Appendix 10: Comprehensive Everglades Restoration Plan

DESCRIPTION OF COMPREHENSIVE PLAN PROJECTS INCLUDING ESTIMATED START DATES THROUGH 2001

Table A10-1 shows estimated start dates to begin the development of project management plans for projects beginning in 2000 through 2001. The projects for which the District will act as local sponsor with the Corps are described below and listed in **Table A10-2**. The component designation that was used throughout the planning of the Comprehensive Plan is included in parentheses, e.g., (A). Other Project Elements are identified as (OPE).

Table A10-1. Project Start Dates Through 2001

Project	Estimated Start Date
Lake Okeechobee ASR Pilot Project	08/2000
Caloosahatchee River Basin ASR Pilot Project	10/2000
L-31N Seepage Management Pilot Project	09/2000
Hillsboro Site 1 Impoundment & ASR Pilot Project	08/2000
Lake Belt In-Ground Reservoir Pilot Project	09/2000
Wastewater Reuse Technology Pilot Project	10/2000
Lake Okeechobee Watershed Project (A, W, and 2 OPEs)	09/2000
Lake Istokpoga Regulation Schedule Project (OPE)	01/2001
Part 1 – C-43 Basin Storage Reservoir Project (D P1)	01/2001
C-44 Basin Storage Reservoir Project (B)	07/2001
Phase 1 – C-23 & C-24 Storage Reservoir (UU P1)	07/2001
Phase 2 – C-25 & North & South Fork Storage Reservoir (UU P2)	07/2001
Part 1 - Everglades Agricultural Area Storage Reservoirs Project (G P1)	09/2000
Flows to NW & Central WCA 3A Project (II, RR)	09/2000
Loxahatchee NWR WCA 1 Internal Structures Project (KK)	10/2000
Modify Holey Land Wildlife Management Area Operation Plan Project (DD)	10/2000
Modify Rotenberger Wildlife Management Area Operation Plan Project (EE)	10/2000
Part 1 - North Palm Beach County Project (X, Y, K, GGG, LL, Pal Mar, LWL)	09/2000
Acme Basin B Discharge Project (OPE)	07/2001
Protect & Enhance Existing Wetland Systems Adjacent to LNWR (OPE)	07/2001
Part 1 - Hillsboro Site 1 Impoundment Project (M P1)	07/2001
Western C-11 Diversion Impoundment and Canal, WCA 3A/3B Levee Seepage Management and North New River Conveyance Improvements	07/2001
C-9 STA / Impoundment Project (R)	07/2001
Dade-Broward Levee / Pennsuco Wetlands Project (BB)	07/2001
C-4 Control Structure Project (T)	10/2000
Biscayne Bay Coastal Wetlands Project (FF, OPE)	10/2001
C-111N Spreader Canal Project (WW)	10/2000
Southern Golden Gate Estates Restoration Project(OPE)	09/2000
Florida Keys Tidal Restoration Project (OPE)	10/2000

PILOT PROJECTS

P1) Lake Okeechobee Aquifer Storage and Recovery – Pilot Project

This project is multipurpose and provides benefits to environmental, urban and agricultural users. The pilot project is necessary to identify the most suitable sites for the aquifer storage and recovery wells in the vicinity of Lake Okeechobee and to identify the optimum configuration of those wells. Additionally, the pilot project will determine the specific water quality characteristics of waters to be injected, the specific water quality characteristics and amount of water recovered from the aquifer, and the water quality characteristics of the receiving aquifer. Further information from the pilot project will provide the hydrogeological and geotechnical characteristics of the upper Floridan Aquifer System within the region, and the ability of the upper Floridan Aquifer System to maintain injected water for future recovery.

P2) Caloosahatchee River (C-43) Basin Aquifer Storage and Recovery – Pilot Project

Aquifer storage and recovery wells are proposed in order to maximize the benefits associated with the Caloosahatchee River Storage Reservoir. A pilot project for these wells is necessary to identify the most suitable sites for the aquifer storage and recovery wells in the vicinity of the reservoir and to determine the optimum configuration of those wells. The pilot project will provide information regarding the characteristics of the aquifer system within the Caloosahatchee River Basin as well as determine the hydrogeological and geotechnical characteristics of the upper Floridan Aquifer. The pilot project will also determine the specific water quality characteristics of waters to be injected, the specific water quality characteristics and the amount of water recovered from the aquifer, and the water quality characteristics of water within the receiving aquifer.

P3) Hillsboro Site 1 Impoundment and Aquifer Storage and Recovery – Pilot Project

The Hillsboro Site 1 above-ground impoundment operates in conjunction with multiple aquifer storage and recovery wells in order to maximize the benefits of the impoundment. A pilot project for these wells is necessary to determine the most suitable sites for the aquifer storage and recovery wells in the vicinity of the impoundment and to determine the optimum configuration of those wells. The identification of the hydrogeological and geotechnical characteristics of the soils and aquifer will also be determined. The pilot project will also determine the specific water quality characteristics of water within the aquifer as well as the quality of water proposed for injection and the water quality characteristics of water recovered from the aquifer.

P4) In-Ground Reservoir Technology – Pilot Project

Several projects recommend the use of areas where lime rock mining will have occurred. The initial design of these reservoirs includes subterranean seepage barriers around their perimeter in order to enable drawdown during dry periods, prevent seepage losses and prevent water quality impacts due to transmissivity of the aquifer in these areas.

The pilot project is required to determine construction technologies, storage efficiencies, impacts on local hydrology and water quality effects. Water quality assessments will include a determination as to whether the in-ground reservoirs and seepage barriers will allow for storage of untreated waters without concern for groundwater contamination.

P5) L-31N Seepage Management – Pilot Project

The purpose of this project is to reduce levee seepage flow across L-31N adjacent to Everglades National Park via a levee cutoff wall. Additionally, the project was designed to reduce groundwater flows during the wet season by capturing them with a series of groundwater wells adjacent to L-31N, then back-pumping those flows to Everglades National Park. The pilot project is necessary to determine the appropriate technology to control seepage from Everglades National Park. The pilot project will also provide necessary information to determine the appropriate amount of wet season groundwater flow to return that will minimize potential impacts to Miami-Dade County's West Wellfield and freshwater flows to Biscayne Bay.

P6) Wastewater Reuse Technology – Pilot Project

Currently, two projects involve the advanced treatment of wastewater. This pilot project will address water quality issues associated with discharging reclaimed water into natural areas such as the West Palm Beach Water Catchment Area, Biscayne National Park, and the Bird Drive Basin as well as determine the level of superior treatment and the appropriate methodologies for that treatment. A series of studies will be conducted to determine the level of treatment needed.

Pilot facilities will be constructed to determine the ecological effects of using superior, advanced treated reuse water to replace and augment freshwater flows to Biscayne Bay and to determine the level of superior, advanced treatment required to prevent degradation of freshwater and estuarine wetlands and Biscayne Bay. The constituents of concern in wastewater will be identified and the ability of superior, advanced treatment to remove those constituents will be determined.

In addition, a pilot facility will be constructed to treat wastewater from the East Central Regional Wastewater Treatment Facility using advanced and superior wastewater treatment processes to remove nitrogen and phosphorus. After treatment, the wastewater will be used to restore 1,500 acres of wetlands and to recharge wetlands surrounding the City of West Palm Beach's wellfield. A portion of the treated wastewater will be used to recharge a residential lake system surrounding the city's wellfield and a Palm Beach County wellfield.

Besides serving as a pilot project for wetlands based water reclamation, this project will reduce a portion of the city's dependence on surface water from Lake Okeechobee during dry or drought events. In addition, approximately 2,000 acres of wetlands would be created or restored. Other benefits include aquifer recharge and replenishment, reduction of water disposed in deep injection wells and a reduction of stormwater discharge to tide.

KISSIMMEE RIVER AND LAKE OKEECHOBEE REGION

1) Lake Okeechobee Watershed Project

The Lake Okeechobee Watershed Project includes four separable elements including North of Lake Okeechobee Storage Reservoir, Taylor Creek/Nubbin Slough Storage and Treatment Area, Lake Okeechobee Watershed Water Quality Treatment Facilities and, Lake Okeechobee Tributary Sediment Dredging. These components were combined to an opportunity to generate a more efficient design of the components and address the interdependencies and tradeoffs between the different components.

1a) North of Lake Okeechobee Storage Reservoir (A)

This separable element includes an above-ground reservoir and a 2,500-acre stormwater treatment area. The total storage capacity of the reservoir is approximately 200,000 acre-feet and is located in the Kissimmee River Region, north of Lake Okeechobee. The specific location of this facility has not been identified; however, it is anticipated that the facility will be located in Glades, Highlands, or Okeechobee counties. The initial design of this separable element assumed a 20,000-acre facility (17,500-acre reservoir and 2,500-acre treatment area) with water levels in the reservoir fluctuating up to 11.5 feet above grade. The final size, depth and configuration of this facility will be determined through more detailed planning, land suitability analyses, and design. Future detailed planning and design activities will also include an evaluation of degraded water bodies within the watersheds of the storage/treatment facility to determine appropriate pollution load reduction targets, and other water quality restoration targets for the watershed.

The purpose of this facility is to detain water during wet periods for later use during dry periods and reduce nutrient loads flowing to the lower Kissimmee River and Lake Okeechobee. This increased storage capacity will reduce the duration and frequency of both high and low water levels in Lake Okeechobee that are stressful to the lake's littoral ecosystems and cause large discharges from the lake that are damaging to the downstream estuary ecosystems. Depending upon the proposed location(s) of this water storage/treatment facility and pollutant loading conditions in the watershed(s), the facility could be designed to achieve significant water quality improvements, consistent with appropriate pollution load reduction targets.

The operation of this separable element assumes that water from Lake Okeechobee, the Kissimmee River or the S-65E drainage basin will be pumped into the storage reservoir/stormwater treatment area when the climate-based inflow model forecasts that the lake's water level will rise significantly above the desirable level for the lake's littoral zone. Water held in the reservoir and stormwater treatment area will not be released until the lake's level declines to an ecologically acceptable level.

1b) Taylor Creek/Nubbin Slough Storage and Treatment Area (W)

This separable element includes an above-ground reservoir with a total storage capacity of approximately 50,000 acre-feet and a stormwater treatment area with a capacity of approximately 20,000 acre-feet in the Taylor Creek/Nubbin Slough Basin. The initial design of this separable element assumed a reservoir of 5,000 acres with water levels fluctuating up to 10 feet above grade and a stormwater treatment facility of approximately 5,000 acres. The final size, depth and configuration of this separable element will be determined through more detailed planning, land suitability analyses and design.

The purpose of this separable element is to attenuate flows to Lake Okeechobee and reduce the amount of nutrients flowing to the lake. The separable element is designed to capture, store, and treat basin runoff during periods when levels in Lake Okeechobee are high or increasing. The water quality treatment element of this separable element is consistent with the recommendations of the South Florida Ecosystem Restoration Working Group's Lake Okeechobee Issue Team and the Pollution Load Reduction Goals for Lake Okeechobee developed for the Lake Okeechobee Surface Water Improvement and Management Plan (SFWMD, 1997f). The water held in the reservoir would be released to Lake Okeechobee when the lake's level declines to an ecologically acceptable level.

1c) Lake Okeechobee Watershed Water Quality Treatment Facilities (OPE)

This separable element includes two reservoir-assisted stormwater treatment areas and plugging of select local drainage ditches. The initial design of these reservoir-assisted stormwater treatment areas assumes a 1,775-acre facility in the S-154 Basin in Okeechobee County and a 2,600-acre facility in the S-65D sub-basin of the Kissimmee River Basin in Highlands and Okeechobee counties. The plugged drainage ditches will result in restoration of approximately 3,500 acres of wetlands throughout the Lake Okeechobee watershed basin. This separable element is also consistent with the recommendations of the South Florida Ecosystem Restoration Working Group's Lake Okeechobee Issue Team for achieving water quality restoration objectives in the lake and should provide significant long-term water quality benefits for the lake.

The other portion of this separable element includes the purchase of conservation easements within four key basins of Lake Okeechobee to restore the hydrology of isolated wetlands by plugging the connection to drainage ditches and the diversion of canal flows to adjacent wetlands. The sites range in size from an individual wetland to an entire sub-basin and are located within the lower Kissimmee River basins (S-65D, S-65E, and S-154) and Taylor Creek/Nubbin Slough Basin (S-191).

The purpose of this separable element is to attenuate peak flows and retain phosphorus before flowing into Lake Okeechobee. Further, many of the wetlands in the Lake Okeechobee watershed have been ditched and drained for agriculture water supply and flood control. This separable element will restore the hydrology of selected isolated and riverine wetlands in the region by plugging these drainage ditches.

The South Florida Ecosystem Restoration Working Group's Lake Okeechobee Issue Team identified six primary tributary basins (C-41 Basin, Fisheating Creek, Taylor Creek/Nubbin Slough, S-154 Basin, S-65D [Pool D] Basin, S-65E [Pool E] Basin) contributing significant phosphorus loads to the Lake. To further reduce nutrient loading to Lake Okeechobee in support of the water quality goals for the lake, articulated in the Lake Okeechobee Surface Water Improvement Management Plan, there are potentially other reservoir-assisted stormwater treatment area facilities needed in the Lake Okeechobee watershed, such as in the C-41 and Fisheating Creek basins, that are not included in this construction separable element. Therefore, it is proposed that a comprehensive plan for the Lake Okeechobee watershed be developed before the final configuration of this separable element is implemented. A comprehensive Lake Okeechobee watershed plan would include elements of the Lake Okeechobee Surface Water Management Plan and remediation programs developed to achieve appropriate pollution reduction targets established for the lake.

1d) Lake Okeechobee Tributary Sediment Dredging (OPE)

This separable element includes dredging sediments from 10 miles of primary canals within an eight-basin area in the northern watershed of Lake Okeechobee. The initial design assumes that the dredged material will contain approximately 150 tons of phosphorus.

The purpose of this separable element is to remove phosphorous in canals located in areas of the most intense agriculture in the Lake Okeechobee watershed. These sediments presently contribute to the excessive phosphorus loading to Lake Okeechobee. Under separate funding, the District is planning a demonstration project consisting of sedimentation traps to determine the feasibility of phosphorous removal by this method. The project will be a two-year demonstration with construction starting in FY2000. Upon completion in 2001, the traps will be operated and monitored to determine effectiveness. If feasible, findings from this demonstration will be incorporated into the design for this separable element. This separable element is also consistent with the water quality restoration goals for the lake included in the Lake Okeechobee Surface Water Management Plan and subsequently developed by the Lake Okeechobee Issue Team. Implementation of this separable element will also complement other activities associated with pollution reduction for the lake.

2) Lake Istokpoga Regulation Schedule Project (OPE)

This project includes the development of a plan to address water resource problems in the Lake Istokpoga Basin. Lake Istokpoga is a natural lake located in Highlands County, a tributary of Lake Okeechobee and the Kissimmee River. The major focus of this project is to create a balance between the environmental needs, water supply and flood control in the Lake Istokpoga drainage basin.

The purpose is to examine the Lake Istokpoga Basin with a view towards enhancing fish and wildlife benefits and developing a long-term comprehensive management plan. It has been noted that operation of S-68, beginning in 1962, reduced the maximum annual fluctuation of the lake (SFWMD, 1978). While the littoral zone expanded, the amount of quality habitat was reduced by the formation of extensive floating tussocks and dense cattail communities. Persistently lowered lake levels have reduced the natural frequency of seasonal drying and inundation. Without natural lake level fluctuations, germination

of diverse aquatic plant seeds is reduced, consolidation and compaction of organic sediments cannot occur, and the formation and expansion of floating mats of water hyacinths and other species common to tussock communities are promoted. These mats reduce overall productivity and diversity of the marsh.

The project will also address the need for flood protection for the perimeter and upstream tributaries, and for downstream areas west and east of C-41A. It will address water supply needs for both agriculture and the Seminole Tribe of Florida.

3) Lake Okeechobee Aquifer Storage and Recovery Project (GG)

This project includes a series of aquifer storage and recovery wells adjacent to Lake Okeechobee with a total capacity of one billion gallons per day and associated pre- and post- water quality treatment in Glades and Okeechobee counties. The initial design assumes 200 wells, each with the capacity of five million gallons per day with eight ultrafiltration water quality pre-treatment facilities and aeration for post-treatment. Based on information from existing aquifer storage and recovery facilities studied, it is assumed that recovery of aquifer-stored water would have no adverse effects on water quality conditions in Lake Okeechobee. In fact, some level of nutrient load reduction may occur as a result of aquifer storage, which would be a long-term benefit to in-lake water quality conditions. The level and extent of treatment and number of the aquifer storage and recovery wells may be modified based on findings from the Lake Okeechobee Aquifer Storage and Recovery Pilot Project. The pilot project will also investigate changes to water chemistry resulting from aquifer storage and identify post-retrieval water quality treatment requirements, if any, necessary to implement aquifer storage and recovery facilities. The Comprehensive Plan includes pilot studies to investigate the feasibility of the aquifer storage and recovery facilities, including water quality changes associated with aquifer storage and recovery.

The purpose of this project is to: 1) provide additional regional storage while reducing both evaporation losses and the amount of land removed from current land use (e.g., agriculture) that would normally be associated with construction and operation of above-ground storage reservoirs; 2) increase the lake's water storage capability to better meet regional water supply demands for agriculture, Lower East Coast urban areas and the Everglades; 3) manage a portion of regulatory releases from the lake primarily to improve Everglades hydropatterns and to meet supplemental water supply demands of the Lower East Coast; 4) reduce harmful regulatory discharges to the St. Lucie and Caloosahatchee estuaries and 5) maintain and enhance the existing level of flood protection.

The operation of this project assumes that after treatment, water from Lake Okeechobee will be injected into the upper Floridan Aquifer when the climate-based inflow model forecasts that the lake's water level will rise significantly above those levels that are desirable for the lake's littoral zone. During the dry season, water stored in the Floridan Aquifer will be returned to the lake after aeration either when the lake's water level is projected to fall to within three-quarters of a foot of the supply-side management line or below an established water level during the dry season.

CALOOSAHATCHEE RIVER REGION

4) C-43 Basin Storage Reservoir Project Part 1 (D – Part 1)

This project is the first part of the C-43 Basin Storage Reservoir and aquifer storage and recovery component. The project includes an above-ground reservoir with a total storage capacity of approximately 160,000 acre-feet located in the C-43 Basin in Hendry, Glades, or Lee counties. The initial design of the reservoir assumed 20,000 acres with water levels fluctuating up to eight feet above grade. The final size, depth and configuration of this facility will be determined through more detailed planning and design.

The purpose of this project is to capture C-43 Basin runoff and releases from Lake Okeechobee. The reservoir will be designed for water supply benefits, some flood attenuation, to provide environmental water supply deliveries to the Caloosahatchee Estuary, and water quality benefits to reduce salinity and nutrient impacts of runoff to the estuary. It is assumed that, depending upon the location of the reservoir and pollutant loading conditions in the watershed, the reservoir could be designed to achieve significant water quality improvements, consistent with appropriate pollution load reduction targets.

Excess runoff from the C-43 Basin and Lake Okeechobee flood control discharges will be pumped into the proposed reservoir. Lake Okeechobee will meet any estuarine demands, not met by basin runoff as long as the lake stage is above a pre-determined level. Lake water will also be used to meet the remaining basin demands subject to supply-side management. The C-43 reservoir will also be operated in conjunction with the Caloosahatchee back-pumping project, which includes a stormwater treatment area for water quality treatment. If the level of water in the reservoir exceeds 6.5 feet and Lake Okeechobee is below a pre-determined level, then water is released and sent to the back-pumping facility.

5) C-43 Basin Aquifer Storage and Recovery Project (D – Part 2)

This project is the second part of the C-43 Basin Storage Reservoir and aquifer storage and recovery component. This project includes aquifer storage and recovery wells with a total capacity of approximately 220 million gallons per day and associated pre- and post- water quality treatment located in the C-43 Basin in Hendry, Glades, or Lee counties. The initial design of the wells assumed 44 wells, each with the capacity of five million gallons per day with chlorination for pre-treatment and aeration for post-treatment. The level and extent of treatment and number of the aquifer storage and recovery wells may be modified based on findings from a proposed aquifer storage and recovery pilot project.

The purpose of this project is to capture C-43 Basin runoff and releases from Lake Okeechobee. The wells will be designed for water supply benefits, some flood attenuation, to provide environmental water supply deliveries to the Caloosahatchee Estuary, and water quality benefits to reduce salinity and nutrient impacts of runoff to the estuary.

Excess runoff from the C-43 Basin and Lake Okeechobee flood control discharges will be pumped into the C-43 Basin Reservoir. Water from the reservoir will be injected into the aquifer storage and recovery wellfield for long-term (multi-season) storage. Any estuarine demands, not met by basin runoff and the aquifer storage and recovery wells, will be met by Lake Okeechobee as long as the lake stage is above a pre-determined level. Lake water is also used to meet the remaining basin demands subject to supply-side management.

6) Caloosahatchee Back-pumping with Stormwater Treatment Project (DDD)

This project includes pump stations and a stormwater treatment area with a total capacity of approximately 20,000 acre-feet located in the C-43 Basin in Hendry and Glades counties. The initial design of the stormwater treatment area assumed 5,000 acres with the water level fluctuating up to four feet above grade. The final size, depth and configuration of this facility will be determined through more detailed planning and design.

The purpose of this feature is to capture excess C-43 Basin runoff, which will be used to augment regional system water supply. Backpumping will only occur after estuary and agricultural/urban demands have been met in the basin and when water levels in the C-43 storage reservoir exceed 6.5 feet above grade. Further, Lake Okeechobee water levels must be within a specified range to accept this water as to not impact ecological resources. When these conditions are met, a series of pump stations will back-pump excess water from the reservoir and the C-43 Basin to Lake Okeechobee after treatment through a stormwater treatment area. The stormwater treatment area will be designed to meet Lake Okeechobee phosphorus and other pollutant loading reduction targets consistent with the Surface Water Improvement and Management Plan for the lake and future appropriate pollution load reduction targets which may be developed for the lake and the watershed in which the facility is to be located.

UPPER EAST COAST REGION

7) Indian River Lagoon Project

The Indian River Lagoon Project includes three separable elements including the C-44 Basin Storage Reservoir, the C-23 and C-24 Basins Storage Reservoirs and the C-25 and the North and South Fork Storage Reservoirs. These separable elements are all included in the ongoing Indian River Lagoon Feasibility Study.

7a) C-44 Basin Storage Reservoir (B)

This separable element includes an above-ground reservoir with a total storage capacity of approximately 40,000 acre-feet located in the C-44 Basin in Martin County. The initial design of the reservoir assumed 10,000 acres with water levels fluctuating up to four feet above grade. The final location, size, depth and configuration of this facility will be determined through more detailed analysis to be completed as a part of the ongoing Indian River Lagoon Feasibility Study.

The purpose of this separable element is to capture local runoff from the C-44 Basin, then return the stored water to the C-44 when there is a water supply demand. The reservoir will be designed for flood flow attenuation to the estuary, water supply benefits including environmental water supply deliveries to the estuary, and water quality benefits to control salinity and reduce loading of nutrients, pesticides, and other pollutants contained in runoff presently discharged to the estuary.

7b) C-23 and C-24 Storage Reservoirs (UU – Part 1)

This separable element includes above-ground reservoirs with a total storage capacity of approximately 115,200 acre-feet located in the C-23 and C-24 Basins in Martin and St. Lucie counties. The initial design of the reservoirs assumed 14,400 acres with water levels fluctuating up to eight feet above grade. The final location, size, depth and configuration of these facilities will be determined through more detailed analysis to be completed as a part of the Indian River Lagoon Feasibility Study. It is noted that experience from the Upper St. Johns Project reveals that greater variability of water levels are more desirable for the ecology and water quality.

The purpose of this separable element is to capture local runoff from the C-23 and C-24 basins for flood flow attenuation to the St. Lucie River Estuary. It is assumed that these facilities can be designed to provide significant water quality improvement benefits to the Indian River Lagoon and St. Lucie River Estuary in terms of reduced loading of nutrients, pesticides, and suspended materials in stormwater runoff which is presently conveyed to those waterbodies. This water will then be used to provide both water supply and environmental water supply benefits.

7c) C-25 and North Fork and South Fork Storage Reservoirs (UU – Part 2)

This separable element includes above-ground reservoirs with a total storage capacity of approximately 234,000 acre-feet located in the C-25 and the North Fork and South Fork basins in St. Lucie and Martin counties. The initial design of the reservoirs assumed 24,600 acres with water levels fluctuating up to eight feet above grade and 9,350 acres with water levels fluctuating up to four feet above grade. The final location, size, depth and configuration of these facilities will be determined through more detailed analysis to be completed as a part of the Indian River Lagoon Feasibility Study. Experience from the Upper St. Johns Project reveals that greater variability of water levels are more desirable for the ecology and water quality.

The purpose of this separable element is to capture local runoff from the C-25 and the North Fork and South Fork basins for flood flow attenuation to the St. Lucie River Estuary. It is assumed that these facilities can be designed to provide significant water quality improvement benefits to the Indian River Lagoon and St. Lucie River Estuary in terms of reduced loading of nutrients, pesticides, and suspended materials in stormwater runoff which is presently conveyed to those waterbodies. This water will then be used to provide both water supply and environmental water supply benefits.

EVERGLADES AGRICULTURAL AREA

8) Everglades Agricultural Storage Reservoir Project (G – Part 1)

This project is the first part of the of the Everglades Agricultural Area Storage Reservoir component. It includes two above ground reservoirs with a total storage capacity of approximately 240,000 acre-feet located on land associated with the Talisman Land purchase in the Everglades Agricultural Area. Conveyance capacity increases for the Miami, North New River, Bolles and Cross canals are also included in the design of this project. The initial design for the reservoir(s) assumed 40,000 acres, divided into two, equally sized compartments with water levels fluctuating up to six feet above grade in each compartment. However, actual design and construction of this first phase may result in multiple reservoirs by maximizing the use of the land acquired through the Farm Bill land acquisition agreements encompassing up to 50,000 acres.

This project is located in the Everglades Agricultural Area in western Palm Beach County on lands purchased with Department of Interior Farm Bill funds, with South Florida Water Management District funds, and on lands gained through a series of exchanges for lands being purchased with these funds. The area presently consists of land that is mostly under sugar cane cultivation. Implementation of this project will be consistent with the Farm Bill land acquisition agreements. This project will improve timing of environmental deliveries to the Water Conservation Areas by reducing damaging flood releases from the Everglades Agricultural Area to the Water Conservation Areas, reducing Lake Okeechobee regulatory releases to estuaries, meeting supplemental agricultural irrigation demands, and increasing flood protection within the Everglades Agricultural Area.

Compartment 1 of the reservoir would be used to meet Everglades Agricultural Area irrigation demands. The source of water is excess Everglades Agricultural Area runoff. Overflows to Compartment 2 could occur when Compartment 1 reaches capacity and Lake Okeechobee regulatory discharges are not occurring or impending. Compartment 2 would be used to meet environmental demands as a priority, but could supply a portion of Everglades Agricultural Area irrigation demands if environmental demands equal zero. Flows will be delivered to the Water Conservation Areas through Stormwater Treatment Areas 3 and 4. The sources of water are overflow from Compartment 1 and Lake Okeechobee regulatory releases. Compartment 2 will be operated as a dry storage reservoir and discharges made down to 18 inches below ground level.

9) Everglades Agricultural Storage Reservoir Project (G – Part 2)

This project is the second part of the Everglades Agricultural Area Storage Reservoir component. It includes an above-ground reservoir with a total storage capacity of approximately 120,000 acre-feet located in the Everglades Agricultural Area in western Palm Beach County. The initial design for the reservoir assumed 20,000 acres, which would make up the third compartment of the Everglades Agricultural reservoir, with water levels fluctuating up to six feet above grade. The need for this compartment will be determined through more detailed planning and design after Part 1 is completed.

The purpose of this project is to further improve the timing of environmental deliveries to the Water Conservation Areas, including reducing damaging flood releases from the Everglades Agricultural Area to the Water Conservation Areas and reducing Lake Okeechobee regulatory releases to the estuaries.

This last increment of storage would be used to meet environmental demands as a priority. The sources of water for this reservoir are overflow from the Part 1 reservoirs and Lake Okeechobee regulatory releases only during extreme wet events. This project will be operated as a dry storage reservoir and discharges made down to 18 inches below ground level. The project can also be designed to provide a water quality treatment function, augmenting the performance of the Everglades Construction Project and ensuring protection of water quality in the Everglades Protection Area. Design of this project for water quality performance will be based on water quality targets for the Everglades Construction Project and other water quality targets developed to protect designated uses in Everglades Agricultural Area waters.

BIG CYPRESS REGION

10) Big Cypress/L-28 Interceptor Modifications Project (CCC)

This project includes modification of levees and canals, water control structures, pumps, and stormwater treatment areas with a total storage capacity of 7,600 acre-feet located within and adjacent to the Miccosukee and Seminole Indian reservations in Collier and Hendry counties. The initial design of the stormwater treatment areas assumed a total acreage of 1,900 acres with the water level fluctuating up to four feet above grade. Conceptual sizes of the stormwater treatment areas were based on interim phosphorus concentration targets in the conceptual plan for the Everglades Construction Project. The final size, depth and configuration of this facility, including the stormwater treatment areas, will be determined through more detailed planning and design. Design of the stormwater treatment areas will be based on water quality criteria of the Seminole Tribe and criteria applicable to Big Cypress National Preserve, as appropriate.

The purpose of this project is to reestablish sheetflow from the West Feeder Canal across the Big Cypress Reservation and into the Big Cypress National Preserve, maintain flood protection on Seminole Tribal lands, and ensure that inflows to the North and West Feeder canals meet applicable water quality standards. Consistency with the Seminole Tribe's Conceptual Water Conservation System master plan will be maintained.

Upstream flows entering the West and North Feeder canals will be routed through two stormwater treatment areas to be located at the upstream ends of the canals. Sheetflow will be reestablished south of the West Feeder Canal by a system to be developed consistent with the Seminole Tribe's Conceptual Water Conservation System master plan. After conversion to a pump station, S-190 will also push flows south into the L-28 Interceptor Canal where sheetflow to the southwest will also be reestablished with backfilling and degradation of the southwest levee of the canal.

WATER CONSERVATION AREAS AND EVERGLADES REGION

11) Flow to Northwest and Central Water Conservation Area 3A Project (II and RR)

This project includes relocation and modifications to pump stations and development of a spreader canal system located in the northwest corner and west-central portions of Water Conservation Area 3A in western Broward County.

The purpose of this project is to increase environmental water supply availability, increase depths and extend wetland hydropatterns in the northwest corner and west-central portions of Water Conservation Area 3A.

Additional flows will be directed to the northwest corner and west central portions of Water Conservation Area 3A by increasing the capacity of the G-404 pump station, currently a part of the Everglades Construction Project, and increasing the capacity and relocating the S-140 pump station. A spreader canal system at S-140 will re-establish sheetflow to the west-central portion of Water Conservation Area 3A. Water quality treatment of flows is assumed to be provided by the Everglades Construction Project and water quality treatment strategies developed to fulfill the Non-Everglades Construction Project requirements of the Everglades Forever Act. If additional treatment were determined to be required as a result of future detailed planning and design work, those existing facilities would be modified to provide the necessary treatment.

12) Water Conservation Area 3 Decompartmentalization and Sheetflow Enhancement Project Part 1 (QQ – Part 1 and SS – Part 2)

Part 1 of the Water Conservation Area 3 Decompartmentalization and Sheetflow Enhancement Project includes the modification or removal of levees, canals, and water control structures in Water Conservation Area 3A and B located in western Broward County. This project includes backfilling the Miami Canal in Water Conservation Area 3 from one to two miles south of the S-8 pump station down to the East Coast Protective Levee. To make up for the loss of water supply conveyance to the Lower East Coast urban areas from the Miami Canal, the capacity of the North New River Canal within Water Conservation Area 3A will be doubled to convey water supply deliveries to Miami-Dade County as necessary. Modifications will also be made to the eastern section of Tamiami Trail which includes elevating the roadway through the installation of a series of bridges between L-31N Levee and the L-67 Levees. The eastern portion of L-29 Levee and Canal will also be degraded in the same area as the Tamiami Trail modifications.

The purpose of this project is to restore sheet flow and reduce unnatural discontinuities in the Everglades landscape. Due to the dependencies of components, this project would be implemented with the Water Preserve Areas project that would create a bypass for water supply deliveries to Miami Canal using the North New River Canal.

13) Water Conservation Area 3 Decompartmentalization and Sheetflow Enhancement Project Part 1(AA and QQ – Part 2)

Part 2 of the Water Conservation Area 3 Decompartmentalization and Sheetflow Enhancement Project includes the modification or removal of levees, canals, and water control structures in Water Conservation Area 3A located in western Broward County. This project includes backfilling the southern 7.5 miles of L-67A Borrow Canal, removal of the L-68A, L-67C, the western portion of L-29 below Water Conservation Area 3A, L-28, and L-28 Tieback Levees and Borrow Canals, and elevating the western portion of Tamiami Trail below Water Conservation Area 3A. Eight passive weir structures will be located along the entire length of L-67A to promote sheetflow from Water Conservation Area 3A to 3B during high flow conditions and additional water control structures will be added to the southern end of L-67A to allow for flow during extreme dry events.

The purpose of these features is to reestablish the ecological and hydrological connection between Water Conservation Areas 3A and 3B, the Everglades National Park, and Big Cypress National Preserve. The compartmentalization of the Water Conservation Areas has contributed to the loss of historic overland flows of the central Everglades slough system. This alteration of flows has resulted in temporal changes in hydropatterns and hydroperiods in the historic deepwater, central axis of the Shark River Slough system. This component adds conveyance to Water Conservation Area 3B to help re-establish natural hydroperiods and hydropatterns in the Water Conservation Areas and Shark River Slough.

14) Loxahatchee National Wildlife Refuge Internal Canal Structures Project (KK)

This project includes two water control structures in the northern ends of the perimeter canals encircling the Loxahatchee National Wildlife Refuge (Water Conservation Area 1) located in Palm Beach County.

The purpose of this project is to improve the timing and location of water depths within the Refuge. It is assumed that these structures will remained closed except to pass Stormwater Treatment Area 1 East and Stormwater Treatment Area 1 West outflows and water supply deliveries to the coastal canals.

15) Modified Holey Land Wildlife Management Area Operation Plan Project (DD)

This project consist of a modification to the current operating plan for Holey Land Wildlife Management Area to implement rain-driven operations for this area. Water deliveries are made to Holey Land from the Rotenberger Wildlife Management Area or from Stormwater Treatment Area 3 & 4 if Rotenberger flows are insufficient. The deliveries are assumed to be of acceptable water quality. These new operational rules are intended to improve the timing and location of water depths within the Holey Land Wildlife Management Area.

16) Modified Rotenberger Wildlife Management Area Operation Plan Project (EE)

This project consists of a modification to the current operating plan for Rotenberger Wildlife Management Area to implement rain-driven operations for this area. Water deliveries are made to Rotenberger from Stormwater Treatment Area 5. Discharges from Rotenberger are made to the Holey Land Wildlife Management Area. The deliveries are assumed to be of acceptable water quality. These new operational rules are intended to improve the timing and location of water depths within the Rotenberger Wildlife Management Area.

LOWER EAST COAST REGION

17) North Palm Beach County Project (Part 1)

This project includes a number of separable elements including Pal-Mar and J.W. Corbett Wildlife Management Area Hydropattern Restoration, Water Preserve Areas/L-8 Basin, Lake Worth Lagoon Restoration, C-17 Backpumping and Treatment and C-51 Back-pumping and Treatment. These separable elements have been combined into a single project to address the interdependencies and tradeoffs between the different elements and provide a more efficient design of the overall project.

17a) Pal-Mar and J.W. Corbett Wildlife Management Area Hydropattern Restoration (OPE)

This element includes water control structures, canal modifications and the acquisition of 3,000 acres located between Pal-Mar and the J.W. Corbett Wildlife Management Area in Palm Beach County.

The purpose of this separable element is to provide hydrologic connections between the Corbett Wildlife Management Area and: 1) the Moss Property, 2) the C-18 Canal, 3) the Indian Trail Improvement District, and 4) the L-8 Borrow Canal, in addition to extending the spatial extent of protected natural areas. These connections would relieve the detrimental effects on native vegetation frequently experienced during the wet season and form an unbroken 126,000-acre greenbelt extending from the Dupuis Reserve near Lake Okeechobee across the J.W. Corbett Wildlife Management Area and south to Jonathan Dickinson State Park.

17b) C-51 and Southern L-8 Reservoir (K - Part 1 and GGG)

This separable element includes a combination above-ground and in-ground reservoir. The project has a total storage capacity of 48,000 acre-feet located immediately west of the L-8 Borrow Canal and north of the C-51 Canal in Palm Beach County. Other construction projects include aquifer storage and recovery wells (Part 2) with a capacity of 50 million gallons per day and associated pre- and post-water quality treatment to be constructed in the City of West Palm Beach (Lake Mangonia), a series of pumps, water control structures and canal capacity improvements in the M Canal. The initial design for the reservoir assumed a 1,800-acre reservoir with 1,200 of usable acres and water levels fluctuating from 10 feet above grade to 30 feet below grade. The final

size, depth and configuration of this facility will be determined through more detailed planning and design.

The purpose of this separable element is to increase water supply availability and flood protection for northern Palm Beach County areas. It will also provide flows to enhance hydroperiods in the Loxahatchee Slough, increase base flows to the Northwest Fork of the Loxahatchee River and reduce high discharges to the Lake Worth Lagoon.

Water will be pumped into the reservoir from the C-51 Canal and Southern L-8 Borrow Canal during the wet season, or periods when excess water is available, and returned to the C-51 and Southern L-8 during dry periods. Additional elements will also direct excess water into the West Palm Beach Water Catchment Area. During periods when the West Palm Beach Water Catchment Area is above desirable stages, 50 million gallons per day will be diverted to Lake Mangonia for storage in the aquifer storage and recovery wells (Part 2). The reservoir portion of this component may be implemented under a previous authorization.

17c) Lake Worth Lagoon Restoration (OPE)

This separable element includes sediment removal and trapping within the C-51 Canal and sediment removal or trapping within a 2.5 mile area downstream of the confluence of the C-51 Canal and the Lake Worth Lagoon located in Palm Beach County. A prototype facility will be conducted to determine if the lagoon sediments will either be removed or trapped.

The purpose of this separable element is to improve water quality and allow for the reestablishment of sea grasses and benthic communities. The elimination of the organically enriched sediment from the C-51 Canal discharge will provide for long term improvements to the lagoon and enable success for additional habitat restoration and enhancement projects planned by Palm Beach County.

17d) C-17 Backpumping and Treatment (X)

This separable element includes backpumping facilities and a stormwater treatment area with a total storage capacity of approximately 2,200 acre-feet located in northeastern Palm Beach County. The initial design for the stormwater treatment area assumed 550 acres with water levels fluctuating up to four feet above grade. The final size, depth and configuration of this facility will be determined through more detailed planning and design, and will address appropriate pollution load reduction targets necessary to protect receiving waters (West Palm Beach Water Catchment Area).

The purpose of this separable element is to increase water supplies to the West Palm Beach Water Catchment Area and Loxahatchee Slough by capturing and storing excess flows currently discharged to the Lake Worth Lagoon from the C-17 Canal.

Excess C-17 Canal water will be backpumped through existing canals and proposed water control structures to the stormwater treatment area which will provide water quality treatment prior to discharge into the West Palm Beach Water Catchment Area.

17e) C-51 Back-pumping and Treatment (Y)

This separable element includes back-pumping facilities and a stormwater treatment area with a total storage capacity of approximately 2,400 acre-feet located in Palm Beach County. The initial design for the stormwater treatment area assumed 600 acres in size with the water levels fluctuating up to four feet above grade. The final size, depth and configuration of this facility will be determined through more detailed planning and design, and will address appropriate pollution load reduction targets necessary to protect receiving waters (West Palm Beach Water Catchment Area).

The purpose of this separable element is to increase water supplies to the West Palm Beach Water Catchment Area and Loxahatchee Slough by capturing and storing excess flows currently discharged to the Lake Worth Lagoon from the C-51 Canal.

Excess C-51 Canal water will be back-pumped through existing and proposed water control structures and canals to the stormwater treatment area which will provide water quality treatment prior to discharge into the West Palm Beach Water Catchment Area.

18) North Palm Beach County Project (Part 2)

This project includes two separable elements, the C-51 Regional Groundwater Aquifer Storage and Recovery and L-8 Basin Aquifer Storage and Recovery. These projects will provide an additional increment of storage within the north Palm Beach County region.

18a) C-51 Regional Groundwater Aquifer Storage and Recovery (LL)

This separable element includes a series of aquifer storage and recovery wells with a total capacity of 170 million gallons per day as well as associated pre- and post- water quality treatment to be constructed along the C-51 Canal in Palm Beach County. The initial design of the wells assumed 34 well clusters, each with a capacity of five million gallons per day with chlorination for pre-treatment and aeration for post-treatment. The level and extent of treatment and number of the aquifer storage and recovery wells may be modified based on findings from a proposed aquifer storage and recovery pilot project.

The purpose of this separable element is to capture and store excess flows from the C-51 Canal, currently discharged to the Lake Worth Lagoon, for later use during dry periods.

The aquifer storage and recovery facilities will be used to inject and store surficial aquifer ground water adjacent to the C-51 Canal in the upper Floridan Aquifer instead of discharging the canal water to tide. Water will be returned to the C-51 Canal to help maintain canal stages during the dry-season. If water is not available in the aquifer storage and recovery system, existing rules for water delivery to this region will be applied.

18b) L-8 Basin ASR (K - Part 2)

This separable element includes a combination above-ground and in-ground reservoir (see Part 1). Aquifer storage and recovery wells with a total capacity of 50 million gallons per day and associated pre-and post- water quality treatment will be constructed in the City of West Palm Beach (Lake Mangonia). The initial design of the wells assumed 50 wells, each with a capacity of 5 million gallons per day with chlorination for pre-treatment and aeration for post –treatment. The level and extent of treatment and number of the aquifer storage and recovery wells may be modified based on findings from a proposed aquifer storage and recovery pilot project.

The purpose of this separable element is to increase water supply availability and flood protection for northern Palm Beach County areas. It will also provide flows to enhance hydroperiods in the Loxahatchee Slough; increase base flows to the Northwest Fork of the Loxahatchee River, and reduces high discharges to the Lake Worth Lagoon.

During periods when the West Palm Beach Water Catchment Area is above desirable stages, 50 million gallons per day will be diverted to Lake Mangonia for storage in the aquifer storage and recovery wells.

19) Water Preserve Areas A-List Project

The Water Preserve Area A-List Project consists of nine separable elements including Acme Basin B Discharge, Protect and Enhance Existing Wetland Systems along Loxahatchee National Wildlife Refuge including the Strazzulla Tract, Hillsboro Site 1 Impoundment, Western C-11 Diversion Impoundment and Canal and Water Conservation Areas 3A and 3B Levee Seepage Management, North New River Diversion, C-9 Stormwater Treatment Area/Impoundment, Dade-Broward Levee/Pennsuco Wetlands, and the Eastern C-4 Control Structure. These separable elements are all included in the ongoing Water Preserve Areas Feasibility Study.

19a) Acme Basin B Discharge (OPE)

This separable element consists of construction of a wetland or chemical treatment area and a storage impoundment with a combined total storage capacity of 3,800 acre-feet located adjacent to the Loxahatchee National Wildlife Refuge in Palm Beach County. The initial design for the treatment area and impoundment assumed 310 acres with water levels fluctuating up to four feet above grade and 620 acres with the water levels fluctuating up to eight above grade. The final size, depth and configuration of these facilities will be determined through more detailed planning and design.

The purpose of this separable element is to provide water quality treatment and stormwater attenuation for runoff from Acme Basin B prior to discharge to the Loxahatchee National Wildlife Refuge or alternative locations described below. Excess available water may be used to meet water supply demands in central and southern Palm Beach County.

Stormwater runoff from Acme Basin B will be pumped into the wetland treatment area and then into the storage reservoir until such time as the water can be discharged into the Loxahatchee National Wildlife Refuge if water quality treatment criteria is met or into one of two alternative locations: the Palm Beach County Agricultural Reserve

Reservoir (VV) or the combination above-ground and in-ground reservoir area located adjacent to the L-8 Borrow Canal and north of the C-51 Canal (GGG).

19b) Protect and Enhance Existing Wetland Systems along Loxahatchee National Wildlife Refuge including the Strazzulla Tract (OPE)

This separable element includes water control structures and the acquisition of 3,335 acres located in Palm Beach County. The purpose of this separable element to provide a hydrological and ecological connection to the Loxahatchee National Wildlife Refuge and expand the spatial extent of protected natural areas. This land will act as a buffer between higher water stages to the west and lands to the east that must be drained. This increase in spatial extent will provide vital habitat connectivity for species that require large unfragmented tracts of land for survival. It also contains the only remaining cypress habitat in the eastern Everglades and one of the few remaining sawgrass marshes adjacent to the coastal ridge. This is a unique and endangered habitat that must be protected. This area provides an essential Everglades landscape heterogeneity function.

19c) Hillsboro Site 1 Impoundment (M – Part 1)

This separable element includes an above-ground reservoir with a total storage capacity of approximately 15,000 acre-feet located in the Hillsboro Canal Basin in southern Palm Beach County. The initial design of the reservoir assumed 2,460 acres with water levels fluctuating up to six feet above grade. The final size, depth and configuration of these facilities will be determined through more detailed planning and design to be completed as a part of the Water Preserve Areas Feasibility Study.

The purpose of this separable element is to supplement water deliveries to the Hillsboro Canal during dry periods, thereby reducing demands on Lake Okeechobee and the Loxahatchee National Wildlife Refuge. Water from the Hillsboro Canal will be pumped into the reservoir during the wet season or periods when excess water is available. Water will be released back to the Hillsboro Canal to help maintain canal stages during the dry season.

19d) Western C-11 Diversion Impoundment and Canal and Water Conservation Areas 3A and 3B Levee Seepage Management and North New River Conveyance Improvements (Q, O and SS Part 1)

This separable element includes canals, levees, water control structures, and a stormwater treatment area/impoundment with a total storage capacity of 6,400 acre-feet located in western Broward County. The initial design of the stormwater treatment area/impoundment assumed 1,600 acres with water levels fluctuating up to four feet above grade. The final size, depth and configuration of these facilities will be determined through more detailed planning and design to be completed as a part of the Water Preserve Areas Feasibility Study. Detailed design of this project will address appropriate pollution load reduction targets necessary to protect receiving waters.

The purpose of this separable element is to divert and treat runoff from the western C-11 Basin that is presently discharged into Water Conservation Area 3A, control

seepage from Water Conservation Areas 3A and 3B by improving groundwater elevations, and maintain flood protection for the western C-11 Basin.

Runoff in the western C-11 Canal Basin that was previously back-pumped into Water Conservation Area 3A through the S-9 pump station will be diverted into the C-11 Stormwater Treatment Area/Impoundment and then into either the North Lake Belt Storage Area, the C-9 Stormwater Treatment Area/Impoundment, or Water Conservation Area 3A after treatment, as applicable.

Mitigation of lost water supply conveyance to the Lower East Coast urban areas caused by the backfilling of the Miami Canal in Water Conservation Area 3 is made up in this project. The capacity of the North New River Canal south of the proposed Everglades Agricultural Area Storage Reservoir is doubled to convey additional water supply deliveries to Miami-Dade County as necessary. The capacities of S-351 and S-150 are doubled to allow the additional water supply deliveries to be made to Miami-Dade County via the improved North New River Canal. In addition, the conveyance of the L-33 and L-37 borrow canals west of US 27 is increased as necessary to pass the additional flows.

19e) C-9 Stormwater Treatment Area/Impoundment (R)

This separable element includes canals, levees, water control structures and a stormwater treatment area/impoundment with a total capacity of approximately 10,000 acre-feet, located in the western C-9 Basin in Broward County. The initial design of the stormwater treatment area/impoundment assumed 2,500 acres with water levels fluctuating up to four feet above grade. The final size, depth and configuration of these facilities will be determined through more detailed planning and design to be completed as a part of the Water Preserve Areas Feasibility Study and will address appropriate pollution load reduction targets necessary to protect receiving waters.

The purpose of this separable element is to provide treatment of runoff stored in the North Lake Belt Storage Area, enhance groundwater recharge within the basin, maintain seepage control for Water Conservation Area 3 and buffer areas to the west, and provide flood protection for the western C-9 Basin. Seepage from the C-9 Stormwater Treatment Area/Impoundment will be collected and returned to the impoundment.

19f) Dade-Broward Levee/Pennsuco Wetlands (BB)

This separable element includes water control structures and modifications to the Dade-Broward Levee and associated conveyance system located in Miami-Dade County. The final size and configuration of these facilities will be determined through more detailed planning and design to be completed as a part of the Water Preserve Areas Feasibility Study.

The purpose of this separable element is to reduce seepage losses to the east from the Pennsuco Wetlands and southern Water Conservation Area 3B, enhance hydroperiods in the Pennsuco Wetlands, and provide recharge to Miami-Dade County's Northwest Wellfield.

19g) Eastern C-4 Control Structure (T)

This separable element consists of one water control structure located in the C-4 Canal in Miami-Dade County. The purpose of this separable element is to enhance wetland hydroperiods and enhance recharge to several nearby wellfields.

The eastern structure will be operated to reduce regional system deliveries by diverting dry season stormwater flows to the C-2 Canal to provide salt water intrusion protection and recharge to downstream wellfields. A western structure, being implemented under the Critical Projects Program, will be operated to control water levels in the C-4 Canal at a higher elevation to reduce seepage losses from the Pennsuco Wetlands and areas to the west of the structure.

19h) Bird Drive Recharge Area (U)

This separable element includes pumps, water control structures, canals, and an above-ground recharge area with a total storage capacity of approximately 11,500 acre-feet located in western Miami-Dade County. The initial design of the recharge facility assumed 2,877 acres with the water level fluctuating up to four feet above grade. Final design will seek to enhance and maintain the continued viability of wetlands within the basin. The final size, depth and configuration of these facilities including treatment requirements will be determined through more detailed planning and design to be completed as a part of the Water Preserve Areas Feasibility Study and will address appropriate pollution load reduction targets necessary to protect downstream receiving surface waters.

The purpose of the separable element is to recharge groundwater and reduce seepage from the Everglades National Park buffer area by increasing water table elevations east of Krome Avenue. The facility will also provide C-4 flood peak attenuation and water supply deliveries to the South Dade Conveyance System and Northeast Shark River Slough.

Inflows from the western C-4 Canal Basin and from the proposed West Miami-Dade Wastewater Treatment Plant will be pumped into the recharge area. Inflows from the wastewater treatment plant will stop when the recharge area depth exceeds three feet above ground and will be diverted to a deep well injection disposal system. Recharge area outflows will be prioritized to meet: 1) groundwater recharge demands, 2) South Dade Conveyance System demands and 3) Northeast Shark River Slough demands when supply is available. Regional system deliveries will be routed through the seepage collection canal system of the Bird Drive Recharge Area to the South Dade Conveyance system.

20) Palm Beach County Agricultural Reserve Reservoir Project (VV – Part 1)

This project includes an above-ground reservoir with a total storage capacity of approximately 20,000 acre-feet located in the western portion of the Palm Beach County Agricultural Reserve. The initial design for the reservoir assumed 1,660 acres with water levels fluctuating up to 12 feet above grade. The final size, depth and configuration of these facilities will be determined through more detailed planning and design.

The purpose of this project is to supplement water supply deliveries for central and southern Palm Beach County by capturing and storing excess water currently discharged to the Lake Worth Lagoon. These supplemental deliveries will reduce demands on Lake Okeechobee and Loxahatchee National Wildlife Area. It is assumed that this facility could also be designed to achieve water quality improvements in downstream receiving waters, depending upon pollutant loading conditions in the watershed.

The reservoir will be filled during the wet season with excess water from the western portions of the Lake Worth Drainage District and possibly from Acme Basin B. Water will be returned to the Lake Worth Drainage District canals to help maintain canal stages during the dry-season. If water is not available in the reservoir, existing rules for water delivery to this region will be applied.

21) Palm Beach County Agricultural Reserve Aquifer Storage and Recovery Project (VV – Part 2)

This project includes aquifer storage and recovery wells with a total capacity of 75 million gallons per day and associated pre- and post- water quality treatment located adjacent to the reservoir. The initial design of the wells assumed 15 well clusters, each with a capacity of five million gallons per day as well as chlorination for pre-treatment and aeration for post-treatment. The source of water to be injected is surficial ground water adjacent to the Palm Beach County Agricultural Reserve Reservoir. The level and extent of treatment and number of the aquifer storage and recovery wells may be modified based on findings from a proposed aquifer storage and recovery pilot project.

The purpose of this project is to supplement water supply deliveries for central and southern Palm Beach County by capturing and storing excess water currently discharged to the Lake Worth Lagoon. These supplemental deliveries will reduce demands on Lake Okeechobee and Loxahatchee National Wildlife Area.

The wells will pump water into the aquifer during the wet season and will pump water from the aquifer to the Lake Worth Drainage District canals to help maintain canal stages during the dry-season. If water is not available in the aquifer storage and recovery wells, existing rules for water delivery to this region will be applied.

22) Hillsboro Site 1 Aquifer Storage and Recovery Project (M – Part 2)

This project includes a series of aquifer storage and recovery wells with a total capacity of approximately 150 million gallons per day and associated pre- and post-water quality treatment which will located adjacent to the reservoir or along the Hillsboro Canal. The initial design of the aquifer storage and recovery facility assumed 30 well clusters, each with a capacity of five million gallons per day with chlorination for pre-treatment and aeration for post-treatment. The source of water to be injected is in the surficial ground water adjacent to the reservoir. The location, extent of treatment and number of the aquifer storage and recovery wells may be modified based on findings from a proposed aquifer storage and recovery pilot project.

The purpose of this project is to supplement water deliveries to the Hillsboro Canal during dry periods thereby reducing demands on Lake Okeechobee and the Loxahatchee

National Wildlife Refuge. Water will be pumped into the aquifer during the wet season or periods when excess water is available. Water will be released back to the reservoir or Hillsboro Canal to help maintain canal stages during the dry season.

23) Diverting Excess Water from Water from Water Conservation Areas to Central Lake Belt Storage or to Downstream Natural Areas Project (YY, ZZ and EEE)

This project combines a number of components that include pumps, water control structures, canals and conveyance improvements located adjacent to Water Conservation Area 2 and 3 in Broward County. The final size and configuration of these facilities will be determined through more detailed planning and design to be completed as a part of the Water Preserve Areas Feasibility Study.

The purpose of this project is to attenuate high stages in Water Conservation Areas 2 and 3 and transport this excess water to Central Lake Belt Storage Area where it will be stored to meet downstream demands in Shark River Slough, Water Conservation Area 3B or Biscayne Bay.

When stages in Water Conservation Areas 2B, 3A and 3B exceed target depths, water will be diverted to the Central Lake Belt Storage Area or to other downstream areas through water control structures and conveyance projects. Water supply deliveries will be made first to Northeast Shark River Slough, then to Water Conservation Area 3B and finally to Biscayne Bay, if flows are available. It is assumed that the water to be diverted from Water Conservation Area 2 and 3 is of adequate quality to return to the Everglades Protection Area and Biscayne Bay; however, the final size, depth and configuration of these facilities, including treatment requirements, will be determined through more detailed planning and design.

24) Broward County Secondary Canal System Project (CC)

This project includes a series of water control structures, pumps, and canal improvements located in the C-9, C-12 and C-13 Canal Basins and the east basin of the North New River Canal in central and southern Broward County.

The purpose of this project is to reduce water discharges by recharging local wellfields and stabilizing the saltwater interface. Excess water in the basins will be pumped into the coastal canal systems to maintain canal stages at optimum levels. When basin water is not sufficient to maintain canal stages, the canals will be maintained from other construction projects such as the Site1 Impoundment and the North Lake Belt Storage Area and then from Lake Okeechobee and the Water Conservation Areas.

25) North Lake Belt Storage Area Project (XX)

This project includes canals, pumps, water control structures, and an in-ground storage reservoir with a total capacity of approximately 90,000 acre-feet located in Miami-Dade County. The initial design of the reservoir assumed 4,500 acres with water levels fluctuating from ground level to 20 feet below grade. A subterranean seepage barrier will be constructed around the perimeter to enable drawdown during dry periods, to prevent seepage losses, and to prevent water quality impacts due to the high

transmissivity of the Biscayne Aquifer in the area. The reservoir will be located within an area proposed for rock mining. A pilot test of this component will be conducted before final design to determine construction technologies, storage efficiencies, impacts upon local hydrology, and water quality effects. The water quality assessment will include a determination as to whether the in-ground reservoir with perimeter seepage barrier will allow storage of untreated runoff without concerns of groundwater contamination. The final size, depth and configuration of these facilities including treatment facilities will be determined through more detailed planning and design.

The purpose of this project is to capture and store a portion of the stormwater runoff from the C-6, Western C-11 and C-9 basins. The stored water will be used to maintain stages during the dry season in the C-9, C-6, C-7, C-4 and C-2 canals and to provide water deliveries to Biscayne Bay to aid in meeting salinity targets.

Runoff is pumped and gravity fed into the in-ground reservoir from the C-6 (west of Florida's Turnpike), Western C-11 and C-9 basins. Outflows from the facility will be directed into the C-9 Stormwater Treatment Area/Impoundment for treatment prior to delivery to the C-9, C-7, C-6, C-4 and C-2 canals. If necessary, additional stormwater treatment areas will be constructed adjacent to the in-ground reservoir.

26) Central Lake Belt Storage Area Project (S)

This project includes pumps, water control structures, a stormwater treatment area, and a combination above-ground and in-ground storage reservoir with a total storage capacity of approximately 190,000 acre-feet located in Miami-Dade County. The initial design of the reservoir assumed 5,200 acres with water levels fluctuating from 16 feet above grade to 20 feet below grade. A subterranean seepage barrier will be constructed around the perimeter to enable drawdown during dry periods and to prevent seepage losses. A pilot test of this technology will be conducted prior to final design of this component to determine construction technologies, storage efficiencies, impacts upon local hydrology, and water quality effects. Since this facility is to be located within the protection area of Miami-Dade County's Northwest Wellfield, the pilot test will also be designed to identify and address potential impacts to the county's wellfield that may occur during construction and/or operation. The stormwater treatment area was assumed to be 640 acres with the water level fluctuating up to four feet above grade. The final size, depth and configuration of these facilities will be determined through more detailed planning and design.

The purpose of the project is to store excess water from Water Conservation Areas 2 and 3 and provide environmental water supply deliveries to: 1) Northeast Shark River Slough, 2) Water Conservation Area 3B, and 3) to Biscayne Bay, in that order, if available. Due to the source of the water (Water Conservation Areas 2 and 3), it is assumed that water stored in this facility will be of adequate quality to return to the Everglades Protection Area and Biscayne Bay; however, the final size, depth and configuration of these facilities, including treatment requirements, will be determined through more detailed planning and design.

Excess water from Water Conservation Areas 2 and 3 will be diverted into the L-37, L-33, and L-30 borrow canals, which run along the eastern boundaries of the Water Conservation Areas, and pumped into the Central Lake Belt Storage Area. Water supply deliveries will be pumped through a stormwater treatment area prior to discharge to the

Everglades via the L-30 borrow canal and a reconfigured L-31N borrow canal. If available, deliveries will be directed to Biscayne Bay through the Snapper Creek Canal at Florida's Turnpike. A structure will be provided on the Snapper Creek Canal to provide regional system deliveries when water from the Central Lake Belt Storage Area is not available.

27) Everglades National Park Seepage Management Project (V and FF)

This project includes relocating and enhancing L-31N, groundwater wells, and sheetflow delivery system adjacent to Everglades National Park located in Miami-Dade County. More detailed planning, design and pilot studies will be conducted to determine the appropriate technology to control seepage from Everglades National Park. These studies and tests will also determine the appropriate amount of wet season, groundwater flow control that will minimize potential impacts to Miami-Dade County's West Wellfield and freshwater flows to Biscayne Bay.

The purpose of this project is to improve water deliveries to Northeast Shark River Slough and restore wetland hydropatterns in Everglades National Park by reducing levee and groundwater seepage and increasing sheetflow.

This project reduces levee seepage flow across L-31N adjacent to Everglades National Park via a levee cutoff wall. Groundwater flows during the wet season are captured by groundwater wells adjacent to L-31N and pumped back to Everglades National Park. Water from upstream natural areas will be diverted into a buffer area adjacent to Everglades National Park where sheetflow will be reestablished. Further, this project includes relocation of the Modified Water Deliveries structure S-357 to provide more effective water deliveries to Everglades National Park. New discharges to Everglades National Park will be designed to meet applicable water quality criteria.

28) Biscayne Bay Coastal Wetlands Project (FFF and OPE)

This project includes pump stations, spreader swales, stormwater treatment areas, flowways, levees, culverts, and backfilling canals located in southeast Miami-Dade County and covers 13,600 acres from the Deering Estate at C-100C, south to the Florida Power and Light Turkey Point power plant, generally along L-31E.

The purpose of this project is to rehydrate wetlands and reduce point source discharges to Biscayne Bay. The proposed project will replace lost overland flow and partially compensate for the reduction in groundwater seepage by redistributing, through a spreader system, available surface water entering the area from regional canals. The proposed redistribution of freshwater flow across a broad front is expected to restore or enhance freshwater wetlands, tidal wetlands, and nearshore bay habitat. Sustained lower-than-seawater salinities are required in tidal wetlands and the nearshore bay to provide nursery habitat for fish and shellfish. This project is expected to create conditions that will be conducive to the reestablishment of oysters and other components of the oyster reef community. Diversion of canal discharges into coastal wetlands is expected not only to reestablish productive nursery habitat all along the shoreline but also to reduce the abrupt freshwater discharges that are physiologically stressful to fish and benthic invertebrates in the bay near canal outlets.

More detailed analyses will be required to define target freshwater flows for Biscayne Bay and the wetlands within the redistribution system. The target(s) will be based upon the quality, quantity, timing and distribution of flows needed to provide and maintain sustainable biological communities in Biscayne Bay, Biscayne National Park and the coastal wetlands. Additionally, potential sources of water for providing freshwater flows to Biscayne Bay will be identified and evaluated to determine their ability to provide target flows.

The component Biscayne Bay Coastal Canals as modeled in D-13R and the Critical Project on the L-31E Flowway Redistribution are smaller components of the Biscayne Bay Coastal Wetlands project described above.

29) C-111N Spreader Canal Project (WW)

This project includes levees, canals, pumps, water control structures, and a stormwater treatment area to be constructed, modified or removed in the Model Lands and Southern Glades (C-111 Basin) area of Miami-Dade County. This project enhances the C-111 Project design for the C-111N Spreader Canal with the construction of a stormwater treatment area, enlarging pump station S-332E and extending the canal under U.S. Highway 1 and Card Sound Road into the Model Lands. The initial design of this project pumps water from the C-111 and the C-111E Canals into a stormwater treatment area prior to discharging to the Southern Everglades and Model Lands. This projects also calls for filling in the southern reach of the C-111 Canal and removal of structures S-18C and S-197. The final size, depth, location and configuration of this project will be determined through more detailed planning and design.

The purpose of this project is to improve deliveries and enhance the connectivity and sheetflow in the Model Lands and Southern Glades areas, reduce wet season flows in C-111, and decrease potential flood risk in the lower south Miami-Dade County area.

SOUTHWEST FLORIDA REGION

30) Southern Golden Gate Estates Restoration Project (OPE)

This project includes a combination of spreader channels, canal plugs, road removal and pump stations in the Western Basin and Big Cypress, Collier County, south of I-75 and north of U.S. 41 between the Belle Meade Area and the Fakahatchee Strand State Preserve.

The purpose of this project is to restore and enhance the wetlands in Golden Gate Estates and in adjacent public lands by reducing over-drainage. Implementation of the restoration plan would also improve the water quality of coastal estuaries by moderating the large salinity fluctuations caused by freshwater point discharge of the Fahka Union Canal. The plan would also aid in protecting the City of Naples' eastern Golden Gate wellfield by improving groundwater recharge.

FLORIDA BAY AND KEYS REGION

31) Florida Keys Tidal Restoration Project (OPE)

This project includes the use of bridges or culverts to restore the tidal connection between Florida Bay and the Atlantic Ocean in Monroe County. The four locations are as follows: 1) Tarpon Creek, just south of Mile Marker 54 on Fat Deer Key (width 150 feet); 2) unnamed creek between Fat Deer Key and Long Point Key, south of Mile Marker 56 (width 450 feet); 3) tidal connection adjacent to Little Crawl Key (width 300 feet); and 4) tidal connection between Florida Bay and Atlantic Ocean at Mile Marker 57 (width 2,400 feet).

The purpose of this project is to restore the tidal connection that was eliminated in the early 1900s during the construction of Flagler's railroad. Restoring the circulation to areas of surface water that have been impeded and stagnant for decades will significantly improve water quality, benthic floral and faunal communities, larval distribution of both recreational and commercial species (e.g., spiney lobster), and the overall hydrology of Florida Bay.

Table A10-2. Projects for which the District is local sponsor.

	Project/Separable Elements		*Description*	*Provides*
Pilot Projects				
P1	Lake Okeechobee ASR Pilot Project		Demonstrate ASR technology	
P2	Caloosahatchee River ASR Pilot Project		Demonstrate ASR technology	
P3	L-31N Seepage Management Pilot Project		Demonstrate seepage management technology	
P4	Site 1 ASR Pilot Project		Demonstrate ASR technology	
P5	Lake Belt In-Ground Reservoir Technology Pilot Project		Demonstrate seepage management technology in rock mined areas	
P6	Wastewater Reuse Technology Pilot Project		Demonstrate wastewater reuse technology	
Kissimmee River and Lake Okeechobee Region				
1	Lake Okeechobee Watershed Project		This project includes 4 separable elements	Quantity, Quality, Timing, Spatial Extent
	1a	North of Lake Okeechobee Storage Reservoir (A)	17,500-acre reservoir @11.5 feet (200,000 AF) and 2,500-acre STA @ 4 feet (10,000 AF) for water storage to shorten the duration and frequency of damaging high water levels	Quantity, Quality, Timing
	1b	Taylor Creek/Nubbin Slough Storage and Treatment Area (W)	5,000-acre reservoir @ 10 feet (50,000 AF) and 5,000-acre STA @ 4 feet (20,000 AF) to provide estuary protection, water supply, water quality treatment and flood protection benefits	Quantity, Quality, Timing
	1c	Lake Okeechobee Watershed Water Quality Treatment Facilities (OPE)	3,500-acre headwater restoration/ regional reservoir assisted STA	Quantity, Quality, Timing, Spatial Extent
	1d	Lake Okeechobee Tributary Sediment Dredging (OPE)	Sediment dredging on 10 mi. primary canals	Quality
2	Lake Istokpoga Regulation Schedule Project (OPE)		Plan to balance fish and wildlife benefits with long-term comprehensive management plan	Quantity, Quality, Timing

Table A10-2. Projects for which the District is local sponsor.

	Project/Separable Elements		*Description*	*Provides*
3	Lake Okeechobee Aquifer Storage and Recovery Project (GG – Phased Construction)		200 ASR wells @ 5 mgd (1,000 mgd) phased over time and location for supplemental water during the dry season	Quantity, Timing
Caloosahatchee River Region				
4	C-43 Basin Storage Reservoir Project (D – Part 1)		20,000-acre reservoir @ 8 feet (160,000 AF) for environmental benefits to Caloosahatchee Basin	Quantity, Quality, Timing
5	C-43 Basin Aquifer Storage and Recovery Project (D – Part 2)		44 ASR wells @ 5 mgd (220 mgd) for environmental benefits to Caloosahatchee Basin	Quantity, Quality, Timing
6	Caloosahatchee Backpumping with Stormwater Treatment Project (DDD)		5,000-acre STA @ 4 feet (20,000 AF) to supplement water from Caloosahatchee River into Lake Okeechobee	Quantity, Quality, Timing
Upper East Coast				
7	Indian River Lagoon Project		This project includes separable elements	Quantity, Quality, Timing
	7a	C-44 Basin Storage Reservoir (B)	10,000-acre reservoir @ 4 feet (40,000 AF) for environmental benefits to St. Lucie Estuary and Indian River Lagoon	Quantity, Quality, Timing
	7b	C-23, C-24 Storage Reservoirs (UU – Part 1)	14,400 acres of reservoirs (115,200 AF) to provide environmental benefits to St. Lucie Estuary and Indian River Lagoon	Quantity, Quality, Timing
	7c	C-25, and North and South Fork Storage Reservoirs (UU – Part 2)	33,950 acres of reservoirs (234,400 AF) to provide environmental benefits to Indian River Lagoon	Quantity, Quality, Timing
Everglades Agricultural Area				
8	Everglades Agricultural Storage Reservoir Part 1 Project (G – Part 1)		Approximately 50,000-acre reservoir @ 6 feet (300,000 AF) to store EAA runoff and Lake Okeechobee releases	Quantity, Quality, Timing
9	Everglades Agricultural Storage Reservoir Part 2 Project (G Part – 2)		10,000-acre reservoir @ 6 feet (60,000 AF) to store Lake Okeechobee releases	Quantity, Quality, Timing
Big Cypress Region				
10	Big Cypress/L-28 Interceptor Modifications Project (CCC)		Levee degrade, canal fill and 1,900 acres of STA to alleviate over drainage in Big Cypress	Quantity, Quality, Timing, Distribution
Water Conservation Areas and Everglades Region				
11	Flow to Northwest and Central Water Conservation Area 3A Project (II and RR Phased Construction)		Increase capacity of G-404 and add spreader canal system to improve hydropattern in NW WCA-3A and increase amount of water available in west-central region of WCA -3A to reduce dry out periods	Distribution
12	Water Conservation Area 3 Decompartmentalization and Sheet Flow Enhancement Phase 1 Project (QQ Part 1 and SS Part 2 – Phased Construction)		Fill in Miami Canal, improve N. New River Canal for water supplies deliveries to Miami-Dade County, remove eastern portion of L-29 and raise eastern portion of Tamiami Trail, modify L-67 a and c to achieve unconstrained or passive flow between WCA-3B and Northeast Shark River Slough	Distribution
13	Water Conservation Area 3 Decompartmentalization and Sheet Flow Enhancement Phase 2 Project (AA, QQ Part 2 – Phased Construction)		Remove remainder of L-29 and raise western portion of Tamiami Trail below WCA -3A, remove southern portion of L-28 and L-28 tieback and replace L-67 a and c with passive weirs to achieve unconstrained flow between WCA-3 and Everglades National Park	Distribution

Table A10-2. Projects for which the District is local sponsor.

	Project/Separable Elements		*Description*	*Provides*
14	Loxahatchee National Wildlife Refuge Internal Canal Structures Project (KK)		Water Control Structures to improve timing and location of water depths in Refuge	Distribution
15	Modify Holey Land Wildlife Management Area Operation Plan (DD)		Change in rules to improve timing and location of water depths in Holey Land Water Management Area	Timing
16	Modify Rotenberger Wildlife Management Area Operation Plan (EE)		Change in rules to improve timing and location of water depths in Rotenberger Water Management Area	Timing
Lower East Coast Region				
17	North Palm Beach County Project (Part 1)		This project includes a number of separable elements	Quantity, Quality, Timing ,Distribution, Spatial Extent
	17a	Pal Mar and J.W. Corbett Wildlife Management Area Hydropattern Restoration (OPE)	3,000 acre Land acquisition for area connection between Pal Mar and Corbett and hydropattern restoration for SE Corbett	Distribution, Spatial Extent
	17b	C-51 and L-8 Basin Modifications and Reservoir (K Part 1 and GGG – Phased Construction)	1,200-acre reservoir @ 40 foot depth (48,000 AF), L-8 Basin canal improvements and STA (tbd) for environmental restoration and water supply for environmental and water supply goals in Lake Worth Lagoon and West Palm Beach Water Catchment Area	Quantity, Quality, Timing
	17c	Lake Worth Lagoon Restoration (OPE)	Sediment removal on C-51	Quality
	17d	C-17 Backpumping and Treatment (X)	550-acre STA @ 4 feet (2,200 AF) to supplement water to West Palm Beach Water Catchment Area and Loxahatchee Slough	Quantity, Quality, Timing
	17e	C-51 Backpumping and Treatment (Y)	600-acre STA @ 4 feet (2,400 AF) to supplement water to West Palm Beach Water Catchment Area and Loxahatchee Slough	Quantity, Quality, Timing
18	North Palm Beach County Project (Part 2)		This project includes two separable elements	Quantity, Quality, Timing ,Distribution, Spatial Extent
	18a	C-51 Regional Ground Water Aquifer Storage and Recovery (LL)	34 ASR wells @ 5 mgd (170 mgd) for supplemental water to C-51 during the dry season	Quantity, Timing
	18b	L-8 Basin ASR (K Part 2)	10 ASR wells for environmental restoration and water supply for environmental and water supply goals in Lake Worth Lagoon and West Palm Beach Water Catchment Area	Quantity, Quality, Timing
19	Water Preserve Areas A-List Project		This project includes numerous separable elements	Quantity, Quality, Timing, Distribution, Spatial Extent
	19a	Acme Basin B Discharge (OPE)	620 acre reservoir @ 8 feet (4,950 AF) and 310-acre STA @ 4 feet (1,240 AF) for treatment of water sent to Loxahatchee National Wildlife Refuge	Quantity, Quality, Timing
	19b	Protect & Enhance Existing Wetland Systems along Loxahatchee Nation Wildlife Refuge including the Strazzulla Tract (OPE)	3,335 acres of wetland acquisition along LNWR	Spatial Extent

Table A10-2. Projects for which the District is local sponsor.

	Project/Separable Elements		*Description*	*Provides*
	19c	Hillsboro Site 1 Impoundment (M – Part 1)	2,460-acre reservoir @ 6 feet (14,760 AF) to supplement water deliveries to the Hillsboro Canal during the dry season	Quantity, Quality, Timing
	19d	Western C-11 Diversion Impoundment and Canal and WCA 3A&B Levee Seepage Management (O, Q, SS Part 1 – Phased Construction)	1,600-acre impoundment @ 4 feet (6,400 AF) to clean water from western C-11 basin, 3,350 acre buffer, levee improvements, and diversion canal for water supply deliveries to Miami-Dade County to reduce seepage and improve hydropatterns within the WCA	Quantity, Quality, Timing, Distribution
	19e	C-9 Stormwater Treatment Area/Impoundment R)	2,500-acre impoundment @ 4 feet (10,000 AF) for treatment of water in north lake belt storage area	Quantity, Quality, Timing
	19f	Diverting Water Conservation Area 2B water to Central Lake Belt Storage or Water Conservation Area 3B (YY, ZZ, and EEE – Phased Construction)	Water control structure to remove excess flows from WCA 2b and divert flows to WCA 3b	Distribution
	19g	Dade-Broward Levee/Pennsuco Wetlands (BB)	Levee and canal improvements to reduce seepage from Pennsuco wetlands	Quantity, Distribution
	19h	C-4 Control Structures (T)	Water control structure to control seepage	Quantity, Distribution
	19i	Bird Drive Recharge Area (U)	2,900-acre shallow impoundment @ 4 feet (11,600) to recharge groundwater and reduce seepage from ENP	Quantity, Quality, Timing
20	Palm Beach County Agriculture Reserve Reservoir Project (VV – Part 1)		1,660-acre reservoir @ 12 feet (19,920 AF) to supplement water deliveries to central and southern Palm Beach County	Quantity, Quality, Timing
21	Palm Beach County Agriculture Reserve Aquifer Storage and Recovery Project (VV – Part 2)		15 ASR wells @ 5 mgd (75 mgd) to supplement water deliveries to central and southern Palm Beach County	Quantity, Quality, Timing
22	Hillsboro Site 1 ASR Project (M – Part 2)		30 ASR wells @ 5 mgd (150 mgd) to supplement water deliveries to the Hillsboro Canal during the dry season	Quantity, Quality, Timing
23	Diverting Water Conservation Areas to Central Lake Belt Storage to Downstream Natural Areas Project (YY, ZZ, and EEE - Phased Construction)		Water control structure to remove excess flows from WCA-2B and divert flows to WCA -3B	Distribution
24	Broward County Secondary Canal System Project (CC)		Canal improvements for water supply	Distribution
25	North Lake Belt Storage Area Project (XX – Phased Construction)		4,500-acre in-ground reservoir @ 20 foot depth (90,000 AF)	Quantity, Quality, Timing
26	Central Lake Belt Storage Project (S – Phased Construction)		5,200-acre in-ground reservoir @ 36 foot depth (187,200 AF) to provide flows to Everglades National Park	Quantity, Quality, Timing
27	Everglades National Park Seepage Management Project (V and FF – Phased Construction)		Relocation of L-31 N and Modified Water Deliveries Structure S-356 to reduce seepage losses from and enhance flows into Everglades National Park	Quantity, Distribution
28	Biscayne Bay Coastal Wetlands Project (FFF and OPE)		Sheetflow distribution to Biscayne Bay	Distribution
29	C-111N Spreader Canal Project (WW)		Canal under US 1, Card Sound Rd. to improve hydroperiod in Model Lands	Distribution

Table A10-2. Projects for which the District is local sponsor.

	Project/Separable Elements	*Description*	*Provides*
Southwest Florida Region			
30	Southern Golden Gate Estates Restoration Project (OPE)	Spreader channel, canal plugs, pump station and road removal	Quantity, Quality, Distribution
Florida Bay and Keys Region			
31	Florida Keys Tidal Restoration Project (OPE)	Culvert installation under US 1 to improve circulation in Florida Bay	Distribution

OPERATIONAL MODIFICATIONS

There are several operational components that will be implemented as integral features of the projects described above and listed in **Table A10-2**. While these components do not require additional congressional action to implement, they will be included in the studies necessary to further the project to completion. Further, other operational changes will be implemented as part of other existing state programs. These projects are critical to the success of the Comprehensive Plan and implementation of these projects will be monitored through the RECOVER process. Operational components are listed in **Table A10-3**.

Table A10-3. Operational Components

Project	*Explanation*	*Projects*
Lake Okeechobee Regulation Schedule (F)	Operational change only; implement with appropriate projects	Lake Okeechobee Watershed Project Lake Okeechobee Aquifer Storage and Recovery Project C-43 Basin Storage Reservoir and ASR Projects Caloosahatchee Backpumping with Stormwater Treatment Project Indian River Lagoon Project Everglades Agricultural Storage Reservoir Projects North Palm Beach County Projects Water Preserve Areas A-List Project Palm Beach County Agriculture Reserve Reservoir Projects Hillsboro Site 1 Impoundment and ASR Project Diverting Water Conservation Areas to central Lake Belt Storage to Downstream Natural Areas Project Broward County Secondary Canal System Project

Table A10-3. Operational Components

Project	*Explanation*	*Projects*
		North Lake Belt Storage Area Project Central Lake Belt Storage Project
Environmental Water Supply Deliveries to the Caloosahatchee Estuary (E)	Operational change only; implement with appropriate projects	Lake Okeechobee Watershed Project Lake Okeechobee Aquifer Storage and Recovery Project C-43 Basin Storage Reservoir and ASR Projects Caloosahatchee Backpumping with Stormwater Treatment Project Everglades Agricultural Storage Reservoir Projects
Environmental Water Supply Deliveries to the St. Lucie Estuary (C)	Operational change only; implement with appropriate projects	Lake Okeechobee Watershed Project Lake Okeechobee Aquifer Storage and Recovery Project Indian River Lagoon Project Everglades Agricultural Storage Reservoir Projects
Everglades Rain Driven Operations (H)	Operational change only; implement with appropriate projects	Lake Okeechobee Watershed Project Lake Okeechobee Aquifer Storage and Recovery Project Caloosahatchee Backpumping with Stormwater Treatment Project Everglades Agricultural Storage Reservoir Projects Big Cypress/L-28 Interceptor Modifications Project Flow to Northwest and Central Water Conservation Area 3A Project Water Conservation Area 3 Decompartmentalization and Sheet Flow Enhancement Projects Loxahatchee National Wildlife Refuge Internal Canal Structures Project Water Preserve Areas Projects Diverting Water Conservation Areas to Central Lake Belt Storage to Downstream Natural Areas Project North Lake Belt Storage Area Project Central Lake Belt Storage Project Everglades National Park Seepage Management Project
Change Coastal Wellfield Operations (L)	Implement under existing State process	RECOVER will monitor progress
Lower East Coast Utility Water Conservation (AAA)	Implement under existing State process	RECOVER will monitor progress

Table A10-3. Operational Components

Project	*Explanation*	*Projects*
Operational Modifications to Southern Portion of L-31N and C-111(OO)	Operational change only; implement with appropriate projects	C-111 Project (ongoing) C-111N Spreader Canal Project Everglades National Park Seepage Management Project

The linkages among the RECOVER teams, and between RECOVER and other program management and implementation teams that will lead to refinements in the Comprehensive Plan are shown in **Figure A10-1**. This figure depicts the following:

1. Regional Evaluation Team and Product Delivery Teams work cooperatively to design, evaluate and select the preferred plan for each project implementation report.
2. Regional Evaluation Team provides system-wide evaluation report for each project implementation report, and for each new project, to the Comprehensive Plan Refinement Team.
3. Comprehensive Plan Refinement Team provides independent review of Regional Evaluation Team report, and makes recommendation to the Design Coordination Team for structural (future projects) or operational criteria changes needed to refine the Comprehensive Plan where needed, based on reports Nos. 2 and 10) from the Regional Evaluation Team.
4. Regional Evaluation Team and Adaptive Assessment Team work cooperatively to develop and improve physical, water quality and biological performance measures.
5. Adaptive Assessment Team designs and reviews system-wide monitoring program, and uses information from the monitoring program to assess system-wide responses during implementation of the Comprehensive Plan.
6. Adaptive Assessment Team provides assessment reports to the Comprehensive Plan Refinement Team.
7. Comprehensive Plan Refinement Team makes recommendations to the Design Coordination Team for structural (future projects) or operational criteria changes needed to refine the Comprehensive Plan, based on Adaptive Assessment Team reports.
8. Design Coordination Team determines structural (future projects) or operational criteria changes needed to refine the Comprehensive Plan.
9. Recommendations from Regional Evaluation Team and Adaptive Assessment Team to the Model Refinement Team lead to development and refinement of predictive models; output from the predictive models used by the Regional Evaluation Team to evaluate plans.
10. Regional Evaluation Team reports to the Comprehensive Plan Refinement Team on changes in performance of the Comprehensive Plan due to changes that may occur as a result of adding or revising performance measures or due to refinements that are made in the predictive models.
11. Comprehensive Plan Refinement Team and Model Refinement Team link on model runs to support Comprehensive Plan Refinement Team plan refinement exercises.
12. Pilot Project Study Reports go to Comprehensive Plan Refinement Team for review.
13. Comprehensive Plan Refinement Team recommends to Design Coordination Team refinements in the Comprehensive Plan, based on results of pilot studies.

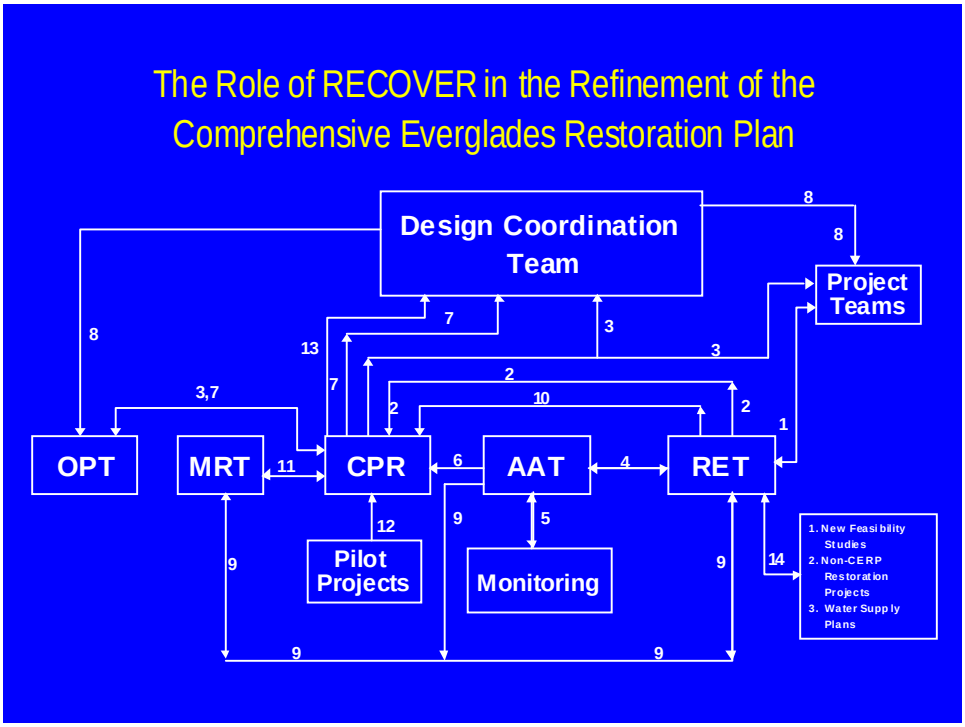

Figure A10-1. Role of RECOVER in Refinement of CERP.