SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Update on the Performance of STA-1W

Technical Oversight Committee
July 24, 2003

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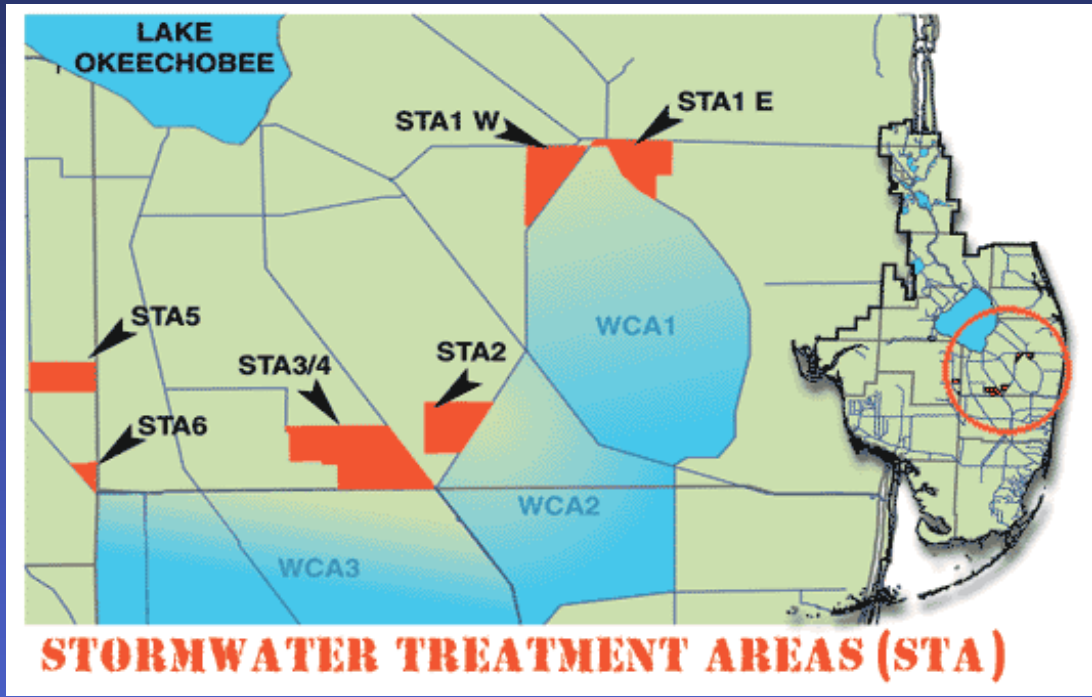
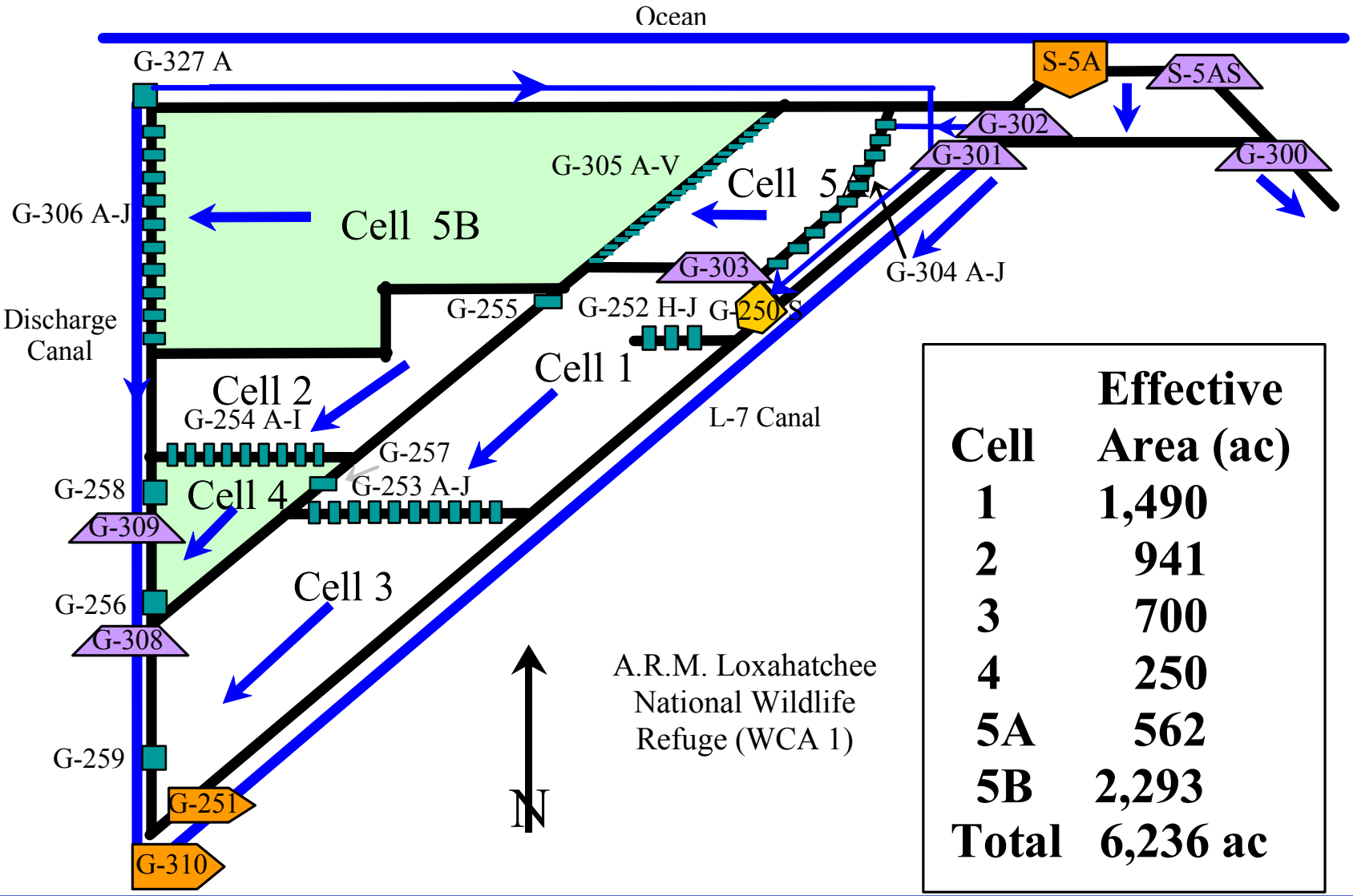
Overview

- STA-1 West Background
- Recent Lake Okeechobee Operations
- Influence of Lake Releases on STA-1W
- Knowledge Gained



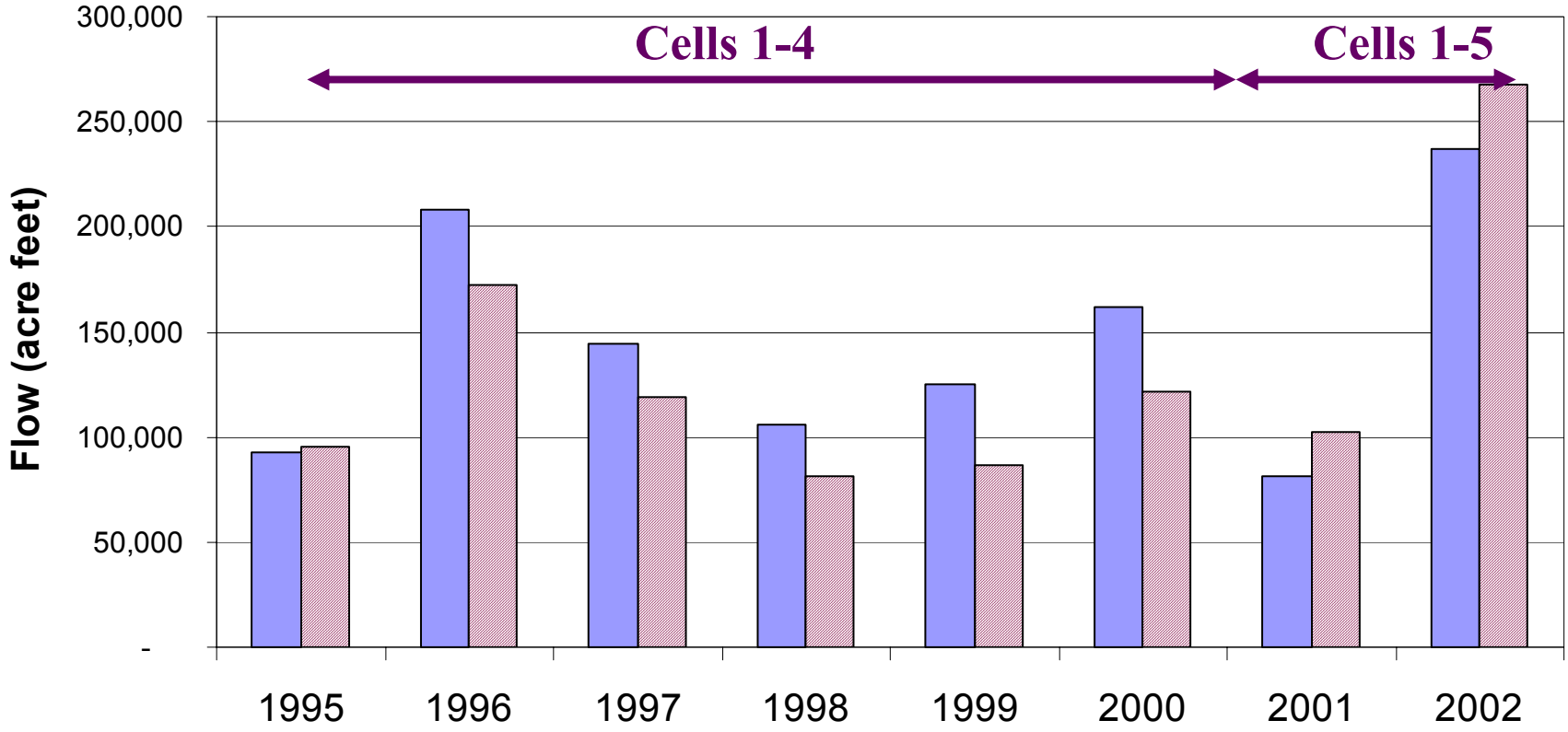
STA-1 West Background

- 3,750 acres began operation in 1993 as Everglades Nutrient Removal Project; prototype STA
- Additional 3,000 acres began operations in 1999
- Source of water: EAA basin, Lake releases, L-8/C-51W basins
- Interim operations phase: when completed, STA-1 East will operate in concert with STA-1W



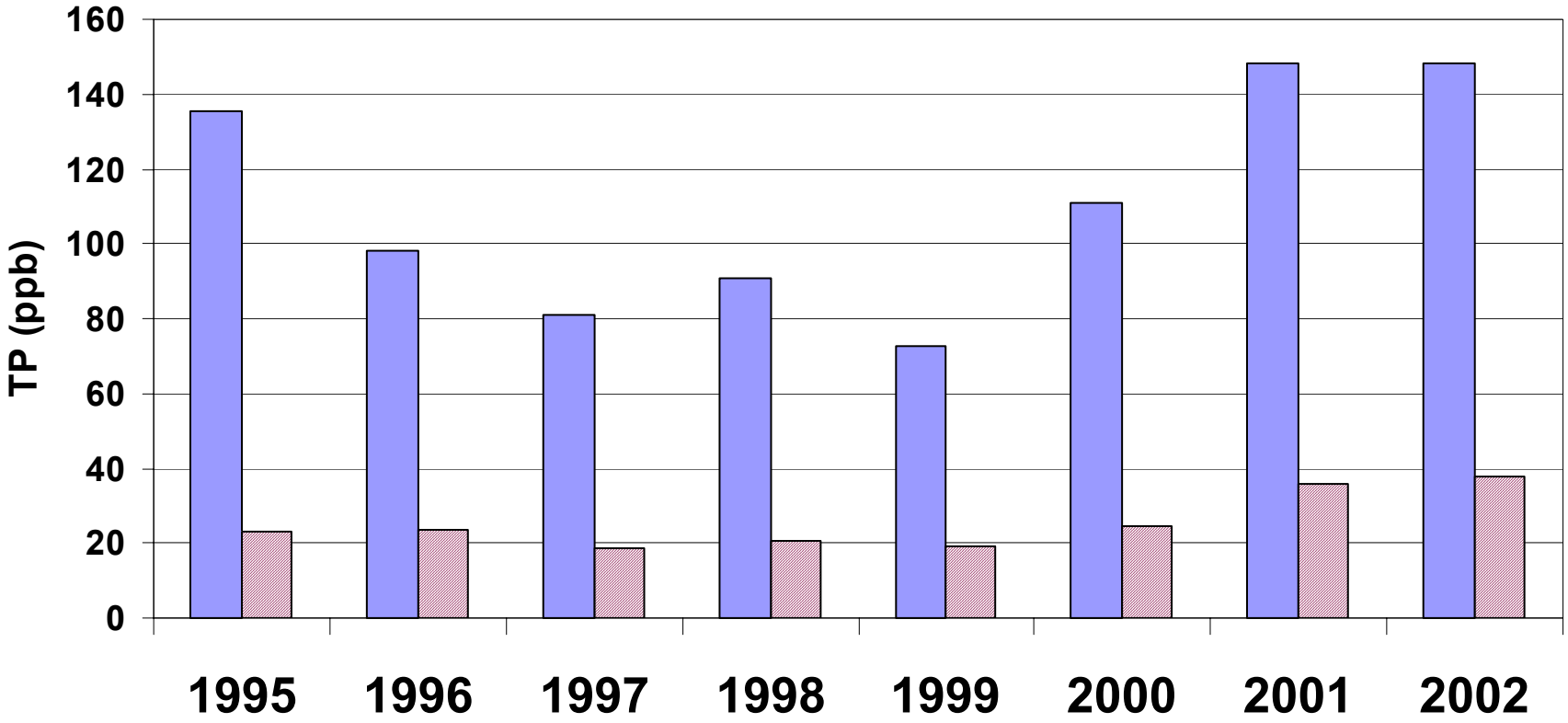
Cell	Effective Area (ac)
1	1,490
2	941
3	700
4	250
5A	562
5B	2,293
Total	6,236 ac

STA-1 West Flow



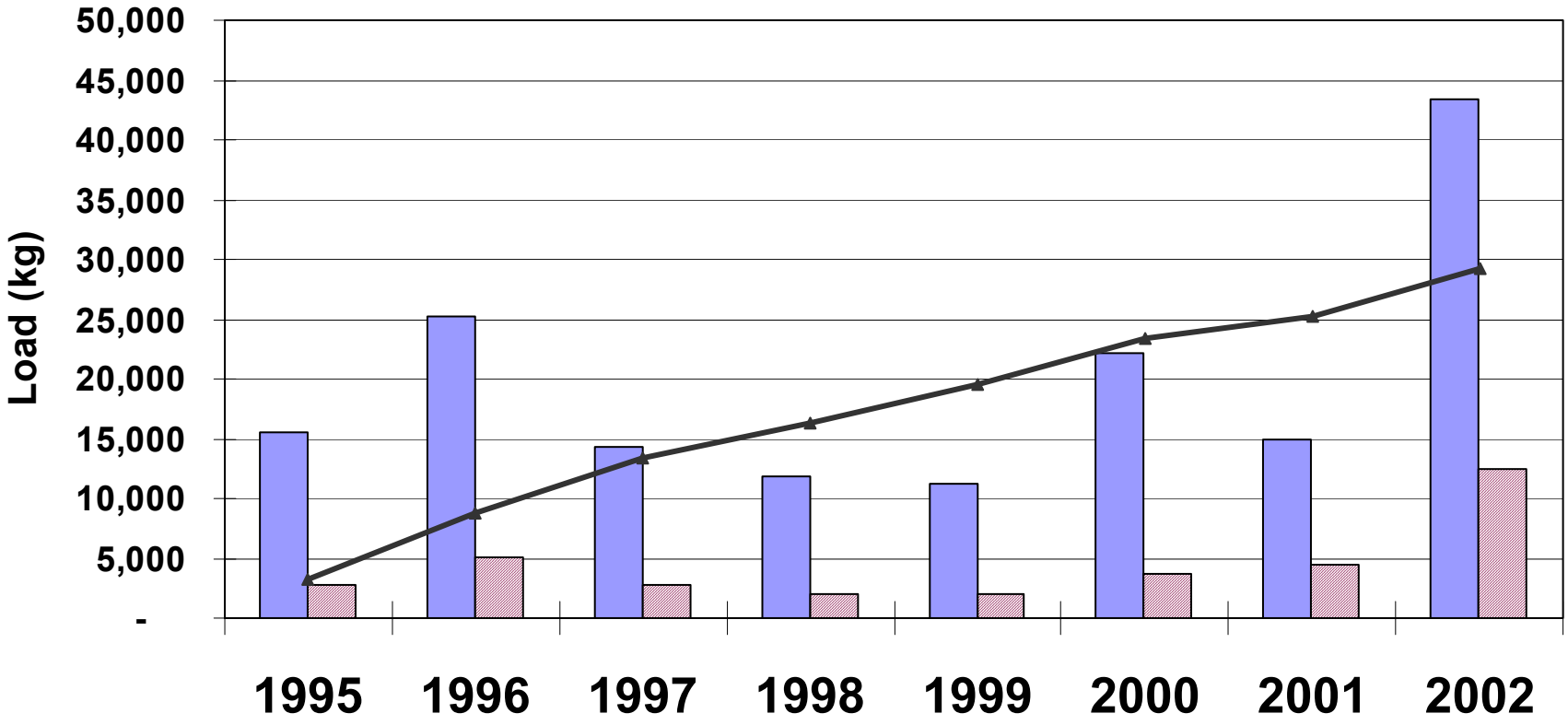
1979-99: 141,191 - 590,047 AF/yr through S-5A

STA-1 West Phosphorus Concentrations



Average inflow: 111 ppb Average outflow: 27 ppb

STA-1 West Phosphorus Loads



123 tonnes removed during WY95-2002

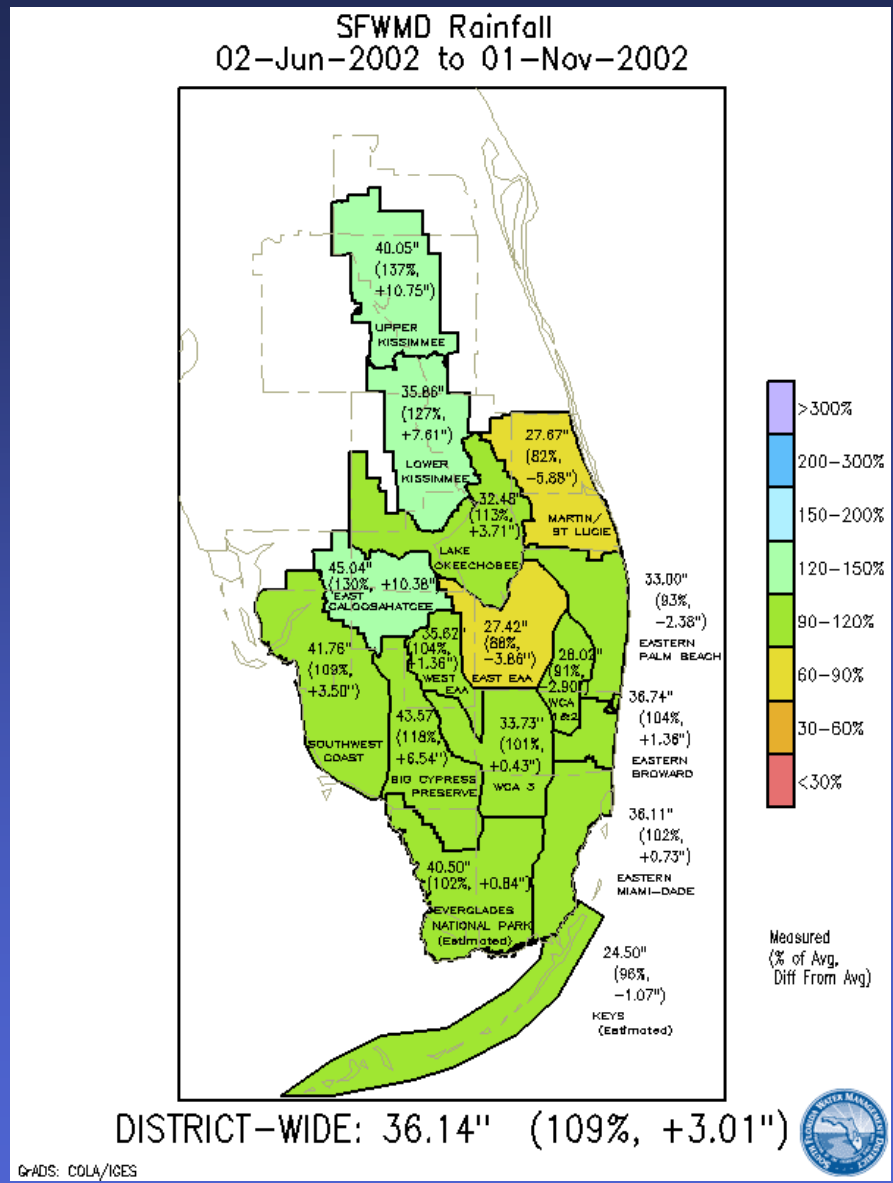
Exceeded removal target by 30 tonnes

Lake Okeechobee Operations

- Water Supply and Environment (WSE): federal regulation schedule
- Improved operations (implemented July 2000):
  - Benefits lake littoral zone & reduces impacts to estuaries
  - Triggers regulatory discharges
  - Balances competing lake management objectives
- Water quality effects were fully considered through the public review process

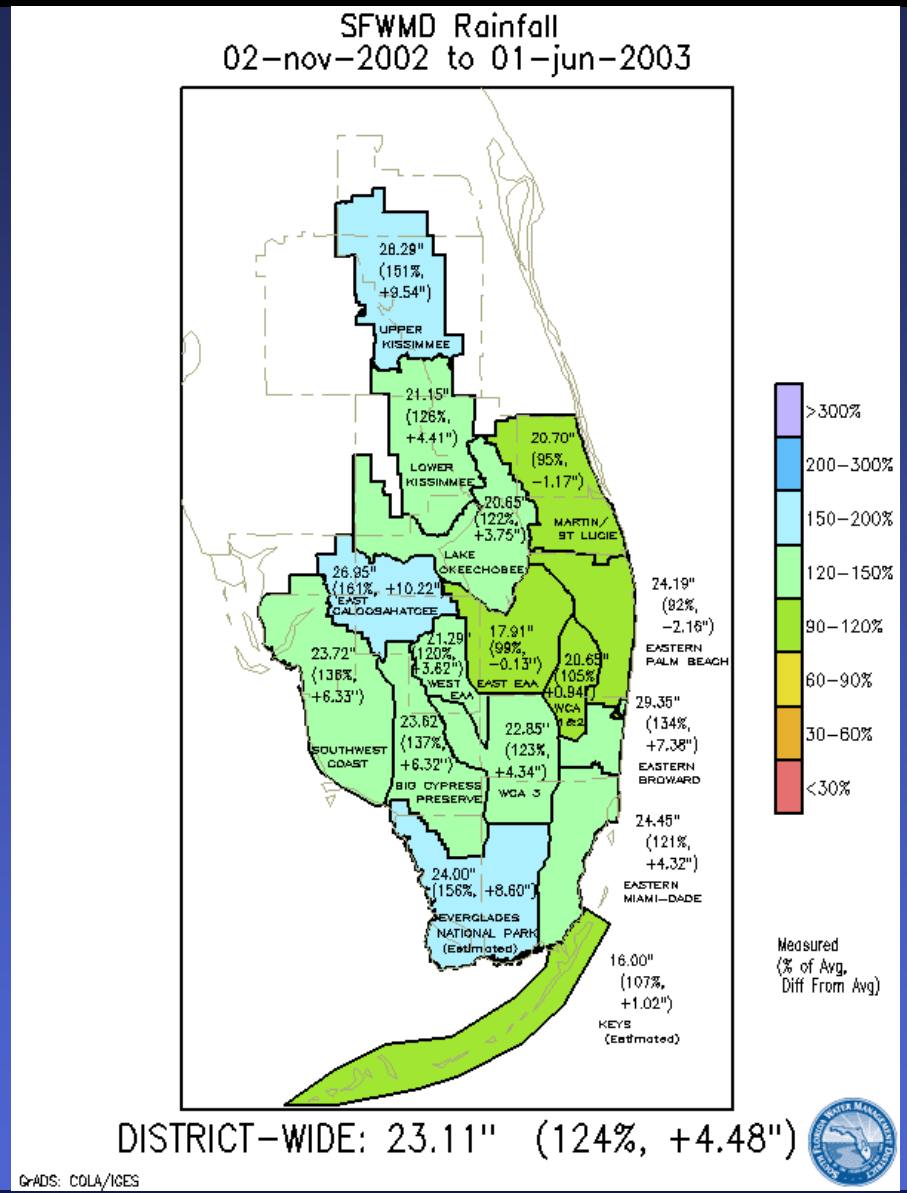
Distribution of Wet Season Rainfall

- Above average rainfall occurred in the Upper & Lower Kissimmee basins
- Average to above average rain fell in Lower West Coast basins



Distribution of Dry Season Rainfall

- Well above average rainfall occurred in the Upper Kissimmee Basin
- Above average rain fell in Lower Kissimmee and Lower West Coast basins

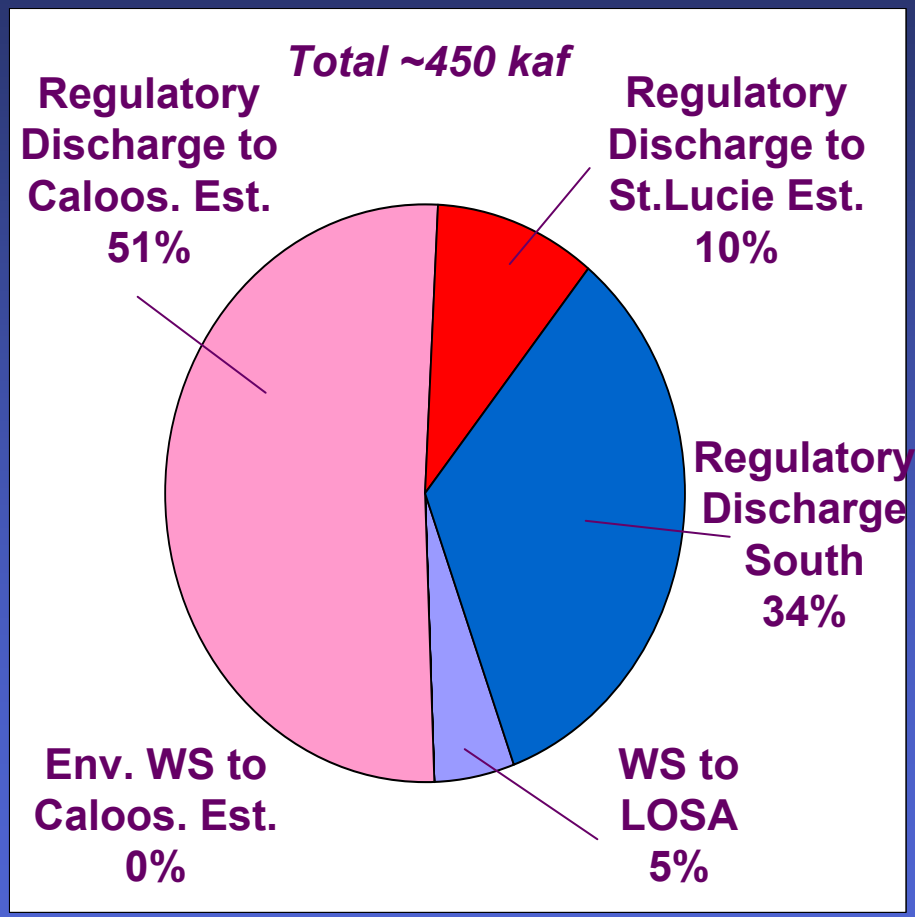


Hydrologic Conditions

- WSE responded to the wet conditions by requiring regulatory releases:
  - WCA-2 & 3 remained above their regulation schedules through most of the year, precluding releases to those areas
  - Refuge was below its schedule: Lake discharges through STA-1W
  - "Pulse Releases" to the Caloosahatchee and St. Lucie estuaries
- Lake Toho Extreme Drawdown Project terminated in January 2003 to avoid additional impacts to Lake Okeechobee, the Estuaries, and the Everglades

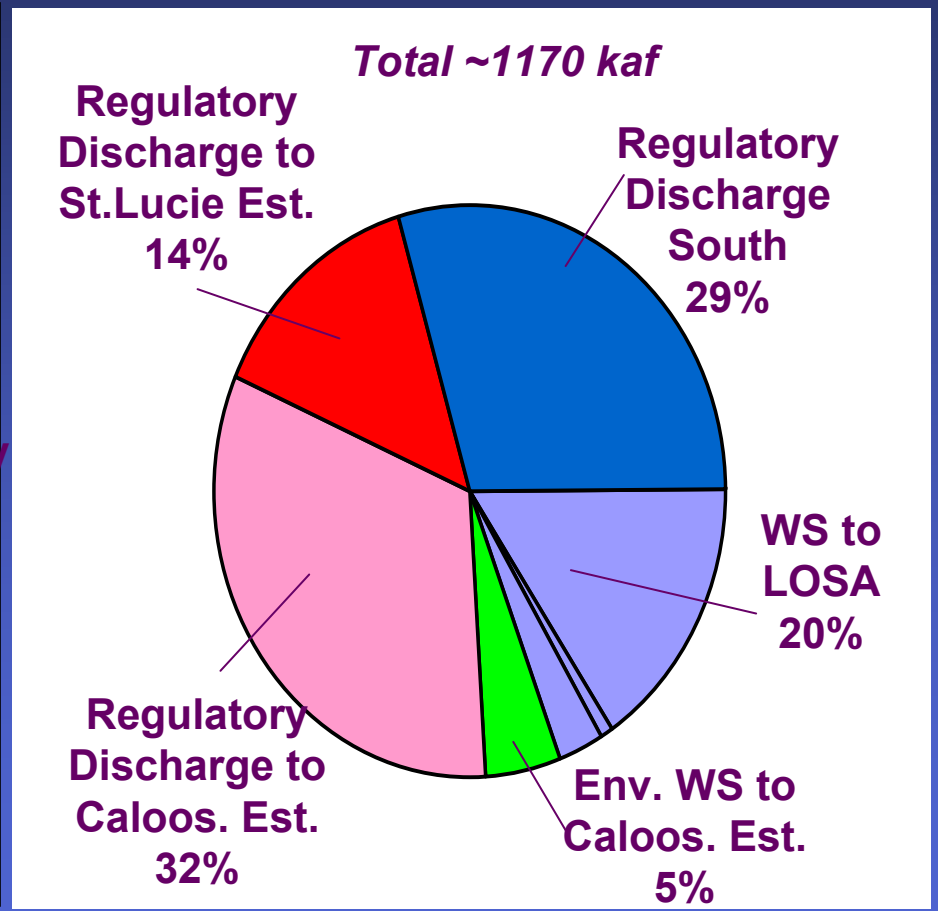
WET SEASON

Regulatory Discharge Mode
July 2002 - October 2002



DRY SEASON

Regulatory Discharge Mode
November 2002 - 19May 2003



Note: These data do not represent a complete water budget and are estimates based on SFWMD provisional structure discharge data.

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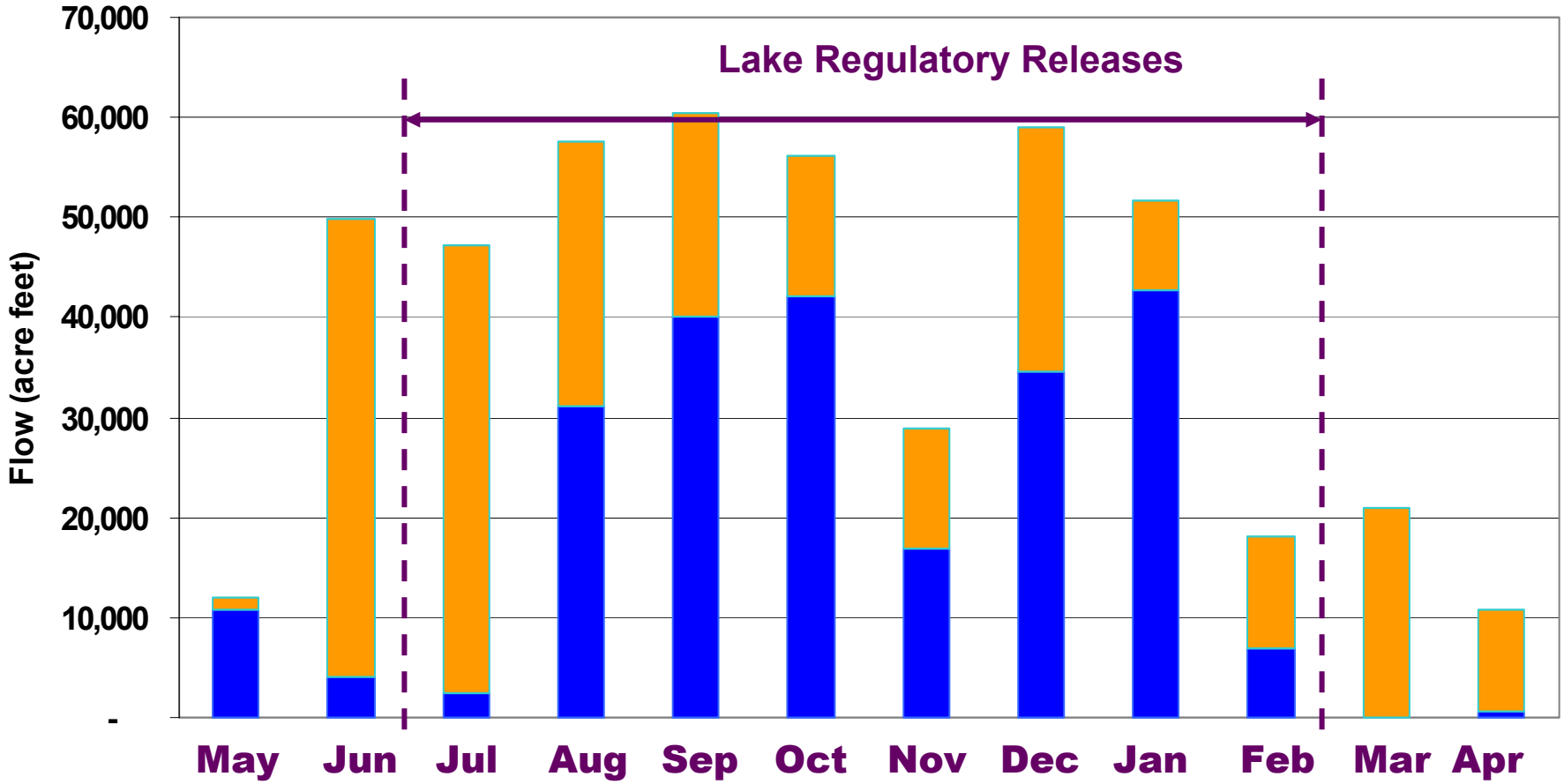
Lake Operations Summary

- Releases were made in response to heavy rainfall influenced by El Niño
- Lake stages were about 0.75 to 1.0 ft lower under WSE than would have occurred under the old schedule (RUN25)
  - Lower lake stages avoided continuous, high releases that would have caused damage to estuaries
- WSE focused significant volumes of regulatory flow south over the year
  - Utilization of STA-1W minimized water quality impacts to the Everglades

Influence of Lake Releases on STA-1 West

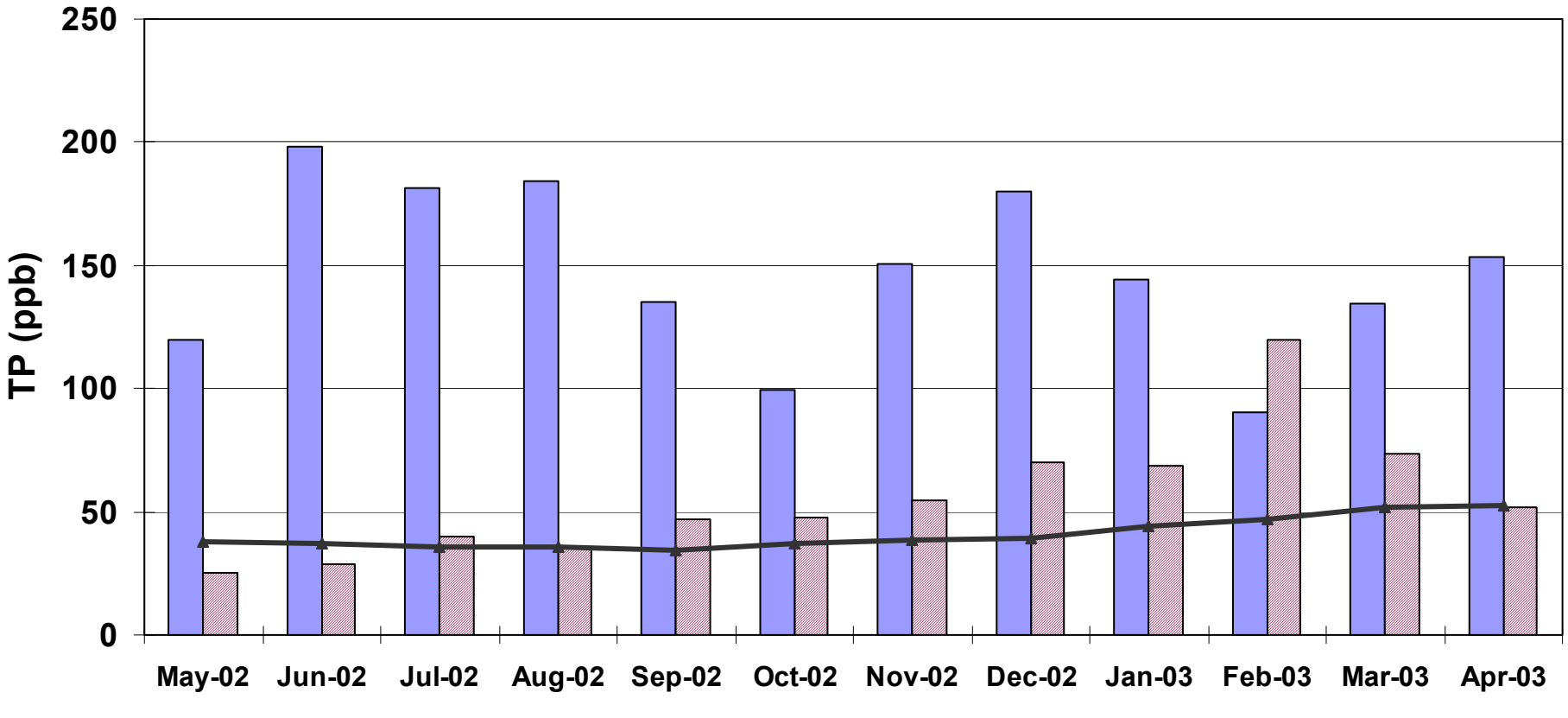
- More than 200,000 acre feet added
  - Total flow for WY2003: 472,000 AF
- 59 tonnes of P from Lake releases
  - Total load for WY2003: 90 tonnes
- Terminated releases in February due to elevated phosphorus concentrations in discharge

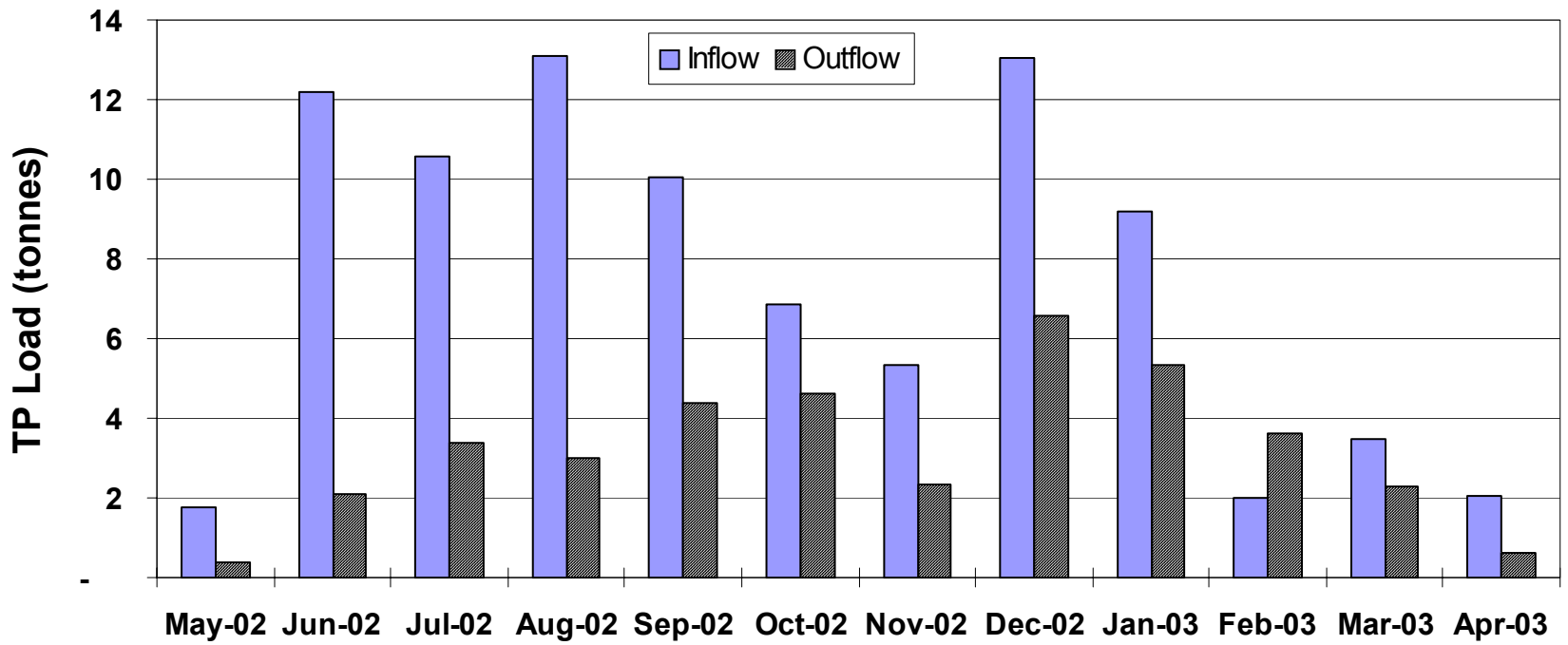
STA-1W Inflow Volumes



Total inflow volume from Lake = 232,301 acre feet (49% of total inflows)

STA-1W Phosphorus Concentrations





51 tonnes of phosphorus removed; 31 tonnes of Lake P

Performance Measures

- Permit
  - Annual discharge flow-weighted mean was 53 ppb
  - Not a violation: permit allows annual maximum of 75 ppb and up to 2 consecutive years above 50 ppb
- Federal Settlement Agreement
  - STA-1W and bypass: 41.2 tonnes to Refuge
  - Compliance methodology allows annual maximum of 75 ppb and up to 2 consecutive years above 50 ppb
  - However, this is a concern - evaluating with Technical Oversight Committee

Knowledge Gained

- Increased definition of performance envelope of STA
- Improved tools to analyze data
- Data will improve calibration of forecast model
- Improved internal and external coordination
  - Weekly operations meeting
  - External review group (Refuge, consultants)

Wrap Up

- Lake operations are a balance of regional factors
- Recovery of STA-1W continues
  - Still learning about large wetland systems
- Future storage components
  - STA-3/4 will be primary STA to receive Lake releases
  - STA-1 East could provide additional storage
  - Other storage projects in EAA and along St. Lucie Canal and Caloosahatchee River will minimize adverse impacts