Historical and Present Flows in the Caloosahatchee River

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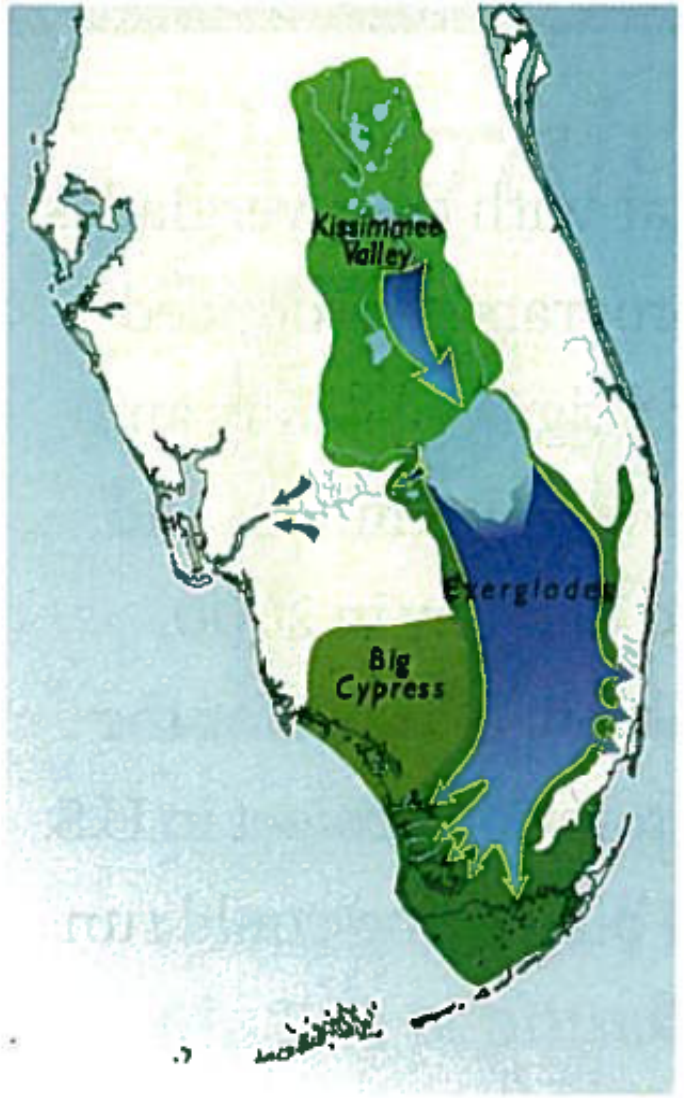
Rapids leading from Lake Flirt to Caloosahatchee River prior to destruction by Hamilton Disston in 1881

5 Things To Know About Caloosahatchee River Flows

- **Interesting History** - Altered throughout history
- **2 components of river flow**: Local basin runoff and Lake Okeechobee discharges
- **Highly variable flow from river to estuary**
- **Substantial pollution load carried to estuary from local runoff and Lake discharges**: phosphorus, nitrogen and sediment.
- **Until additional storage, conveyance, treatment and revised operations are implemented**, the region's environment and economy will continue to be sacrificed for the benefit of those south of the Lake
  - Sen. Negron's proposal represents a once-in-a-lifetime opportunity to significantly reduce destructive Lake discharges to the estuaries

Historical Relationship to Lake Okeechobee
(pre-1918)

- No navigable connection between Lake Okeechobee and Caloosahatchee River, but rather sheetflow during periods of high lake stage
- Overflow from Lake Okeechobee would flow south and west
- Area between Lake Flirt and Lake Okeechobee – including 4 lakes which provided about 11,000 acres of storage and treatment - was the historical headwaters of Western Everglades to the south of the lake



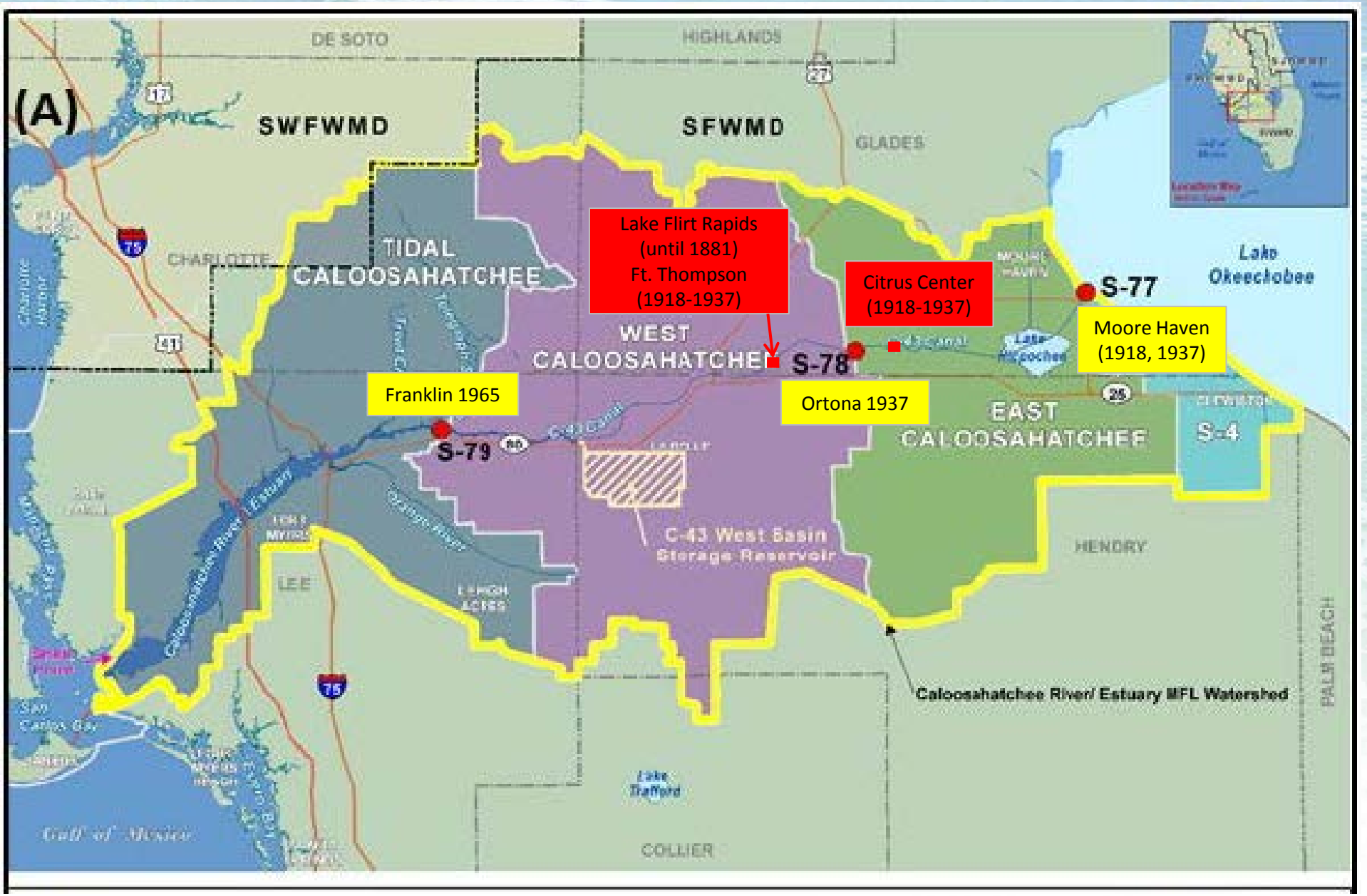
HISTORICAL FLOW:
Summer rainfall migrated slowly down the Kissimmee River floodplain, feeding Lake Okeechobee through the dry season. The lake was a third larger than it is today.

In the rainy season, the saucer-shaped lake overflowed and deposited nutrients to its south, building a band of rich organic soil. Water spilling south of the lake became the "River of Grass" and flowed on to Florida Bay.

Timeline of Caloosahatchee River Flow Alterations

There were 102 river bends in the 64-mile stretch from Beautiful Island to Lake Okeechobee before 1882. Now there are 26 river bends.

300-1000 AD	1880s	1910s	1930s	1940s	1960s	2008	Present
Navigation canals between river, lakes and towns by Myami and Calusa Indians	Disston dredged portions of river channel on way from Ft. Myers to Lake Okeechobee, destroyed rapids at outlet from Lake Flirt; and dredged 22' wide by 5' deep channel from Lake Flirt to Lake Okeechobee (which eventually silted in, exacerbated flooding, and plugged at Moore Haven in 1902)	Everglades Drainage District constructs locks and spillways at Moore Haven, Citrus Center and Ft. Thompson; deepened and widened river (5-ft deep by 40-ft wide)	US Army Corps of Engineers constructs locks and spillways at Moore Haven, Ortona and Franklin; deepened and widened channel (6' deep and 80' wide)	Corps deepened and widened channel (8-12 ft deep and 90-250 ft wide)	Corps constructed lock and spillway at Franklin and deepened and widened channel (25' deep ¼-mile wide	Current Lake Okeechobee Regulation Schedule (LORS2008)	C-43 Reservoir authorized and construction began; scheduled completion 2020; Lake Hicpochee enhancement project started



Modified from SFWMD 2016

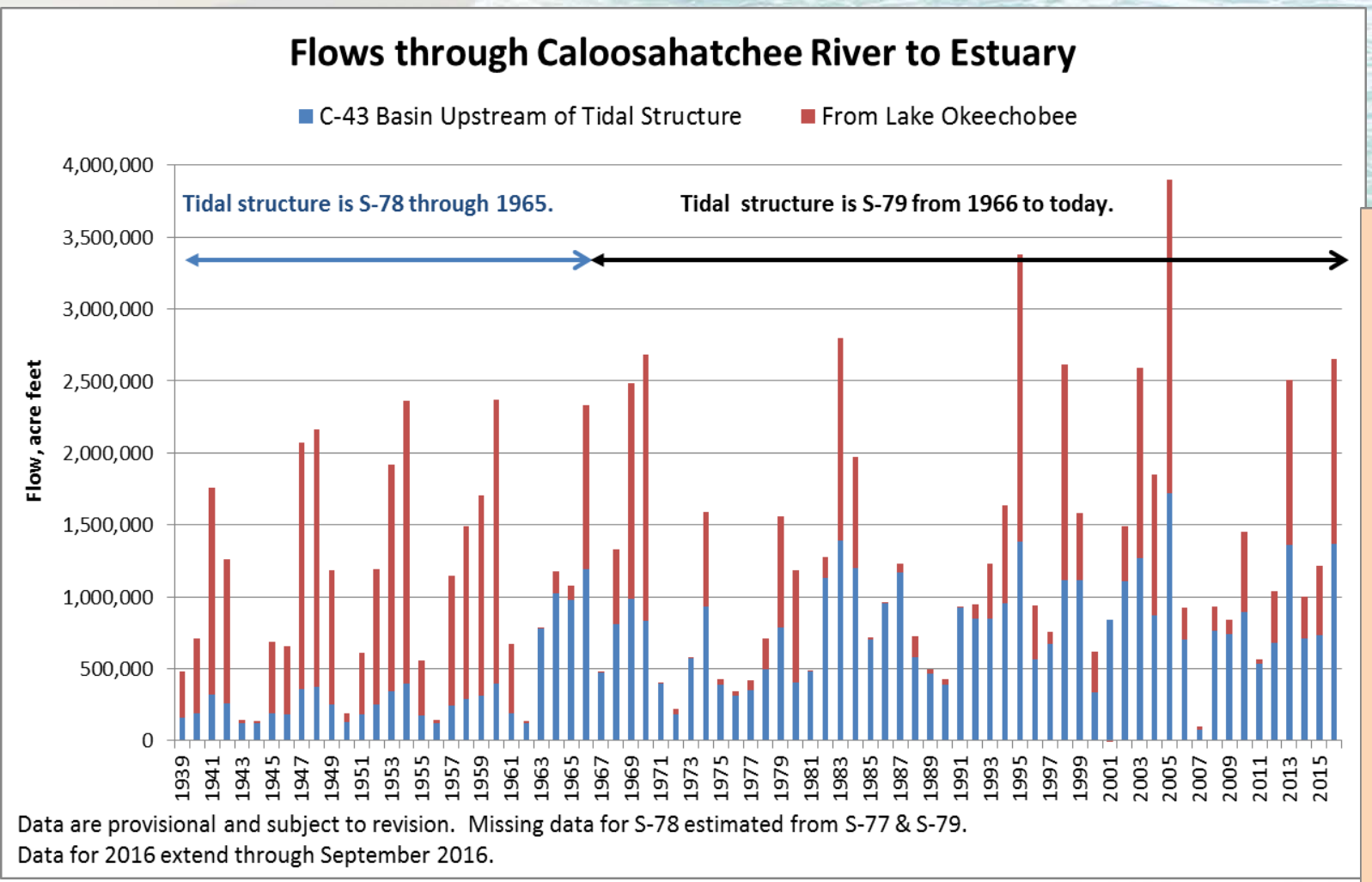
Flows to Estuary from C-43 Basin and Lake

Average daily flow is 1,770 cfs; median flow is 650 cfs

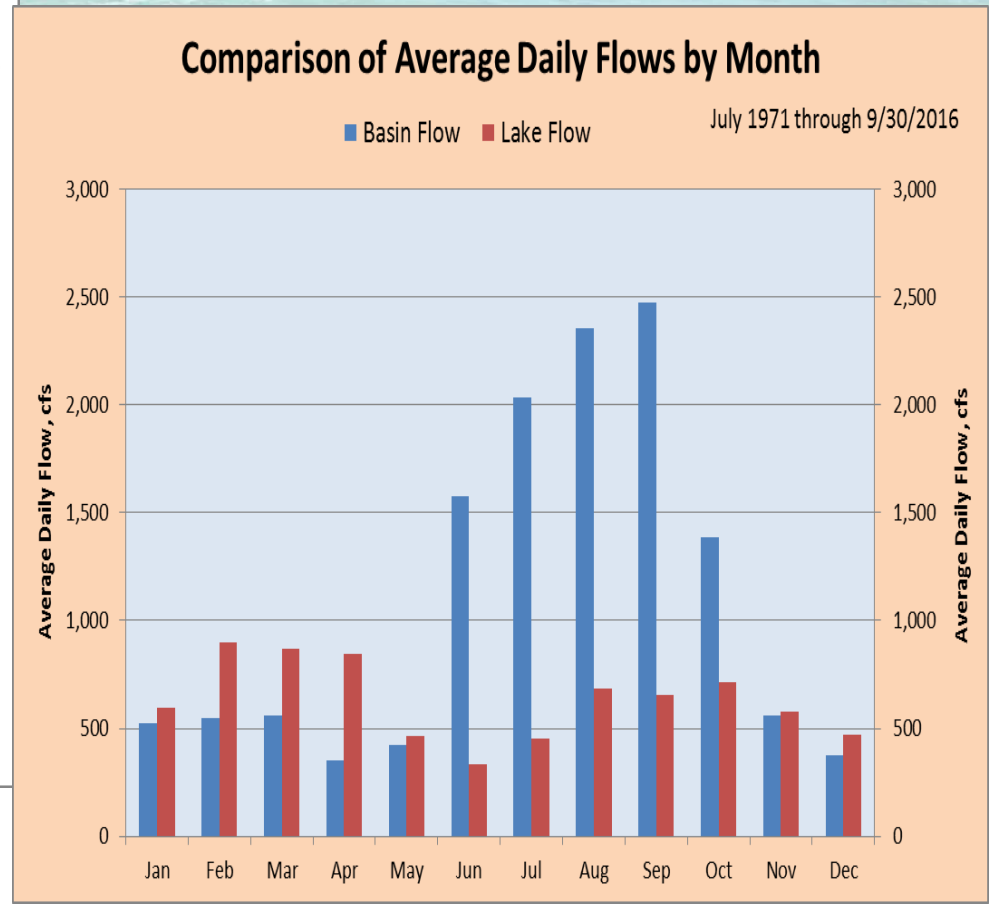
Lake contribution to estuary varies widely – from 0-69%

For the 45-yr period from 1971-present,

- approximately 36% of flow through S-79 are from Lake Okeechobee
- approximately 20% of flow through S-79 are from the Eastern basin (east of S-78)
- approximately 43% of flow through S-79 are from the Western basin (west of S-78)



Data are provisional and subject to revision. Missing data for S-78 estimated from S-77 & S-79.
Data for 2016 extend through September 2016.



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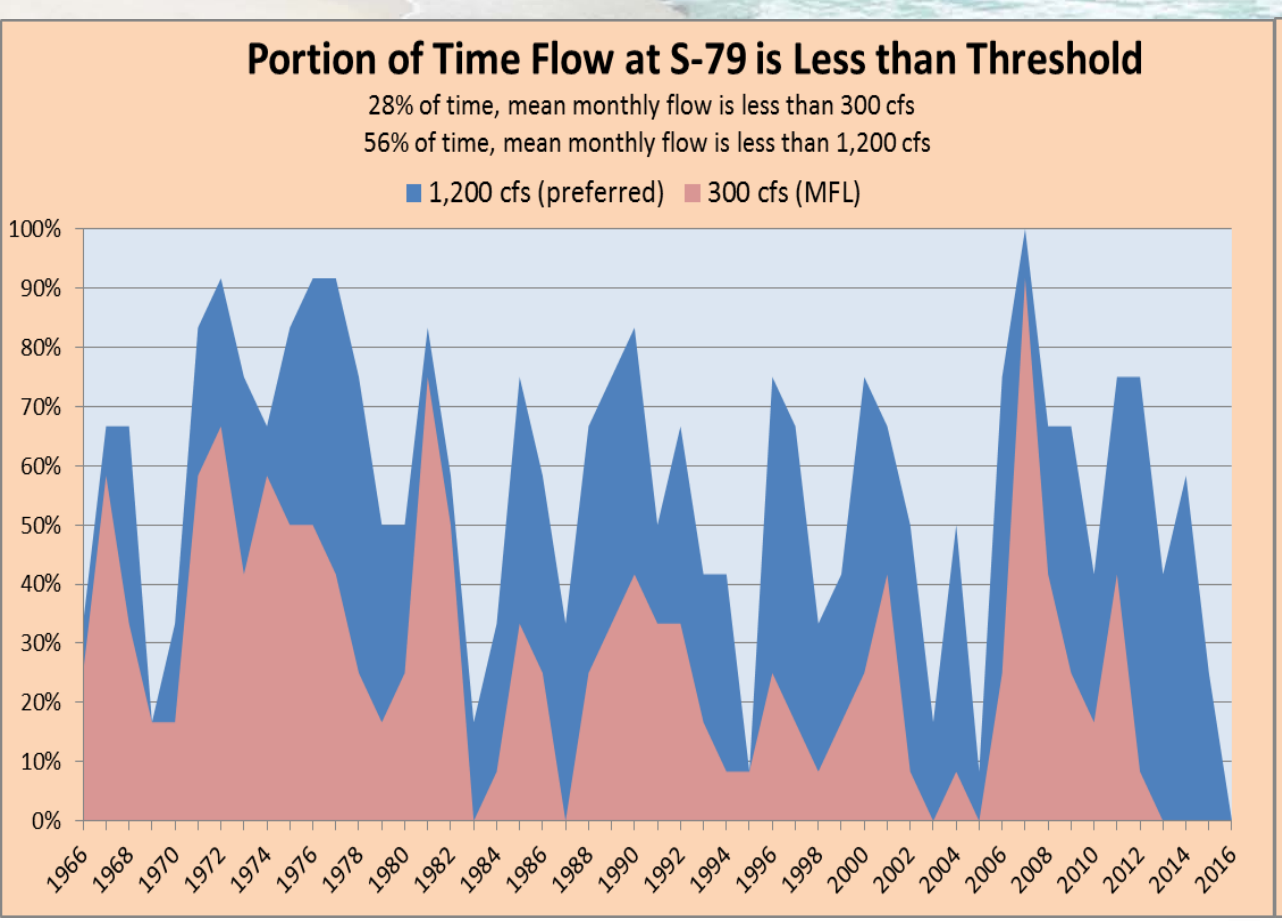
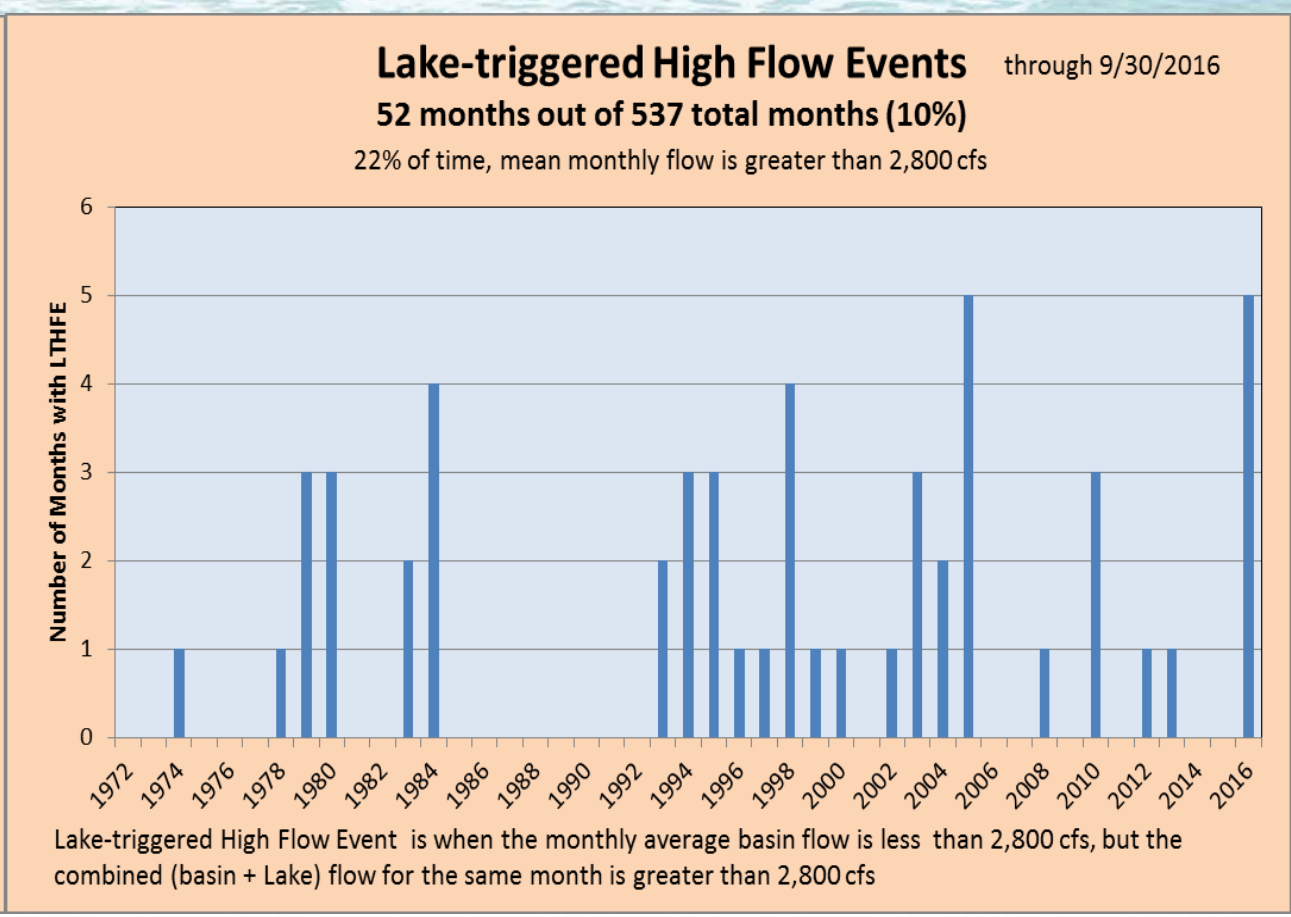
Ecological harm occurs at flow less than 300-1,200 cfs and above 2,800 cfs

At least 50% of time, flows are in these harmful extremes





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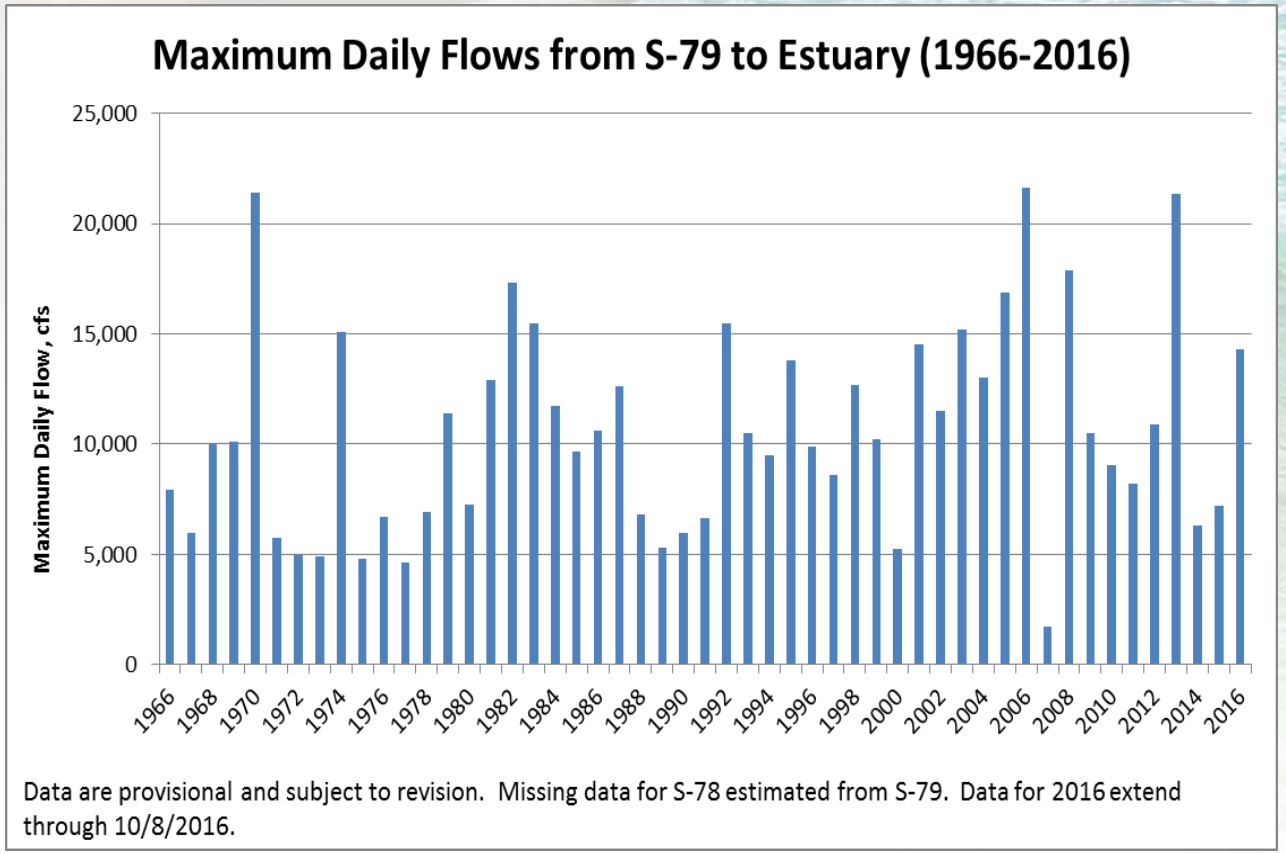
Maximum Flows to Estuary from C-43 Basin and Lake



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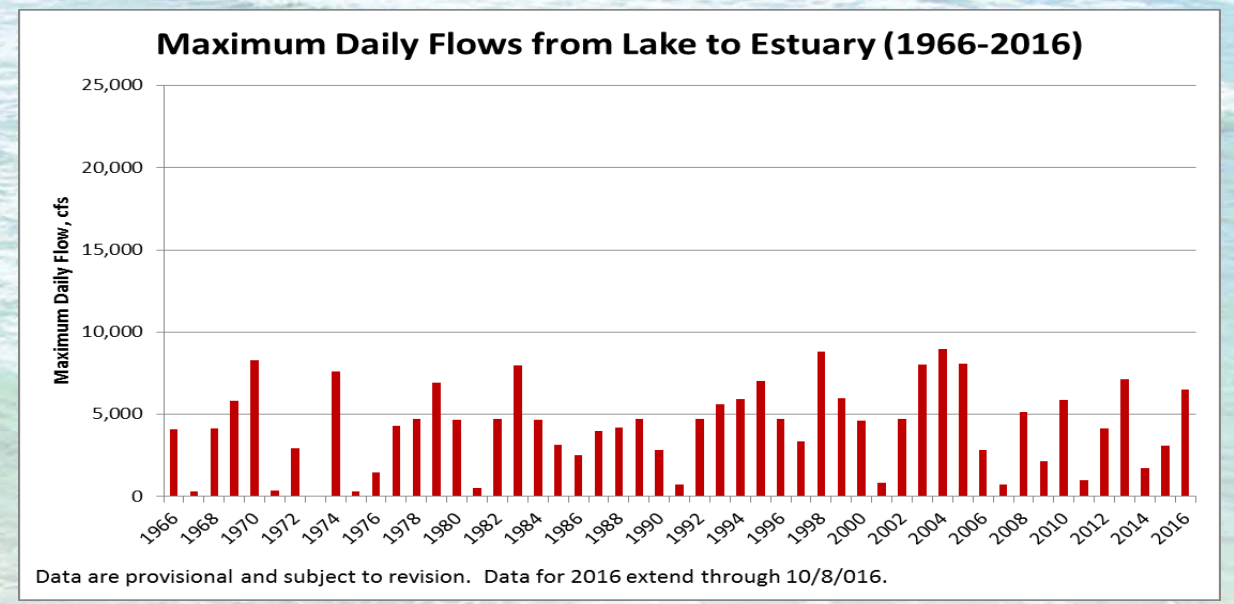

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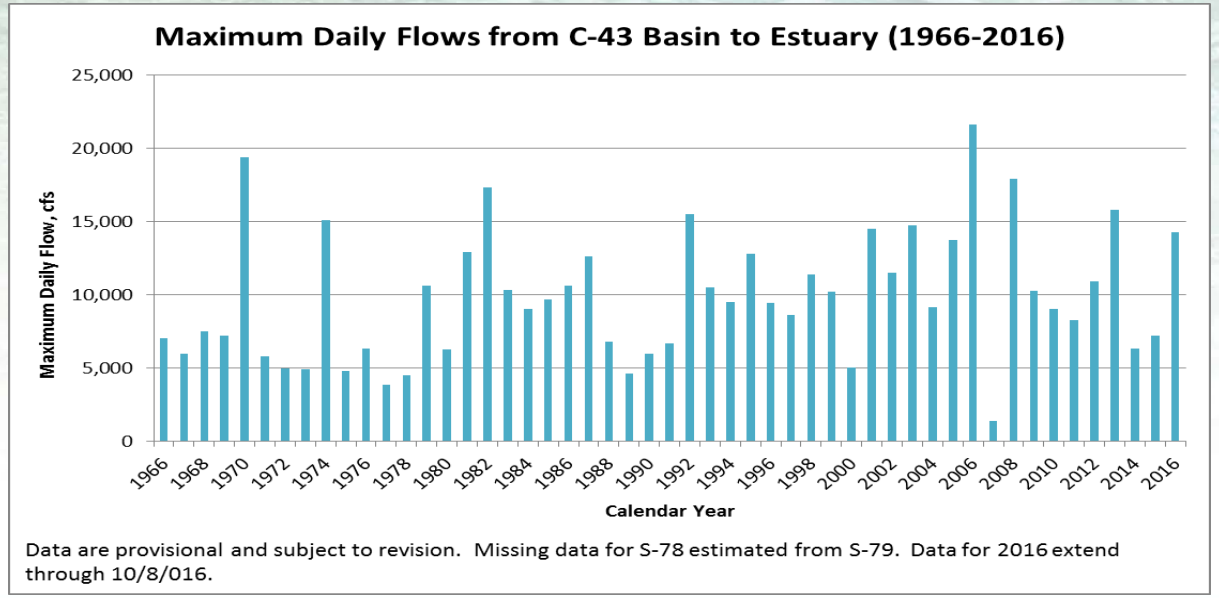

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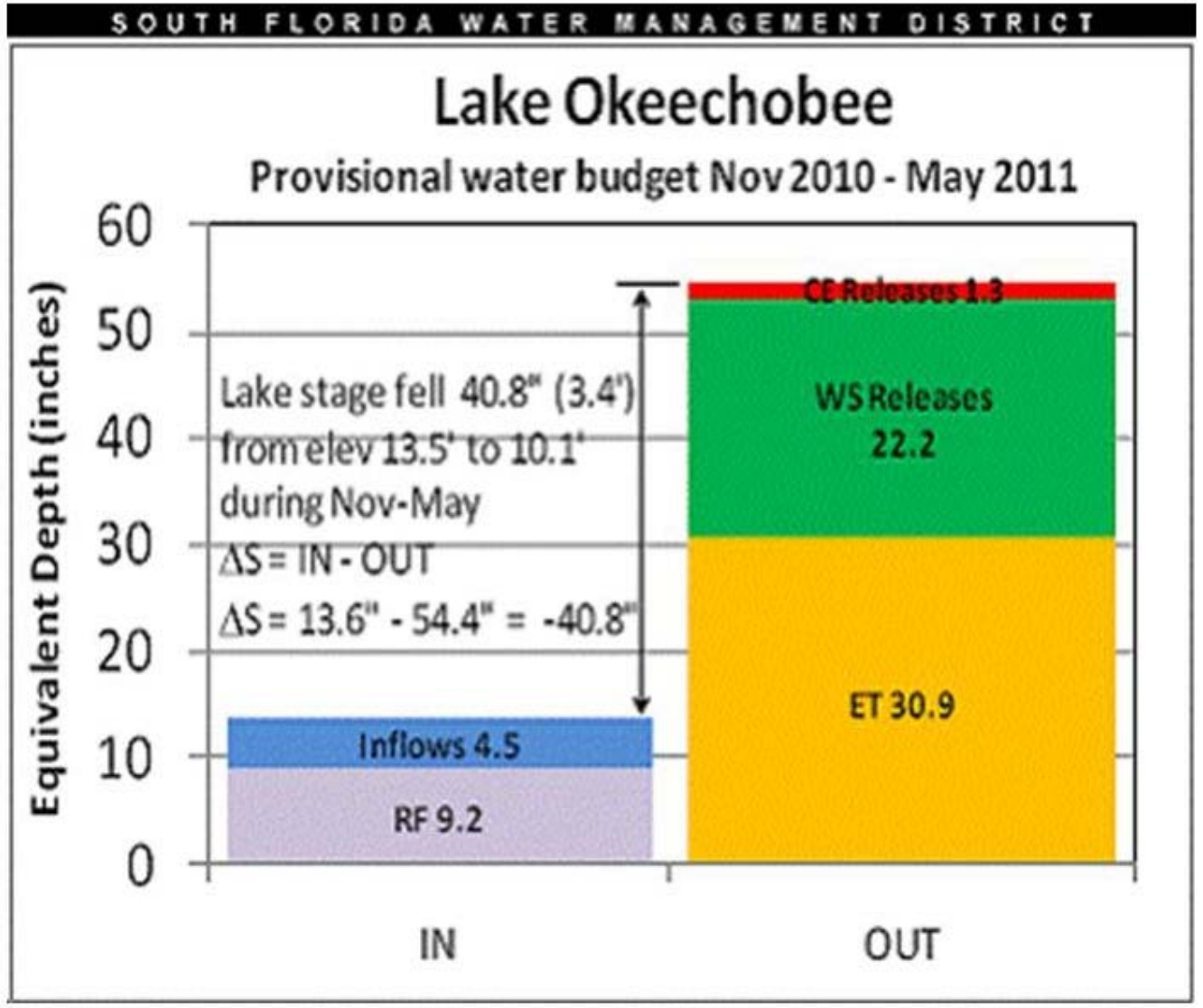
Drought Conditions - Example of imbalanced water supply decisions

During 7 months of drought, Caloosahatchee River received only 1.3” from Lake Okeechobee, resulting in 5th consecutive year of exceedance and violation of the Minimum Flows and Levels (MFL),
while water supply users in the EAA received 22.2” of Lake water.

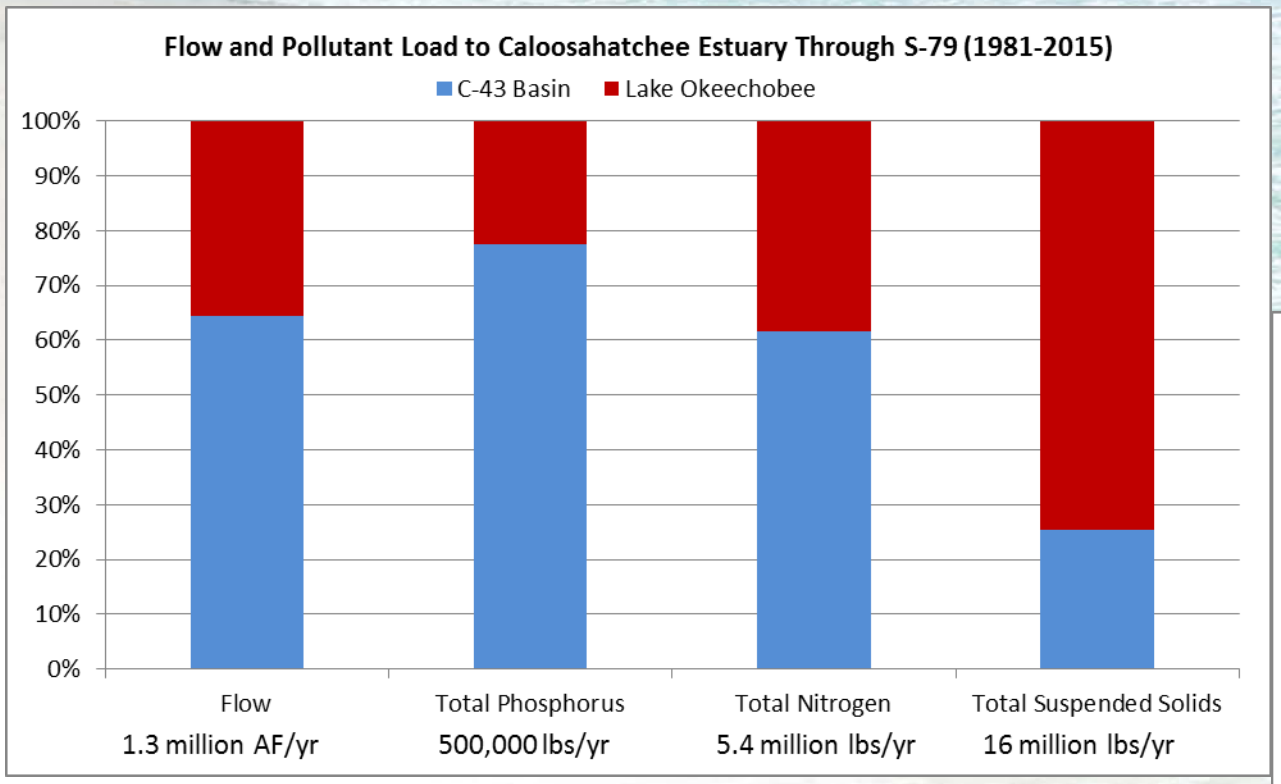
The next month, June 2011, the SFWMD used pumps to send an additional 2” of Lake water to the EAA, resulting MFL exceedance for Lake itself.

Preferred scenario would be shared adversity.



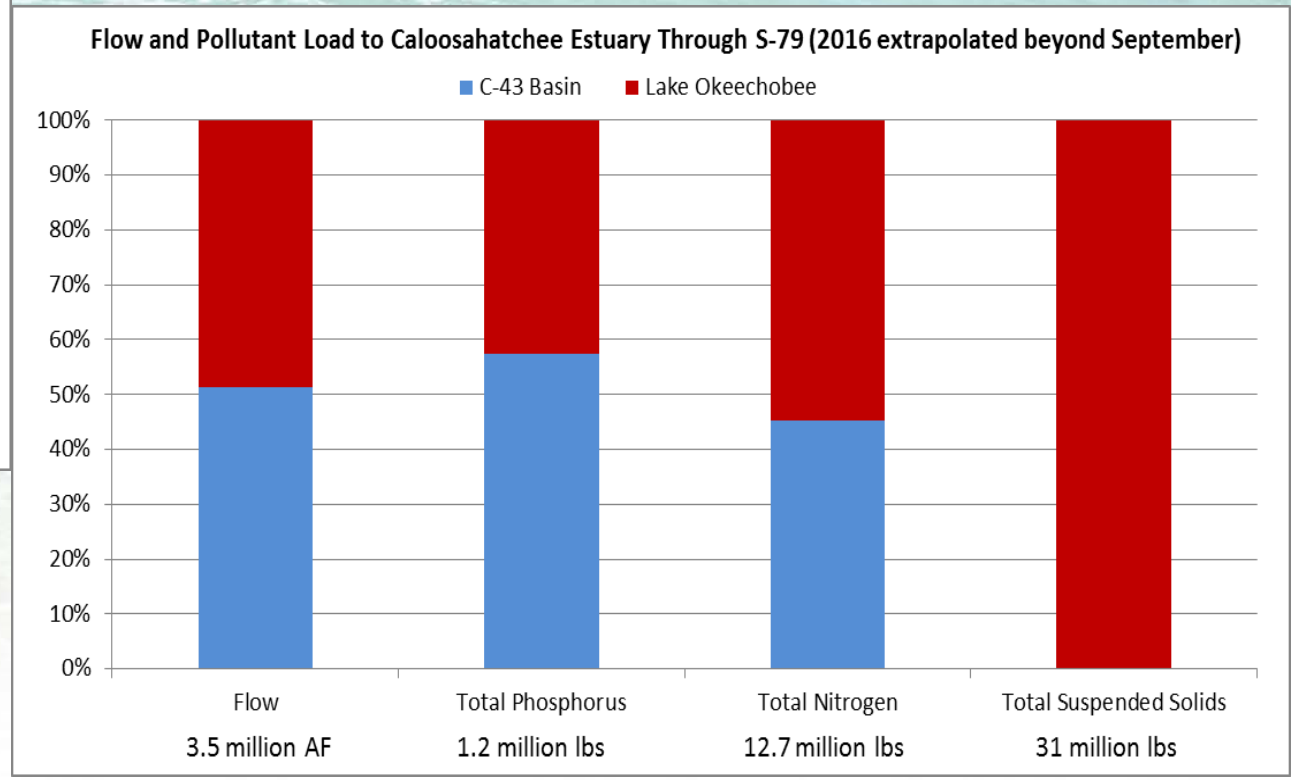
From SFWMD staff

Pollution loads to estuary from C-43 Basin and Lake



35-yr average annual values (1981-2015)

Year with high Lake discharges - 2016



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Reducing destructive Lake discharges to estuary

- **Until additional storage, conveyance, treatment and revised operations are implemented**, the region's environment and economy will continue to be sacrificed for the benefit of those south of the Lake
- Goal is to stop the Lake-triggered high flow events (LTHF)
- 400,000 AF storage in Caloosahatchee basin, 200,000 AF in St. Lucie basin, and at least 1,000,000 AF distributed north and south of Lake
  - CERP C-43 Reservoir – 170,000 AF of storage
  - Through CEPP - <55% reduction in LTHF
- Sen. Negron's commitment: 360,000 AF on 60,000 acres south of Lake
- Operations – send Lake water south 12 months each year
- Water Year 2015 – District demonstrated benefits of year-round delivery of Lake discharges to STAs – ***most Lake flow in history AND best performance in history***!

Summary of Caloosahatchee River Flows

- **Interesting History**
- **2 components of river flow**
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Questions?

Lone cypress at the lake and canal junction.