-based strategies for reducing TN load, and other constituents including TP and TSS, to the Caloosahatchee River and its downstream estuarine ecosystems. Special attention will be given to reducing dissolved organic nitrogen (DON) as it constitutes the most abundant and recalcitrant form of TN in the Caloosahatchee River. This is a multi-phased project involving bioassays, mesocosms, test cells, and field-scale cells to test, optimize, and demonstrate wetland-based technology effectiveness ultimately leading to implementation of a full sized treatment facility. It is envisioned that information gained from this project will be applicable to other South Florida Systems.	In late 2012, a conceptual design for a testing facility was completed. Full engineering design and permitting of the testing facility is contingent upon funding. The District will be performing the bioassays and mesocosms study in FY 2015 through 2018.	Long-term	Regional SFWMD, Lee County	$8,000,000 (des. & const.)	23% TN min. reduction goal (agency)	
CRE 04 CRE 05 CRE-LO 40	Lake Hicpochee North Hydrologic Enhancement Project	The channelization of the Caloosahatchee River in the 1800's drained the lake and bisected it into two distinct parts, north and south. The objective of this project is to enhance the hydrology of Lake Hicpochee North with ancillary benefits of habitat restoration and water quality improvements. Phase I involves construction of a shallow storage feature on approximately 670 acres of land and construction of a spreader canal to deliver water to Lake Hicpochee North. Phase II involves the acquisition of an additional 2,454 acres for use as a flow equalization basin. Project is expected to provide multiple benefits including flood control, habitat enhancement and water recharge.	Design activities for Phase I are ongoing and construction is anticipated to begin in early 2016. Phase II requires land acquisition and the design and construction of the flow equalization basin. Project has linkages to Nicodemus Slough water storage project.	Short-term (Phase I)	Regional SFWMD	Phase I $17,200,000 (funded) Phase II $16,600,000 (acq.)		1,280
CRE 13	West Caloosahatchee Water Quality Treatment Area (C-43 reservoir site)	Project consists of a water quality facility in association with C-43 West Basin Storage Reservoir site to treat reservoir water to reduce nutrient concentrations from the Caloosahatchee River and Estuary and nutrient pollutant loading downstream. Project is expected to provide multiple benefits including habitat enhancement, recreation and water quality improvements. The project is expected to have O&M costs associated with pumping operations.	Project was included in the Southwest Florida Comprehensive Watershed Plan; however there has not been any additional design or funding. 1,500 acres was retained in ownership by the SFWMD for potential future water quality treatment. Funding to initiate a conceptual design study is required.	Long-term	Regional TBD			

Caloosahatchee River Watershed Projects
REGIONAL PROJECTS

CRWPP ID	Project/Activity	Description	Project Status	Phase	Category/ Agency	Estimated Cost	Estimated Nutrient Removal (source)	Estimated Storage (ac-ft)
	Babcock Ranch Preserve Water Storage Project	Project purpose is to reduce stormwater runoff to the Caloosahatchee River originating from approximately 4,220 acres of watershed located in the southeast portion of the Babcock Ranch State Preserve. The project will provide shallow water storage by improving existing berms, constructing new berms, modifying existing water control structures and installing new water control structures. Project is expected to provide multiple benefits including flood control, habitat enhancement and water recharge.	Design to be conducted in FY14/15; funded by DACS. Construction funding will be required in FY15/16. Project has linkages to Jacks Branch/County Line Ditch project.	Near-term	Regional TBD	$1,200,000 (des. & const.)		1,500
	Charlotte Harbor Flatwoods Initiative	The Charlotte Harbor Flatwoods Initiative is a multi-phased regional hydrologic restoration effort with the overall goal to restore historic flows to Charlotte Harbor. The project involves the development of regional water storage and treatment facilities, establishment of conveyance systems and restoration of habitat to restore sheetflow across five watersheds encompassing approximately 90 square miles. It will establish linkages between Cecil Webb WMA and Yucca Pens WMA. Project is expected to provide multiple benefits including flood control, habitat enhancement, recreation opportunities, water quality improvements and water recharge. The project is expected to provide timed releases of water to enhance hydroperiods, have limited O&M costs and can be modified to meet future needs.	Land acquisition of 670 acres has been approved with closing expected in spring 2015. Funding for final design and construction of storage facility is required Funding for conceptual design is expected to be provided by SWFWMD and FDOT and to begin in winter 2014. Construction funding will be required. Funding for the design and construction of conveyance systems will be required. Project is supported by over a dozen state, federal and local agencies.	Long-term	Regional Multiple	$4,000,000 (acq) $10,000,000 (des. & const.)		
		NEAR-TERM REGIONAL PRIORITIES						
	Lake Hicpochee South Project	The purpose of this project is to enhance the hydrology of Lake Hicpochee South by redirecting storm water through upland and wetland areas rather than a canal. Project is expected to provide multiple benefits including flood control, habitat enhancement, and water quality improvements. The project is expected to have O&M costs associated with pumping operations.	In 2008 a conceptual design report was completed that had a high implementation cost for the project. In 2013 a conceptual re-evaluation report was completed in cooperation with the Flaghole Drainage District and Hendry Hilliard Water Control District to refine portions of the 2008 report in order to integrate existing infrastructure where possible to maximize the cost-effectiveness of the project. Project requires funding for design and construction. Land is in public ownership. Will require collaboration with local 298 Districts to implement.	Long-term	Regional TBD	$4,5000,000 (const.)		

		CONCEPTUAL REGIONAL PROJECTS NEEDING FURTHER DEVELOPMENT OR ADDITIONAL FEASIBILITY WORK						
CRE 128	East Caloosahatchee Storage Project	Project includes constructing distributed reservoirs on 7,500 acres of private properties, with the potential to create 100,000 ac-ft of above ground storage. Project could be designed to allow for dry season releases. It is expected to have O&M costs associated with pumping operations.	Further study required to develop project(s). Assumes the acquisition of approximately 7,500 acres.	Long-term	Regional TBD		69 mt/yr TN 5.2 mt/yr TP (CRWPP)	100,000
CRE 128a	Caloosahatchee Storage – Additional Project	Project creates 50,000 ac-ft of aboveground storage in Caloosahatchee River Watershed. Project could be designed to allow for dry season releases. It is expected to have O&M costs associated with pumping operations.	Further study required to develop project(s). Assumes the acquisition of approximately 3,500 acres.	Long-term	Regional TBD		58 mt/yr TN 4.3 mt/yr TP (CRWPP)	50,000
CRE 11	Caloosahatchee Ecoscape Water Quality Treatment Area Project	Project consists of a constructed wetland designed for optimal removal of TN from the CRE. Conceptual project developed to reduce nutrient pollutant loading downstream. Strategy of this effort was to formulate both structural and non-structural features.	Project was included in the Southwest Florida Comprehensive Watershed Plan (formerly Southwest Florida Feasibility Study), which is in the process of being completed; however, there has not been any additional design or funding work performed.	Long-term	Regional TBD		50.0 mt/yr TN 12.0 mt/yr TP (CRWPP)	
CRE-LO 41	C-43 Distributed Reservoirs Project	Project involves construction of multiple storage reservoirs to capture excess runoff for use to meet both environmental flows to the CRE and agricultural demands. Project could be designed to allow for dry season releases. It is expected to have O&M costs associated with pumping operations.	Further study required to develop project(s). Assumes the acquisition of approximately 6,600 acres.	Long-term	Regional TBD		39.4 mt/yr TN 2.6 mt/yr TP (CRWPP)	85,410
CRE 01 CRE 02	Recyclable Water Containment Areas Project	Project uses agricultural or other lands to provide temporary storage, remove nutrients, and treat agricultural stormwater runoff which will help reduce nutrient loading to the CRE. Involves the construction of earthen berms to retain up to two feet of water storage. Would remain operational approximately 5 years, then returned to agricultural production. Project is expected to provide multiple benefits including water reuse and water recharge. It is expected to have O&M costs.	Project was included in the Southwest Florida Comprehensive Watershed Plan (formerly Southwest Florida Feasibility Study), which is in the process of being completed. Funding for design and construction will be required. Additionally, partnerships will be required to implement.	Long-term	Regional TBD		67.5 mt/yr TN 14.3 mt/yr TP (CRWPP)	
	Lee-Charlotte County Border Area Hydrologic Improvement	This project involves reconnecting and improving the hydrology of the area through the construction of a series of filter marshes and weirs within and adjacent to the FPL transmission line. The project will create a conveyance system that during the rainy season will function to connect multiple watersheds within the corridor. It will allow excess water from one watershed to flow to the next watershed via a series of filter marshes providing water treatment and storage before entering the CRE. Project is expected to provide multiple benefits including flood control, habitat enhancement, water quality improvements and water recharge.	A conceptual design study is required. It is unknown at this point if land acquisition will be required. The project will require collaboration with FPL and multiple land owners. It is anticipated to take 15 years to fully implement, but could be constructed in phases.	Long-term	Regional Lee County	$400,000 (feas.) $2,000,000 (design) $5,000,000 (acq.) $12,600,000 (cons.)		
	ASR on Public Lands	Development of Aquifer Storage and Recovery arrays on public lands to capture surplus water flow in watershed. Potential locations include BOMA property and Babcock Ranch Preserve. It is expected to have O&M costs associated with pumping operations.	Further study required to develop project(s).	Long-term	Regional TBD			

	Carlos Waterway Conveyance	A conceptual project to use an existing waterway owned by East County Water Control District to convey water from C-43 West Basin Storage Reservoir into the Caloosahatchee. Project is expected to provide habitat enhancement, and water quality improvements.	A conceptual design study is required.	Long-term	Regional TBD			
		REGIONAL RESTORATION PROJECTS						
CRE 150	Tape Grass (*Vallisneria americana*) Plantings Upstream of S-79 Project	District study helps reestablish viable tape grass seed stock for future populations in the upper CRE. The goal is to create a viable tape grass seed stock in the upper CRE; test two genetic strains of South Florida tape grass for survival, growth, and flower and seed production for two years; and determine how long enclosures need to remain in place to ensure survival.	In 2011, cages were monitored weekly in June and bimonthly in July and August; to date, cages are holding up well. The Lake Trafford plants/cages are showing significantly more growth at both sites compared to those in Lake Kennedy. In August, spread outside of the cages and new growth in the cages was observed at Site 2 for Lake Kennedy treatments. Funding for additional planting and monitoring was appropriated for FY14-15.	Near-term	Regional SFWMD, Lee County			
	Oxbow Restoration	Project involves the restoration of remnant oxbows within the Caloosahatchee River. Project would involve limited dredging of the former river channel and restoration/preservation of adjacent littoral vegetation. Approximately 40 oxbows have been identified for restoration. Project is expected to provide multiple benefits including recreation, habitat enhancement, and water quality improvements.	Several oxbows are publicly owned. Could involve collaboration with multiple public and private entities. Project budget for Oxbow24 was $500,000. Estimated nutrient removal cost was $140/lbs TN, $3,500/lbs TP	Long-term	Regional TBD	$500,000 per oxbow		
	Tape Grass Plantings below S-79	Involves the restoration and enhancement of +/-1,200 acres of historic submerged aquatic vegetation (tape grass) in the oligohaline littoral zones of the Caloosahatchee River below S-79. The project will involve the planting and establishment of between 16-20 large "founder colonies" in the upper estuary and tributaries to restore fish and wildlife habitat and serve as a seed bank for recovery of historic distribution and density of tape grass.	There is no local sponsor for this project. Project was submitted for RESTORE funding.	Long-term	Regional TBD	$2,312,900		

Caloosahatchee River Watershed Projects
LOCAL PROJECTS

CRWPP ID	Project/Activity	Description	Project Status	Phase	Category/ Agency	Estimated Cost	Estimated Nutrient Removal (mt/yr)	Estimated Storage (ac-ft)
		LOCAL PRIORITIES FOR THE NEAR TERM						
CRE 142	Harns Marsh Improvements – Phase III (West Marsh) Project	Project involves an existing 578-acre ECWCD stormwater treatment facility. Phase III includes designing the West Marsh (additional 202+/- acres) to expand the marsh treatment facility. This will reduce freshwater discharges to the Caloosahatchee River (via the Orange River) and provide water quality treatment. Project is expected to provide multiple benefits including flood control, recreation, habitat enhancement, water quality improvements and water recharge.	All necessary lands have been acquired. Project design is currently underway. The project involves collaboration with multiple agencies including FDOT as a potential source for construction funding.	Near-Term	Local ECWCD	$6,000,000	0.91 mt/yr TN 0.24 mt/yr TP (agency)	400-800
CRE 147	Nalle Grade Stormwater Park Project	Lee County project proposes to restore/modify an existing degraded marsh system and design a stormwater retention facility to minimize flooding in the Bayshore Creek Watershed. Project is expected to provide multiple benefits including flood control, habitat enhancement, water quality improvements and water recharge.	Project is in design and permitting. $500,000 in Legislative funding was appropriated. Construction is scheduled to begin in 2016.	Near-term	Local Lee County	$3,300,000 (design & cons.)	0.54 mt/yr TN 0.14 mt/yr TP (CRWPP)	
CRE 139	Ford Canal Filter Marsh (Ford Street Preserve) Project	City of Fort Myers project creates a filter marsh to improve overall quality of storm water discharging into Billy Creek; marsh is intended to work collectively with other treatment areas along Billy Creek and its tributaries. Project creates a treatment marsh designed to divert and treat low flows from low-level rain events using a diversion weir.	Phase 1 complete, Phase 2 awarded with construction to begin in August 2014 and Phase 3 is being permitted.	Near-term	Local Ft. Myers	$2,000,000	0.54 mt/yr TN 0.21 mt/yr TP (CRWPP)	
CRE 140	Fichter's Creek Restoration Project	Project provides ecosystem restoration through hydrologic and water quality improvements in Fichter's Creek, and provides flood protection for neighboring areas; components include 3.2 acres of lakes, three dry detention areas (7.1 acres), culvert installation/ replacement, filter marsh creation, and berm work. Project is expected to provide multiple benefits including flood control, habitat enhancement and water recharge.	No land acquisition is required. Project has been permitted; construction is planned to begin in FY16.	Near-term	Local Lee County	$1,400,000 (const.)	0.09 mt/yr TN 0.02 mt/yr TP (CRWPP)	6
CRE 30	Aquifer Benefit and Storage for Orange River Basin (ABSORB) Project	Project involves increasing stormwater storage capacity and groundwater recharge in the Southwest area of Lehigh Acres by constructing 27 weirs. Project is expected to provide multiple benefits including flood control, water quality improvements and water recharge.	Project is designed and permitted. Scheduled to begin construction by the end of 2014. Partial funding is in place (FDEP $1.2m) and the rest is being worked on with an agreement from FDOT for the SR 82 widening project.	Near-term	Local ECWCD	$2,400,000 (const.)	3.72 mt/yr TN 0.37 mt/yr TP (agency)	800-1,200
CRE 135	Hickey Creek Canal Widening Project	Project includes the canal widening and construction of littoral zones along three miles of Hickey Creek Canal. Project is expected to provide multiple benefits including flood control, habitat enhancement, water quality improvements and water storage.	No land acquisition is required. Project is designed and permitted. Construction is waiting on funding and a project source to take the fill material removed.	Near-term	Local ECWCD		0.2 mt/yr TN 0.05 mt/yr TP (agency)	420
CRE 22	Hendry Extension Canal Widening Project	Project provides additional water quantity storage within existing canal right-of-way to help provide more stormwater storage in the 5.5 mile section of Hendry Extension Canal. Project is expected to provide multiple benefits including flood control and water recharge.	Project permitted and designed, construction projected in FY2015. FDOT providing funding through SR82 expansion.	Near-term	Local ECWCD	$6,000,000 (const.)	0.36 mt/yr TN 0.1 mt/yr TP (agency)	190

CRE 44	Hydrologic Restoration of Bob Janes Preserve	Project will serve to restore the natural sheet flow and possibly impound water within the abandoned farm fields to allow aquifer recharge, reduce high flows in a manmade ditch (Lighter Canal) during the wet season. Project is expected to provide multiple benefits including flood control, habitat enhancement, water quality improvements and water recharge.	Phase I involving the restoration of former agricultural fields was completed in 2014. The second phase is awaiting construction funds. No land acquisition is required.	Near-Term	Local Lee County	$600,000 (const.)		
	Hydrologic Restoration of Six Mile Cypress Slough Preserve - North	The historical site hydrology and ecosystem have been significantly altered. Water from potions of the preserve has been diverted north into the Orange River, rather than south into Six Mile Cypress Slough. Restoration of historic flows could benefit Six Mile Cypress Slough and reduce the amount of water flowing into the Orange River and ultimately the Caloosahatchee River. Project is expected to provide multiple benefits including flood control, recreation, habitat enhancement, water quality improvements and water recharge.	Phase I, the impoundment, is permitted and will undergo construction during 2014. Additional construction funds will be needed to complete the project phase. Phase II, the rehydration of the western cypress dome, is being permitted and will be constructed with financial help by the Florida Department of Transportation. Phase III, will require the design, permitting and construction of a flowway which will bring water to Phase 1 of the project.	Near-term	Local Lee County	$1,000,000		
CRE 53	Hydrologic Restoration of Caloosahatchee Creeks Preserve	The project area is a former marsh that was disturbed when covered with fill during the dredging of the Caloosahatchee River in the 1950s. The project will cut a meandering stream channel through the spoil in the location near a historic channel and rehydrate former wetlands. Project is expected to provide multiple benefits including habitat enhancement, water quality improvements and water recharge.	No land acquisition is required. The project has been designed and permitted.	Near-term	Local Lee County	$650,000 (cons.)		
	Hydrologic Restoration of Telegraph Creek Preserve	This project will help to restore the natural sheet flow from the 800-acre palmetto prairie and wet prairie/hydric flatwoods system into Telegraph Creek where ditches were installed by previous owners to help drain this portion of the preserve. Geowebbing and/or culverts will be installed along existing management trails that are eroding into the creek. The existing swale where the water formerly would have flowed to the creek will be graded and cleaned out. The washouts will be recontoured and plantings will be installed to reduce further soil erosion into the creek. Project is expected to provide multiple benefits including flood control, habitat enhancement, water quality improvements and water recharge.	No land acquisition is required. The project requires further design.	Near-term	Local Lee County	$500,000 (cons.)		
	Ft. Myers Central Sewer Expansion	Septic tank conversion to central sewer to reduce nutrient loading in the watershed and expand reclaimed water from 6 MGD to 11 MGD. The project area is located within the city limits east of I-75.	The project is tentatively scheduled for FY 2016-2017 based on funding availability	Near-Term	Local Ft. Myers	$11,000,000		
	Ranch Lakes Estates Central Sewer Project	Septic tank conversion to central sewer located at Ranch Lakes Estates in Moore Haven. Involves the construction of additional gravity sewer collection system in the Moore Haven downtown and Ranch Lakes Estates area adjacent to the Caloosahatchee River to homes now served by individual private old and failing septic systems. This project will reduce nutrient loading to the Caloosahatchee Basin.	The wastewater improvement project includes the preliminary engineering services, design, permitting and construction.	Near-term	Local Glades County	$350,000		
CRE 44	Jacks Branch/County Line Ditch	Project involves improvement of water flow within Jacks Branch watershed and modification of the County Line Ditch by widening the ditch and providing weirs for increased water storage and treatment. Project is expected to provide multiple benefits including flood control, water quality improvements and water recharge.	All necessary land has been acquired. The project has been designed and permitted. Requires construction funding. Could be constructed in conjunction with Babcock Ranch Preserve Project.	Near-Term	Local Hendry County	$3,600,000 (const.)		

CRE 121	City of LaBelle Stormwater Master Plan Implementation	Project includes stormwater conveyance and water quality storage improvements in the City of LaBelle.	The C-5 portion of the city's 2004 Master Stormwater Plan was completed in 2010. These stormwater management improvements included retrofitting stormwater catch basins and adding vegetative swale treatment. Funding required to continue design and construction of additional projects.	Near-Term	Local LaBelle		34.8 mt/yr TN 5.8 mt/yr TP (CRWPP)	
CRE 123	North Ten Mile Canal Stormwater Treatment System Project	Project provides stormwater storage and treatment for an urban and commercial area with the City of Ft. Myers. It is intended to minimize peak flows and enhance water quality within Manuel's Branch and Carrell Canal.	FDEP permit is being reviewed for a modification. Project scheduled to begin in next five years	Near-term	Local Ft. Myers	$4,500,000	0.82 mt/yr TN 0.33 mt/yr TP (CRWPP)	
	Sunniland/Nine Mile Run Drainage Improvements	Project involves the restoration of historical flows to Buckingham Trails Preserve. Consists of the rehydration of the preserve through the removal of manmade alterations to correct the natural sheetflow and hydrology. Project is expected to provide multiple benefits including flood control, habitat enhancement and water recharge.	Requires land acquisition. Project design scheduled during FY14/15 with construction in FY15/16.	Near-term	Local Lee County	$50,000 (acq.) $100,000 (des.) $300,000 (con.)		
CRE 64	Yellow Fever Creek/Gator Slough Transfer Facility Project	Project involves the hydrologic restoration of the historical flows to the headwaters of Yellow Fever Creek. Project includes the construction of an interconnection facility between Gator Slough Canal and Yellow Fever Creek to transfer surface waters during high flow. Flows are currently intercepted by Gator Slough Canal and redirected to Matlacha Pass.	Conceptual design is complete. Permitting to begin in FY15 pending further coordination between Lee County and City of Cape Coral.	Near-term	Local Lee County Cape Coral	$671,000 (design & cons.)	0	0
	Billy Creek Restoration Dredging	Removal of exotic vegetation and dredging of Billys Creek.	Project is permitted. Project to begin in FY2016.	Near-term	Local Ft. Myers	$680,000		
	Moore Haven Canal Dredging	Deepening and widening of Moore Haven Canal. Will provide sediment reduction, an increase in wetland habitat, and water quality benefits to the Caloosahatchee River	State and federal permits have been approved. Partially funded in FY13-14.	Near-term	Local Glades County	$12,000,000		
		LONG-TERM LOCAL PROJECTS						
CRE 143	Greenbriar Preserve Project	Project involves modifications within Greenbriar Swamp and to the connecting canal/swale system to increase surface water connectivity and storage within the swamp, thereby reducing freshwater discharge to the Caloosahatchee River via Hickey's Creek. Project is expected to provide multiple benefits including flood control, habitat enhancement and water recharge.	Project is included in the ECWCD FY2014-FY2018 Capital Improvement Plan. Project requires further design work.	Long-term	Local ECWCD Lee County		1.45 mt/yr TN 0.36 mt/yr TP (agency)	600
CRE 144	Section 10 Storage Project	Project includes modifying an existing mine pit to allow for additional surface water storage in the ECWCD Water Management System; also, includes improvements to the connecting canals, control structures, and a pump station.	Requires land acquisition. Project requires further design work.	Long-term	Local ECWCD	$6,500,000	1.63 mt/yr TN 0.41 mt/yr TP (agency)	1,200
CRE 21	Hendry County Storage Project	Project consists of the construction of shallow water storage facility to help reduce nutrient loading to the CRE. Project is expected to provide multiple benefits including flood control, habitat enhancement, water quality improvements and water recharge. The project is expected to have the capability of providing timed releases of water to the estuary. It will be expected to have O&M costs associated with pumping operations.	Project was included in the ECWCD FY2010-FY2014 Capital Improvement Plan. ECWCD has evaluated three sites for possible acquisition. Funding will be required for land acquisition, design and construction.	Long-term	Local ECWCD		2.72 mt/yr TN 0.68 mt/yr TP (agency)	

CRE 44	Spanish Creek Preserve Restoration	Project involves the acquisition of agricultural lands to create shallow water storage and wetland flow-way to rehydrate the Ruby Daniels Preserve at Spanish Creek. Project is expected to provide multiple benefits including flood control, habitat enhancement, water quality improvements and water recharge.	Phase 1 involving the rehydration of a portion of Ruby Daniels Preserve was completed in 2014. Design and acquisition of approximately 640 acres land is required to construct the storage and complete rehydration of Spanish Creek.	Long-Term	Local Lee County	$14,800,000 (acq. des. const.)		
	Lehigh Wetland Restoration	Undeveloped lots will be purchased to restore remnant wetlands through the construction of one weir. Project is approximately 710 acres located in the Greenbriar Swamp area. Project is expected to provide multiple benefits including flood control, habitat enhancement, water quality improvements and water recharge.	Funding needed to initiate the project.	Long-term	Local Multiple	$70,000,000 (acq. des. & const.)	0.34 mt/yr TN 0.10 mt/yr TP (agency)	1,500
CRE 122	Mirror Lakes Storage/Rehydration Project	Multi-phase project intended to rehydrate Mirror Lakes (aka Halfway Pond), reduce peak flow discharges to the Orange River, and restore flows to the headwaters of the Estero River. Project is expected to provide multiple benefits including flood control, habitat enhancement, water quality improvements and water recharge.	Phase I (rehydrate Mirror Lakes) completed October 2012 to include a pump station and approximately 1,000 acre-ft of storage. Phase II and III involves moving water south under SR 82, and is in the planning and preliminary design stage.	Long-term	Local ECWCD FDOT SFWMD	Phase II: $300,000 (const.) Phase III: TBD	Phase II & III: 0.24 mt/yr TN 0.03 mt/yr TP (agency)	100-500
CRE 77	Cape Coral Canal Stormwater Recovery by Aquifer Storage and Recover (ASR) Project	Project uses ASR wells in Cape Coral to overcome water shortfall in the dry season and provide flood attenuation in the wet season. Project is expected to provide multiple benefits including flood control, water quality improvements and water recharge.	Three ASR wells were constructed in 2007; however, cycle testing has not started and construction of pumping stations and associated connections is not anticipated until 2015 due to budgetary constraints.	Long-term	Local Cape Coral		4.13 mt/yr TN 0.82 mt/yr TP (CRWPP)	
	Stumper Jumper Ranch Land Acquisition	Project involves the acquisition and restoration of 149 acres of disturbed land located within the Spanish Creek watershed in northeast Lee County. Project is expected to provide multiple benefits including flood control, habitat enhancement, water quality improvements and water recharge	Project design and acquisition required. Former Lee County Conservation 20/20 nomination.	Long-term	Local Lee County	$1,482,250 (acq.)		
CRE 29	Lehigh Acres Wastewater Treatment and Stormwater Retrofit Project	Project involves installing stormwater treatment features in Lehigh Acres, updating current stormwater management system, and converting high-density septic tanks to centralized wastewater treatment. Includes the conversion of 12,666 septic tank systems to central sewer. Project is expected to provide multiple benefits including flood control and water quality improvements. The project is expected to have O&M costs associated with the central sewer system.	Nearly 100 single family homes in Lehigh Acres have been connected to the centralized wastewater treatment plant since 2009. Project requires funding to continue.	Long-term	Local Multiple	$197,238,350 (sewer component)	48.66- 87.59 mt/yr TN (agency)	
CRE 126	Fort Myers-Cape Coral Reclaimed Water Interconnect Project	Project includes installing a 20-inch diameter transmission line from Fort Myers Treatment Plant to Cape Coral Reclamation Treatment Plant. This is intended to help prevent discharging 9 mgd treated water into the CRE.	The feasibility study completed in 2010 found that constructing a disposal well was a less expensive near-term option; however, project is still desirable as a long-term option. Legislative funding for additional study was appropriated for FY14-15.	Long-term	Local Cape Coral Ft. Myers			
CRE 69	Cape Coral Wastewater Treatment and Stormwater Retrofit Project	City of Cape Coral utility expansion project to convert septic systems to gravity sewers and replace older stormwater inlets with newer inlets designed to assist stormwater management. Includes improvements to existing sewer system and incorporation of roadside swale into drainage system. Project is expected to provide multiple benefits including water quality improvements, water reuse and water recharge.	Project on-going. Next scheduled area is located in Northwest Sector outside of Caloosahatchee watershed.	Long-term	Local Cape Coral		27 mt/yr TN 5.4 mt/yr TP (CRWPP)	

CRE 125	Shoemaker-Zapato Canal Stormwater Treatment Project	Project includes installing weir/water control structures to increase channel storage and provide peak flow attenuation. It will enhance water quality and reduce erosion and siltation into Billy Creek.	Additional study required	Long-term	Local Ft. Myers		0.54 mt/yr TN 0.14 mt/yr TP (CRWPP)	
CRE 141	Winkler Canal Treatment Marsh Project	Project creates a treatment marsh designed to divert and treat low flows from low-level rain events using a diversion weir.	Project has been permitted but is on-hold pending funding for land acquisition.	Long-term	Local Ft. Myers		0.2 mt/yr TN 0.08 mt/yr TP (CRWPP)	

Caloosahatchee River Watershed Projects
ON-GOING PROGRAMS

CRWPP ID	Project/Activity	Description	Project Status	Phase	Category/ Agency	Estimated Cost	Estimated Nutrient Removal (mt/yr)	Estimated Storage (ac-ft)
CRE 149	Northern Everglades – Payment for Environmental Services (NE-PES) Program	NE-PES solicitation is an innovative approach that allows cattle ranchers to deliver environmental services for water and nutrient retention. The goal is to establish relationships via contracts with private landowners to obtain water management services of water and nutrient retention to reduce flows and nutrient loads to Lake Okeechobee and the St. Lucie and Caloosahatchee rivers.	There are currently three projects under contract to provide water retention service within the Caloosahatchee watershed. One of the projects (Mudge Ranch) is operational and two projects (Alico Ranch and Babcock Ranch) will be initiating construction in FY2015	Ongoing	Regional Dispersed Water Mgmt. SFWMD	$125.9 million over 11 years	n/a	93,554
CRE 152	Dispersed Water Management Water Farming Assessment	Utilize fallow/out-of-production citrus lands to store water and attenuate nutrients. To determine the overall feasibility of the water farming concept, information with respect to environmental benefits gained compared to the cost estimates associated with on-site construction, infrastructure improvements, environmental assessments, and facility maintenance needs to be evaluated.	The District entered into a cooperative agreement with Gulf Citrus Growers Association to assess the feasibility of water farming. The feasibility study was completed in December 2013. Funding for further implementation is not available at this time.	Ongoing	Regional Dispersed Water Mgmt. SFWMD	TBD		
CRE 153	Dispersed Water Management Interim Sites	Parcels scheduled to become regional restoration projects present an opportunity to provide water retention through interim, low-cost alterations to the existing surface water management systems. These parcels would then provide an interim role of contributing to the watershed restoration effort while the final designs are completed and approved. If the public lands are being leased, then water management strategies will be jointly developed with the lessees to reduce discharges while not adversely affecting flood protection (including adjacent properties) and water quality.	Interim lands in the Caloosahatchee Watershed include BOMA and C-43 reservoir site.	Ongoing	Regional Dispersed Water Mgmt. SFWMD	$700,000		1,316
CRE-LO 03 CRE-LO 05 CRE-LO 63	Urban BMPs: Urban Fertilizer Rule [Lake Okeechobee Estuary and Recovery (LOER)] & Florida Yards and Neighborhoods Program	The Urban Fertilizer Rule is an FDACS rule that regulates the content of phosphorus and nitrogen in urban turf fertilizers to improve water quality. The Florida Yards and Neighbors Program provides education to citizens by promoting land use designs to minimize pesticides, fertilizers, and irrigation water.	Since 2009, the UF/IFAS Florida Yards and Neighborhood Program has expanded from a homeowner approach to cover a broader audience (e.g., builders, developers, architects).	Ongoing	Regional Source Control Multiple			

CRE-LO 01,02,49	Agricultural BMPs – Owner Implemented, Funded Cost-Share, and Cost-Share Future Funding	Implements agricultural BMPs and water quality improvement projects to reduce the discharge of nutrients from the watershed.	Total agricultural acreage in the Caloosahatchee Watershed is approximately 476,568 acres. Approximately 71 percent of this acreage is enrolled in owner implemented BMPs and have cost-share type BMPs in place. Goal is 100% coverage	Ongoing	Regional Source Control DACS			
CRE-LO 09	Coastal & Estuarine Land Conservation Program (CELCP)	Established in 2002 by NOAA, CELCP protects important coastal and estuarine areas that have significant conservation, recreation, ecological, historical, or aesthetic values, or that may be converted from their natural or recreational state to other uses (CELCP Final Guidelines, 2003). In Florida, CELCP is coordinated through FDEP's Coastal Management Program.	The primary purpose of the program is to acquire property in coastal and estuarine areas that have significant conservation, recreation, ecological, historical, or aesthetic values, or that are threatened by conversion from a natural or recreational state to other uses. The program provides up to $3 million dollars for each eligible project.	Ongoing	Regional DEP			
CRE-LO 91	Farm and Ranchland Partnerships	There are two USDA-NRCS farm and ranchland partnership programs: Farm and Ranchlands Protection Program, and Wetlands Reserve Program (WRP). Under these programs, landowners sell development rights to land and place it in a conservation easement that permanently maintains land as agriculture and open space.	The District executed a Memorandum of Understanding in October 2010 to assist USDA-NRCS by providing technical assistance in implementing their WRP projects.	Ongoing	Regional Dispersed Water Mgmt. SFWMD			
CRE-LO 63	Wastewater & Stormwater Master Plans	Master Plans outline implementing urban stormwater retrofit or wastewater projects to achieve additional nutrient reductions and water storage basin-wide by working with entities responsible for wastewater/stormwater programs in the service area.	See the CRWPP Construction Project for the implementation status of urban stormwater retrofits and wastewater projects.	Ongoing	Local Source Control			

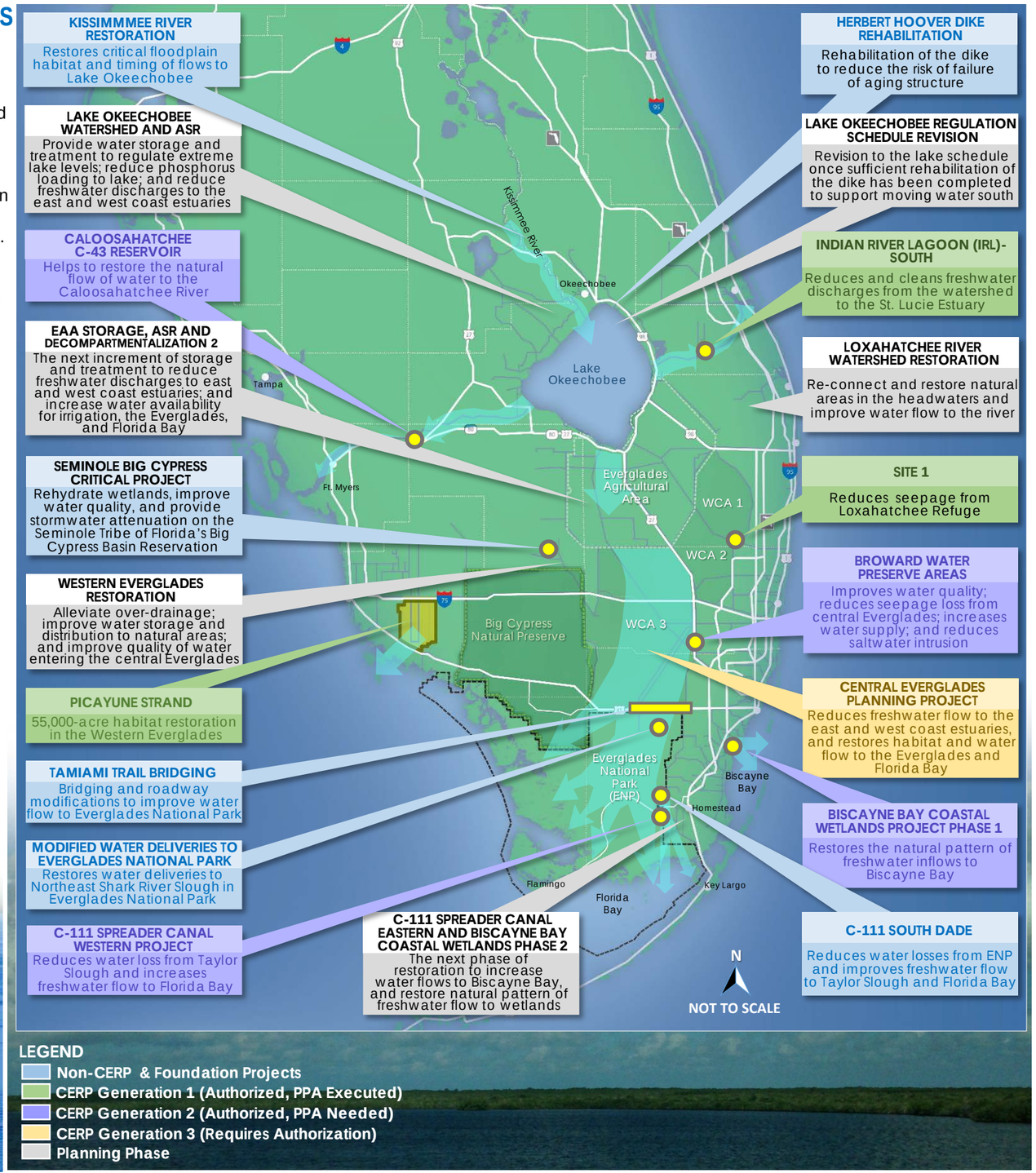
INTEGRATED DELIVERY SCHEDULE (IDS) 2015 UPDATE

SYNCHRONIZING RESTORATION EFFORTS

- A formal re-evaluation of the Integrated Delivery Schedule (IDS) was completed in 2015.
- The IDS provides the sequencing strategy for planning, designing and constructing federal projects cost-shared with local sponsors as part of the South Florida Ecosystem Restoration Program, based on ecosystem needs, benefits, costs and available funding.
- The IDS does not require an agency action or a decision document, it is a tool that provides guidance to decision-makers for scheduling ,staffing and budgeting.
- It is a living document that is updated as needed to reflect progress and/or program changes.
- The IDS synchronizes program and project priorities with the State of Florida and is needed to request required funding to plan and build South Florida Ecosystem Restoration Program projects.

PROCESS

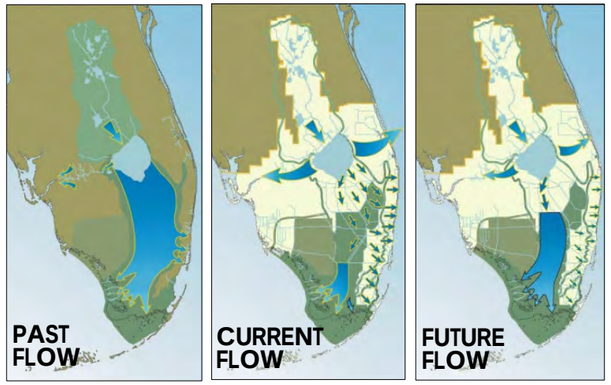
- The IDS is required as part of the Comprehensive Everglades Restoration Plan (CERP) Programmatic Regulations.
- Regular updates to the IDS are required.
- The process involves consultation with the South Florida Ecosystem Restoration Task Force.
- Public workshops sponsored by South Florida Ecosystem Restoration Task Force Working Group engaged stakeholders during the development of the IDS.



ACHIEVING RESTORATION BENEFITS

The Draft 2015 IDS Update will:

- Maximize holistic benefits to the regional system as early as possible.
- Ensure additional projects will be ready in order to continue progress on Everglades restoration.
- Remain consistent with project dependencies and constraints.



STATUS

- A formal re-evaluation of the Integrated Delivery Schedule (IDS) was completed in 2015.

PATH FORWARD

- The 2015 Integrated Delivery Schedule will be used to guide planning, design and construction sequencing and budgeting as Everglades restoration efforts move forward.

INTEGRATED DELIVERY SCHEDULE (IDS) 2015 UPDATE

Project	Yellow Book Code	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Planning Estimates Federal Construction Cost (SFER)++		41	138	141	190	203	141	213	191	195	221	213	186	200	144	151	100	0	0	0	0	0
Planning Estimates Non-Federal Construction Cost (SFER)++		78	139	160	161	111	119	56	125	142	141	210	210	192	192	123	123	0	0	0	0	0
Planning Estimates Total Construction Cost (SFER)++		119	277	302	351	313	260	269	316	338	362	423	396	392	336	275	223	0	0	0	0	0
Modified Water Deliveries to Everglades National Park*																						
Herbert Hoover Dike*																						
Seminole Big Cypress*	OPE																					
Restoration Strategies*																						
Tamiami Trail Next Steps Phase 1*																						
Kissimmee River Restoration																						
West Palm Beach Canal/STA-1E																						
C-111 South Dade Contract 8 & 9																						
C-111 South Dade PACR																						
Picayune Strand Restoration	OPE																					
Merritt Pump Station																						
Faka Union Pump Station																						
Manatee Mitigation and Flood Protection Features																						
Miller Pump Station																						
Remaining Features - Road removal & canal backfill																						
Site 1 Impoundment	M																					
Phase 1																						
Indian River Lagoon-South																						
C-44 Intake Canal	B																					
C-44 Reservoir	B																					
C-44 STA & Pump Station	B																					
C-23/24 Reservoir North	B																					
C-23/24 Reservoir South	B																					
C-23/24 STA	B																					
C-25 Reservoir	B																					
C-25 STA	B																					
Natural Lands	B																					
Decomp Physical Model	Q																					
Caloosahatchee River (C-43) West Basin Storage																						
Pump Station & Cell 1	D																					
Cell 2	D																					
Broward County Water Preserve Areas																						
C-11 Impoundment	Q																					
WCA 3A&3B Seepage Management	O																					
C-9 Impoundment	R																					
Biscayne Bay Coastal Wetlands Phase 1	FFF, OPE																					
L-31 East Flowway																						
Cutler Wetlands																						
C-111 Spreader Canal Western Project	WW																					
Central Everglades Planning Project (Authorization WRDA 2016)																						
PPA South: LRR & PPA Execution	AA, FF, H, QQ																					
Remove Old Tamiami Trail (CNTX)																						
L-67A Structure 1 & Gap in L-67C Levee (CNT 3)																						
Increase S-356 (CNT 4)																						
L-29 Gated Spillway (CNT 4b)																						
Increase S-333 (CNT 4a)																						
L-67A Structures 2 & 3 (CNT 5)																						
Removal L-67C & L-67 Ext, Constr L-67D Levee (CNT 6)																						
Removal L-29 Levee & Backfill L-67 Ext (CNT 7)																						
PPA North	QQ, II, G																					
PPA New Water	V																					
Loxahatchee River Watershed Restoration Project	X, Y, K																					
Lake Okeechobee Watershed, ASR	A, GG																					
Big Cypress/L-28 Interceptor (Western Everglades)	CCC																					
EAA Storage & ASR/Decomp Ph2	G, GG																					
C-111 Spreader Canal Eastern & BBCW Ph2	WW,FFF																					
Lake Okeechobee Regulation Schedule Revision*+																						

++ Does not reflect budgetary development dollars or capability
Blue = Non-Federal
Black = Federal
* Funded through other program authorities or by other entities
+ Schedule subject to Dam Safety Modification Study

XXXX SMART Planning Compliance Approval
Planning
Design, PPA Execution, Real Estate Acquisition
Construction
Operational Testing and Monitoring Period

Non-CERP and Foundation Projects
CERP Generation 1 Projects - Authorized, Project Partnership Executed (PPA)
CERP Generation 2 Projects - Authorized, requires PPA
Planning Phase - Requires Authorization
Planning Phase - Proposed

Maximizes holistic benefits to regional system as early as possible

- Ensures continued stream of construction, which provides for steady increase in regional ecosystem benefits
- Provides beneficial storage to the Caloosahatchee and St Lucie estuaries while infrastructure that is needed to open up the system for additional flow south is being implemented
- Improves conditions and flow through WCA-3 and provides more water to Everglades National Park and Florida Bay as early as possible
- Advances projects with the greatest potential to avert ongoing degradation and considers implications of climate change and sea-level rise

Ensures additional projects will be ready to continue progress on restoration

- Includes most of the planning efforts for projects identified by stakeholders as priorities
- Prioritizes planning studies for Lake Okeechobee Watershed and the Western Everglades

Consistency with project dependencies and constraints

- Maintains 50/50 cost-share
- Commitment to complete construction on projects where construction has been initiated
- Consistent with project dependencies for moving water south
- Modifications to downstream infrastructure, Restoration Strategies, etc.

NOTE: The funding shown for FY17 and beyond is only notional, representing approximate funding levels that would be needed to sustain the work displayed in the IDS for any particular FY. The funding does not represent a commitment by the Administration to budget the amounts shown.