Everglades Restoration and Water Quality

Charlotte County Water Quality Summit
January 29, 2019
Historic Everglades
River of Grass
Current Everglades

CURRENT WATER FLOW

CURRENT EVERGLADES VEGETATION (ca. 1990)

(Vegetation from Davis and Odgen, 1994)
Overview of Restoration Efforts

Restore, Protect and Preserve Water Resources

Everglades restoration will enable the right quantity of water, at the right quality, to be distributed to the right place, at the right time throughout south Florida.

This will be accomplished through the implementation of multiple projects that will work together to provide:

- Water Storage
- Water Treatment
- Water Conveyance
- Water Distribution

Restoration Strategies

- Water Storage
- Water Treatment
- Water Conveyance
- Water Distribution
North of Lake Okeechobee
Kissimmee Restoration Project and Lake Okeechobee Watershed Restoration

• **Status**
  
  • Kissimmee River Headwater Revitalization Project (Complete)
  
  • Kissimmee River Restoration: Underway (Expected 2020)
  
  • Lake Okeechobee Watershed Restoration: Planning underway (expected 2030)

• **Combined Benefits**
  
  • 710,000 acre feet of storage
    (+~490,000 acre-feet planned LOWP)
  
  • 80,000 lbs TP removed annually
  
  • 35,000 acres of wetlands restored
    (+~5,300 acres planned LOWP)
North of Lake Okeechobee
Kissimmee Restoration Project and Lake Okeechobee Watershed Restoration

1 $\mu$g L$^{-1}$ = parts-per-billion

Data from SFWMD (www.sfwmd.gov/dbhydro).
Lake Okeechobee Projects

Herbert Hoover Dike Rehabilitation Project

- **Project Components**
  - Culvert replacement and repair
  - Levee improvements

- **Status**
  - Final construction contract to be issued 2019
  - Expedited by State’s contributions
  - LORS planning anticipated to start next month

*LORS = Lake Okeechobee Regulation Schedule*
Lake Okeechobee

Surface Water Flow

Positive = Inflow to Lake
Negative = Outflow from Lake
Lake Okeechobee

Surface Water Flow

Top 3 Highest Flow Years

Top 3 Lowest Flow Years

Lake Okeechobee Outflow

Flow (x10^9 Ac-Fe Yr^-1)

- WY2006 (3781 x10^9 Ac-Fe Yr^-1)
  - East (24%)
  - North (0%)
  - South (16%)
  - West (60%)

- WY2008 (198 x10^9 Ac-Fe Yr^-1)
  - East (5%)
  - North (3%)
  - South (67%)
  - West (25%)

- WY1996 (3141 x10^9 Ac-Fe Yr^-1)
  - East (25%)
  - North (0%)
  - South (24%)
  - West (51%)

- WY1991 (254 x10^9 Ac-Fe Yr^-1)
  - East (9%)
  - North (0%)
  - South (63%)
  - West (28%)

- WY1998 (2924 x10^9 Ac-Fe Yr^-1)
  - East (38%)
  - North (0%)
  - South (9%)
  - West (52%)

- WY1992 (547 x10^9 Ac-Fe Yr^-1)
  - East (16%)
  - North (1%)
  - South (72%)
  - West (11%)
Lake Okeechobee

Total Phosphorus Load

Positive = Inflow to Lake
Negative = Outflow from Lake
Restoration Strategies

Water Quality Improvement Project for America’s

- Construction of the treatment, storage and conveyance improvement projects complete by 2025.
- Several projects are already operational, under construction or under design.
Everglades Stormwater Treatment Areas

- To date (circa May 2018) STAs removed 2,604 metric tons of P
- Approximately 5,700 acres of treatment
- Additional treatment area expected
Comprehensive Everglades Restoration Plan

EAA Reservoir and STA, Chapter 2017-10

• **Status**
  - Design and Engineering underway
  - USACE Review (Expected early 2019)
  - Expected completion 2026 - 2028

• **Benefits**
  - 370,000 acre feet of storage
  - Expected TP removal
Northern Everglades and Estuaries Protection Plan

Lake Hicpochee Hydroperiod Restoration

• **Status**
  - Authorized for Phase I construction (2016)
  - Expected completion early-2019
  - Funding to acquire Phase II secured (June 2018)

• **Benefits**
  - Hydrate Lake Hicpochee
  - 1280 acre feet of storage (+ ~9,000 acre-feet Phase II)
  - Improve water quality

*FEB = Flow Equalization Basin*
Comprehensive Everglades Restoration Plan

C-43 Reservoir

**Status**
- Construction ongoing
- Final construction contract anticipated early 2019
- Expected completion 2022

**Benefits**
- 170,000 acre feet of storage
- 18,000 lbs TP removed annually
- Expected 12% reduction in high flow events
Dispersed Water Management
Wrap up

• **Restoration**
  • Increased wetland area (wetland restoration)
  • Reduce stormwater run-off
  • Improve timing and distribution of water

• **Storage**
  • Increased storage through a variety of projects (DWM, ASR, Reservoirs)

• **Treatment**
  • Reduction of nutrient concentrations from stormwater run-off
  • Water attenuation resulting in ancillary water quality benefits
Office of Ecosystem Projects
Paul Julian, PhD
Paul.Julian@FlordaDEP.gov