



Lake Okeechobee Watershed Protection Plan (LOWPP) Three-year Update

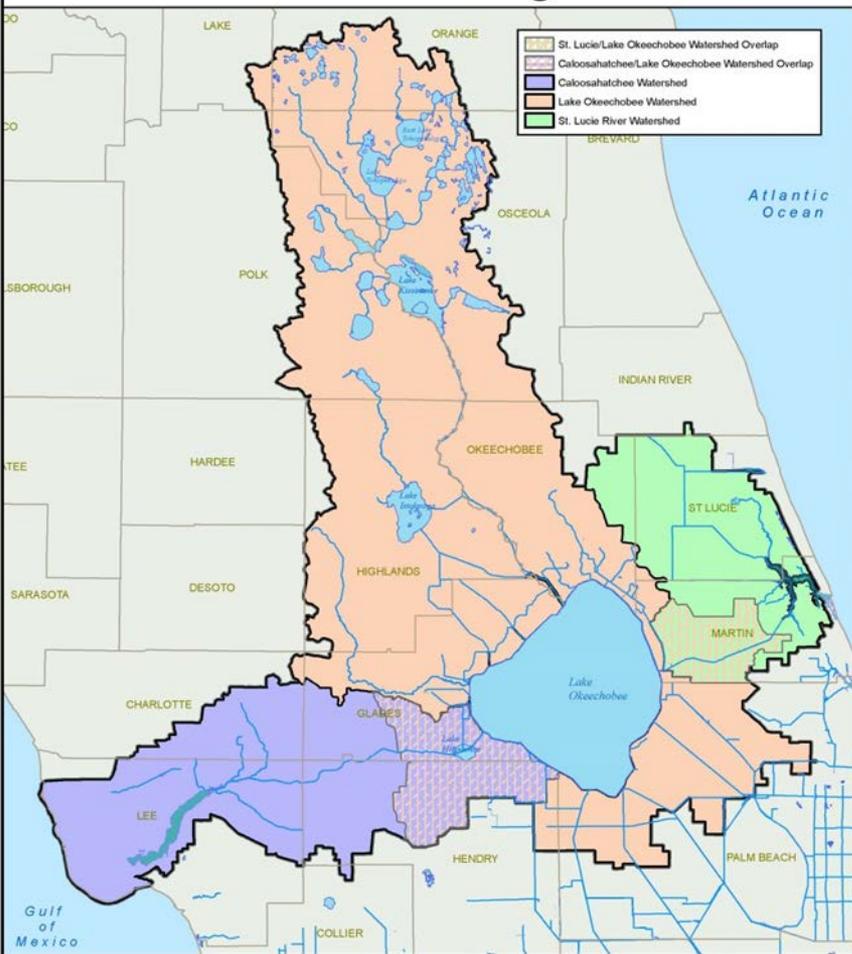
Temperince Morgan

Director, Office of Everglades Policy & Coordination

Water Resources Advisory Commission (WRAC), November 7, 2013

Northern Everglades and Estuaries Protection Program (NEEPP)

Northern Everglades



- History
 - 1987 Surface Water Improvement and Management (SWIM) Act
 - 2000 Lake Okeechobee Protection Act (LOPA)
 - 2007 Northern Everglades and Estuaries Protection Act (373.4595 Florida Statutes)
- Holistic approach to the Northern Everglades and recognizes the need for a watershed-based approach
- Requires development of Watershed Protection Plans for each of the three Northern Everglades watersheds

LOWPP Plan Components and Goals

Source Control Program



Construction Project



Research and Water Quality Monitoring Program



GOALS

1. Meet established Total Maximum Daily Loads
2. Manage Lake Okeechobee water levels within an ecologically desirable range
3. Maintain a desirable salinity balance in the estuaries

Northern Everglades and Estuaries Protection Program

Three-year Updates/Annual Reports

Caloosahatchee River
Watershed Protection Plan

St. Lucie River Watershed
Protection Plan

Lake Okeechobee
Watershed Protection Plan

Coordinating Agencies

SFWMD

- Source Control Program (ERP & Watershed Regulatory Nutrient Source Control Program)
- Annual and triennial NEEPP reporting
- Research and WQ Monitoring Plan
- Construction Project

FDEP

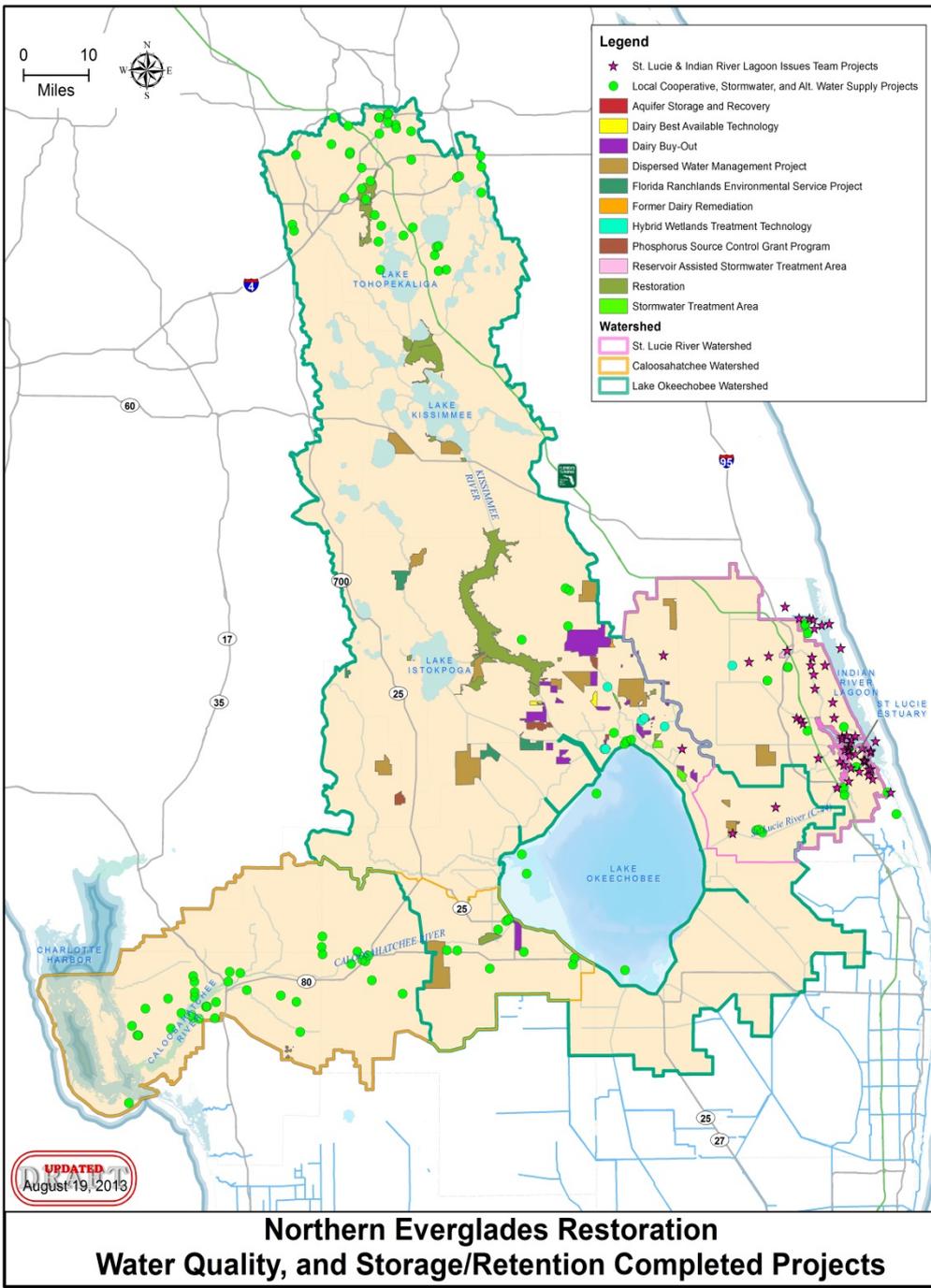
- BMAP/TMDL
- Numeric Nutrient Criteria
- Source Control Program (e.g., NPDES, biosolids rule, ERP, comp. planning)
- Regulation of LOPP Regional Projects

FDACS

- Source Control Program (Agricultural BMP Program / Implementation)
- Urban turf fertilizer and animal manure application rule

Northern Everglades Restoration Highlights

- Nutrient source control programs
- C-44 Reservoir/STA Construction
- Construction of 3 Stormwater Treatment Areas
- Dispersed Water Management Program
- Cost share investments supporting over 129 Local Water Quality Projects
- Lake Hicpochee Restoration-under design
- Construction of more than 30 phosphorus-reduction projects
- Biosolids rule amendments
- Completed three phases of the Kissimmee River Restoration Project





Lake Okeechobee - TMDLs and BMAPs

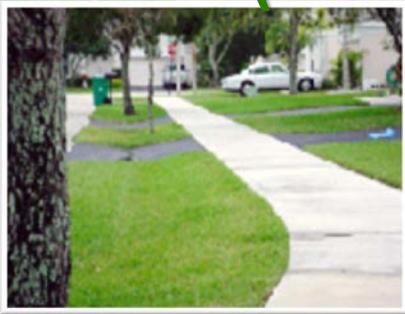
- FDEP's Total Maximum Daily Load (TMDLs) and Basin Management Action Plan (BMAPs) Program
 - TMDL is the maximum amount of a pollutant a waterbody can receive and still meet its water quality standards
 - BMAP is the blueprint to meet TMDLs (e.g., with projects and initiatives)
 - In Northern Everglades, BMAPs build upon Watershed Protection Plans
- Lake Okeechobee (62-304.700(1) F.A.C)
 - Total Phosphorus TMDL - 140 Mtons per year Total Phosphorus (35 from atmospheric deposition and 105 from the watershed)
 - TMDL for phosphorus complete (Oct. 2001); BMAP Planning Phase kicked off in Feb. 2013 and is ongoing



Source Control Program

Best Management Practices (BMPs)

Nutrient Management



Fertilizer ordinances



Fertilizer spill prevention



Fertilizer in root zone

Particulate Matter and Sediment Control



Systematic canal/ditch cleaning



Weed boom upstream of structure



Street Sweeping

Water Management



Stormwater management projects



Control structures



Reservoirs



Coordinating Agency Source Control Programs

- Florida Department of Agriculture and Consumer Services (FDACS) Agricultural BMP Program
 - Current enrollment: 74% of agricultural lands in the Lake Okeechobee Watershed
- SFWMD Source Control Programs
 - Regulatory Phosphorus Source Control Program: Amendments to 40E-61 needed for consistency with NEEPP direction
 - ERP Program: Codify the existing guidance memorandum
- FDEP Urban Source Control Programs
 - Adoption of Statewide ERP Rule (SWERP)
 - Biosolids Rule resulted in no permitted Class B biosolids sites in the Northern Everglades (from 22 to 0)



Construction Project Highlights

Regional Projects – Lakeside Ranch STA

Construction of Phase I Completed in 2012



Estimated Load Reduction Phase I: 9 Mt/yr sfwmd.gov

Regional Projects – Taylor Creek and Nubbin Slough STAs



Taylor Creek STA
~ 120 Acres Treatment Area
Nutrient Removal: 4.04 Mt over
37 months

Nubbin Slough STA
~ 775 Acres Treatment Area
Nutrient Removal Estimate:
5 Mt/yr



Regional Projects – Kissimmee River Restoration

PRE/POST RESTORATION AREA



1954



1954

Looking south in the Phase I restoration area from the Oak Creek floodplain. This photo of the natural historic Kissimmee River and floodplain was taken in 1954 before the river was channelized.

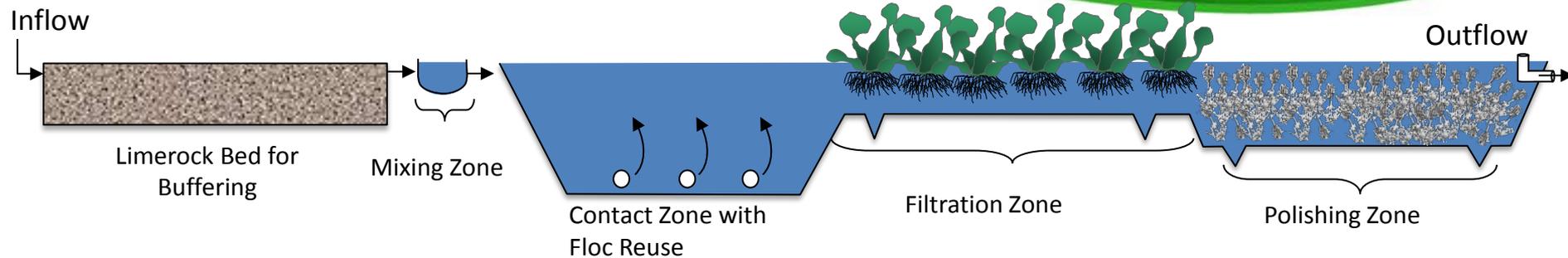
2013



August 15, 2013

Looking south in the Phase I restoration area from the Oak Creek floodplain from the same exact view as the previous historical slide.

Alternative Nutrient Reduction Technologies - Hybrid Wetland Treatment Technology



Percent Phosphorus Reduction: 67%-93%

Mosquito Creek



Nubbin Slough



Lemkin Creek



Dispersed Water Management



DWM - Private and Public Lands Projects

- Private Lands
 - Agreements with private or public entities to cost share the design, permitting, or construction of water resource related projects
 - Typically exceptional circumstance to justify an individual agreement such as, large cost effective benefit to the regional system, also solves local or regional water resource related problem, benefits to multiple watersheds
- Public Lands
 - Cooperative agreements with other public entities (local govt., WCDs, state agencies) to cost share portions of the planning, design, permitting, and construction of water resource projects





Florida Ranchlands Environmental Services Projects (FRESP)

Collaboration of Ranchers, NGOs, Scientists/Engineers, and State & Federal Agencies to Design and Implement a Market Based Payment for Environmental Services Program

- Eight pilot projects implemented with 3 years of operation
- Three now operating under NE-PES 1
- Two now operating under NRCS Wetland Reserve Program (WRP)
- Two continuing under extended agreements
- One contemplating future activity

Northern Everglades Payment for Environmental Services (NE-PES)

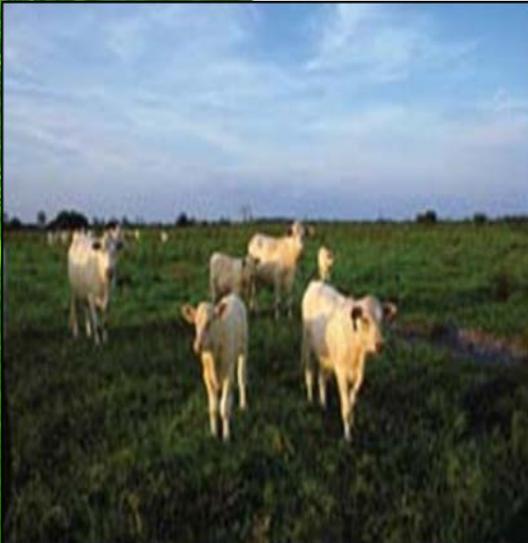
Public-Private partnerships that enhance opportunities for storing excess surface water on privately owned ranchlands

First Solicitation

- Thirteen proposals submitted
- Eight water retention project contracts
- Total Retention: 4,778 ac-ft/yr
- Average retention per project: 597 ac-ft/yr

Second Solicitation

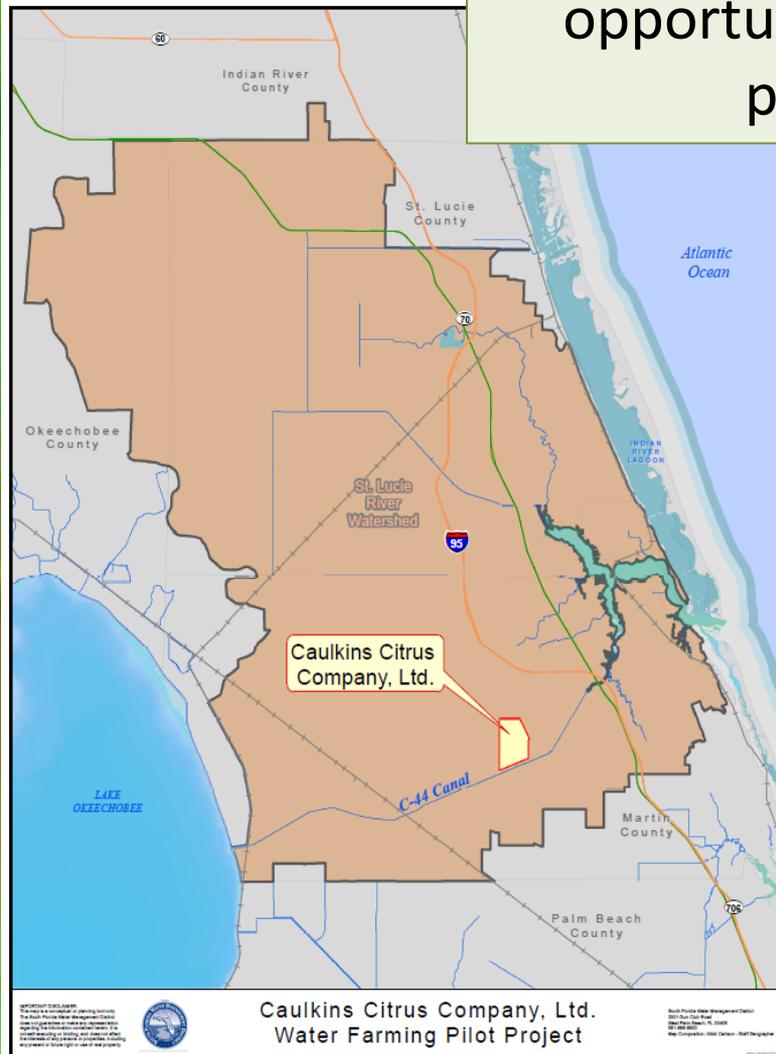
- Nineteen proposals submitted
- One contract executed
- Negotiations with second respondent underway



Water Farming Payment for Environmental Services Pilot

Public-Private partnerships that enhance opportunities for storing excess surface water on privately owned fallow citrus lands

- Caulkins Citrus Company, Ltd.
 - Construction to be complete by February 2014
- Due to additional 319 Grant funding, negotiations underway with:
 - Bull Hammock Ranch, Ltd.
 - Evans Properties, Inc.

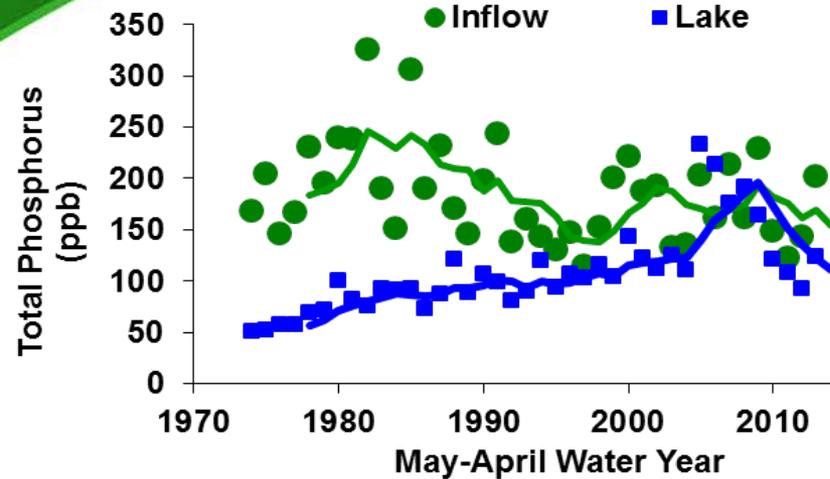




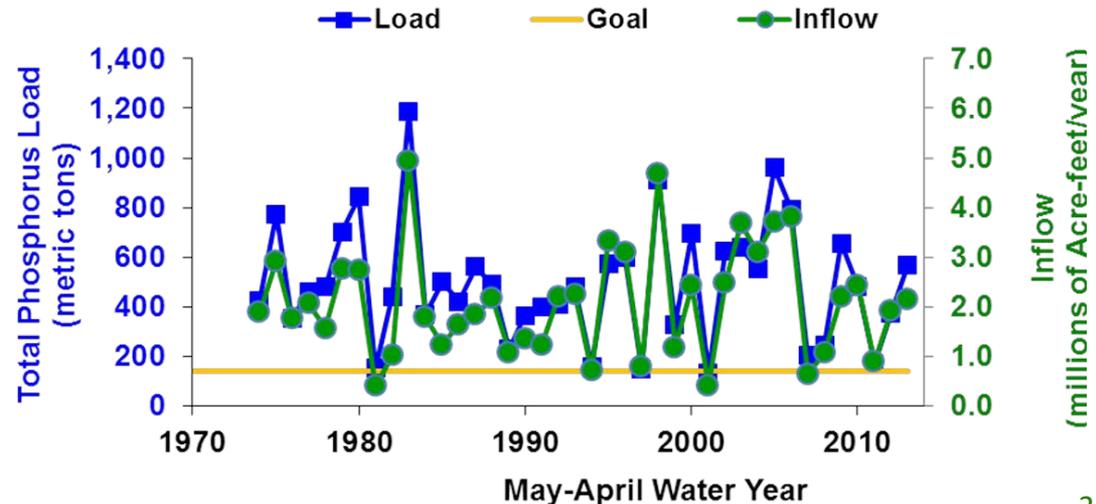
Watershed and In-Lake Conditions

Inflow and Lake Average Annual TP Concentrations and Five-year Moving Average Trend Lines

In-lake TP concentrations had declined from a high of 233 ppb in WY2005 to 93 ppb in WY2012. While in-lake TP concentrations increased in WY2013 to 124 ppb, the in-lake TP five-year average is still trending downward.



The WY2013 TP load and five-year average (WY2009–WY2013) TP load from all drainage basins and atmospheric deposition was 569 Mt and 451 Mt, respectively.

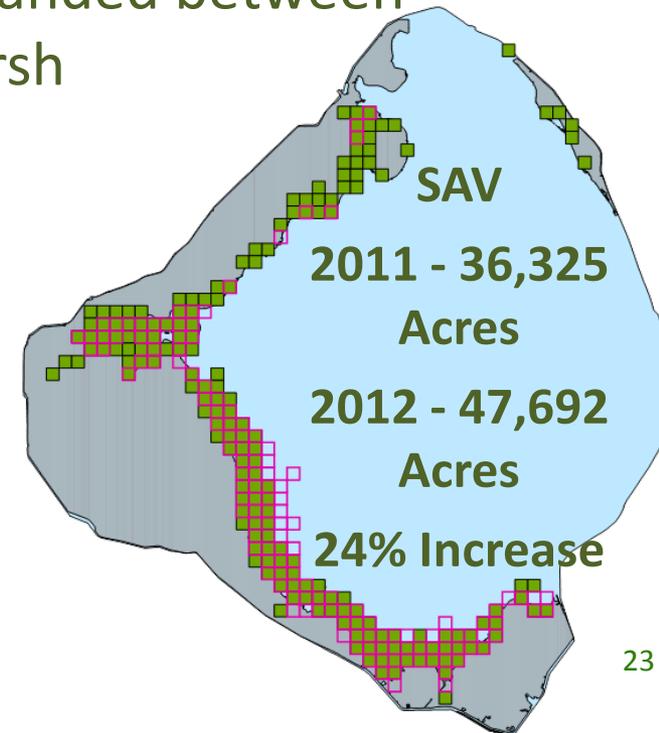


Percent Contribution, Unit Area Load, and Flow Weighted Mean TP Concentration by Sub-Watershed (POR 2001-2012)

Source	Area	Discharge	TP Load	Unit Load	Average TP Conc.
	(%)	(%)	(%)	(lb/ac)	(ppb)
East Lake Okeechobee Sub-watershed	7	6	6	0.25	172
Fisheating Creek Sub-watershed	9	10	13	0.45	234
Indian Prairie Sub-watershed	8	11	20	0.77	315
Taylor Creek/Nubbin Slough Sub-watershed	6	6	19	1.03	558
South Lake Okeechobee Sub-watershed	11	4	4	0.12	170
West Lake Okeechobee Sub-watershed	6	2	2	0.10	137
Lake Istokpoga Sub-watershed (S-68)	11	11	7	0.18	103
Lower Kissimmee Sub-watershed [(S-65E) - (S-65)]	12	14	12	0.30	150
Upper Kissimmee Sub-watershed (S-65)	30	35	17	0.17	86
Totals from Lake Okeechobee Watershed	100	100	100	0.31	176

Lake Ecological Conditions

- Submerged Aquatic Vegetation (SAV) increased 24 percent with higher prevalence of desirable vascular species
- No major algal blooms reported
- Conditions for sport and forage fish remain good
- Invasive species have expanded between 2010 and 2012 in the marsh





Strategies Moving Forward

Strategies Moving Forward

- BMAP Development
 - Build upon previous restoration efforts
 - Identify additional projects and funding opportunities
- Source Control Programs
 - Continued implementation
 - Rule amendments
 - Streamline efforts
- Evaluate Innovative Treatment Technologies and incorporate them when feasible
- Continue to cost share with local governments as feasible
- Seek a dedicated funding source to support the Dispersed Water Management Program



Questions?