Lake Okeechobee BMAP

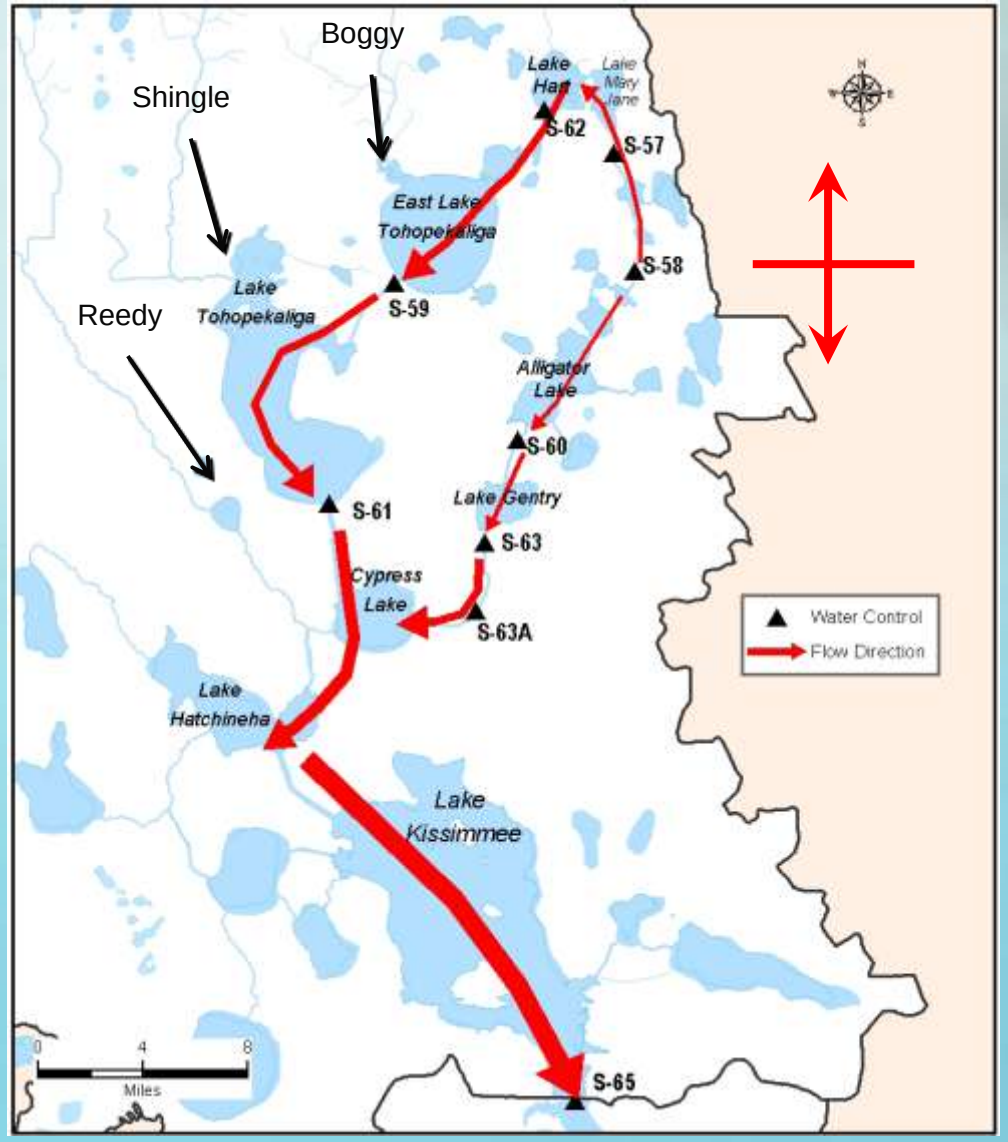
And Today's Theme Is:
Interesting Photos

Frank Nearhoof
FDEP
6/11/13

Recent Damage from Tropical Storm Andrea

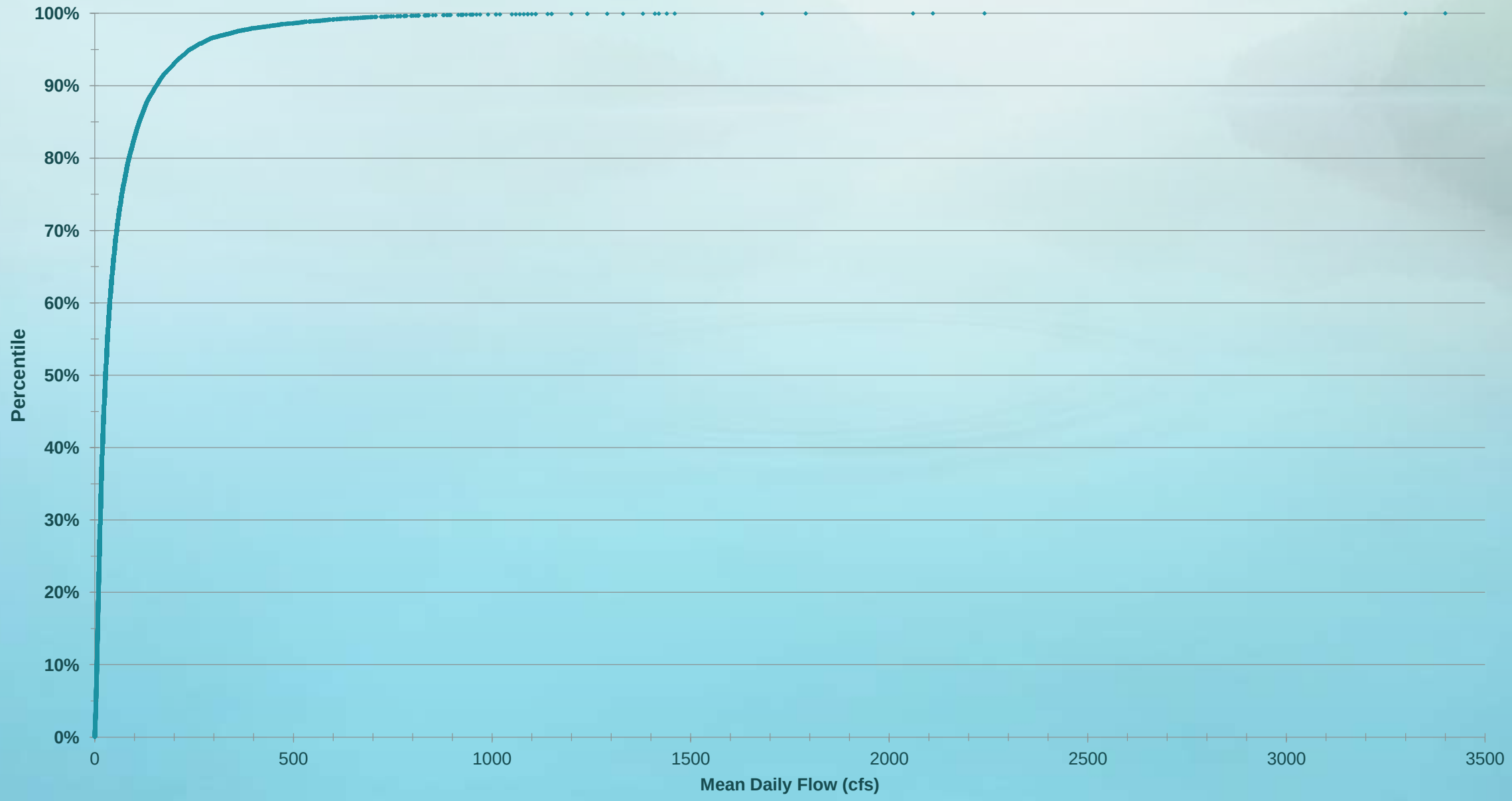
Upper Kissimmee Sub-watershed

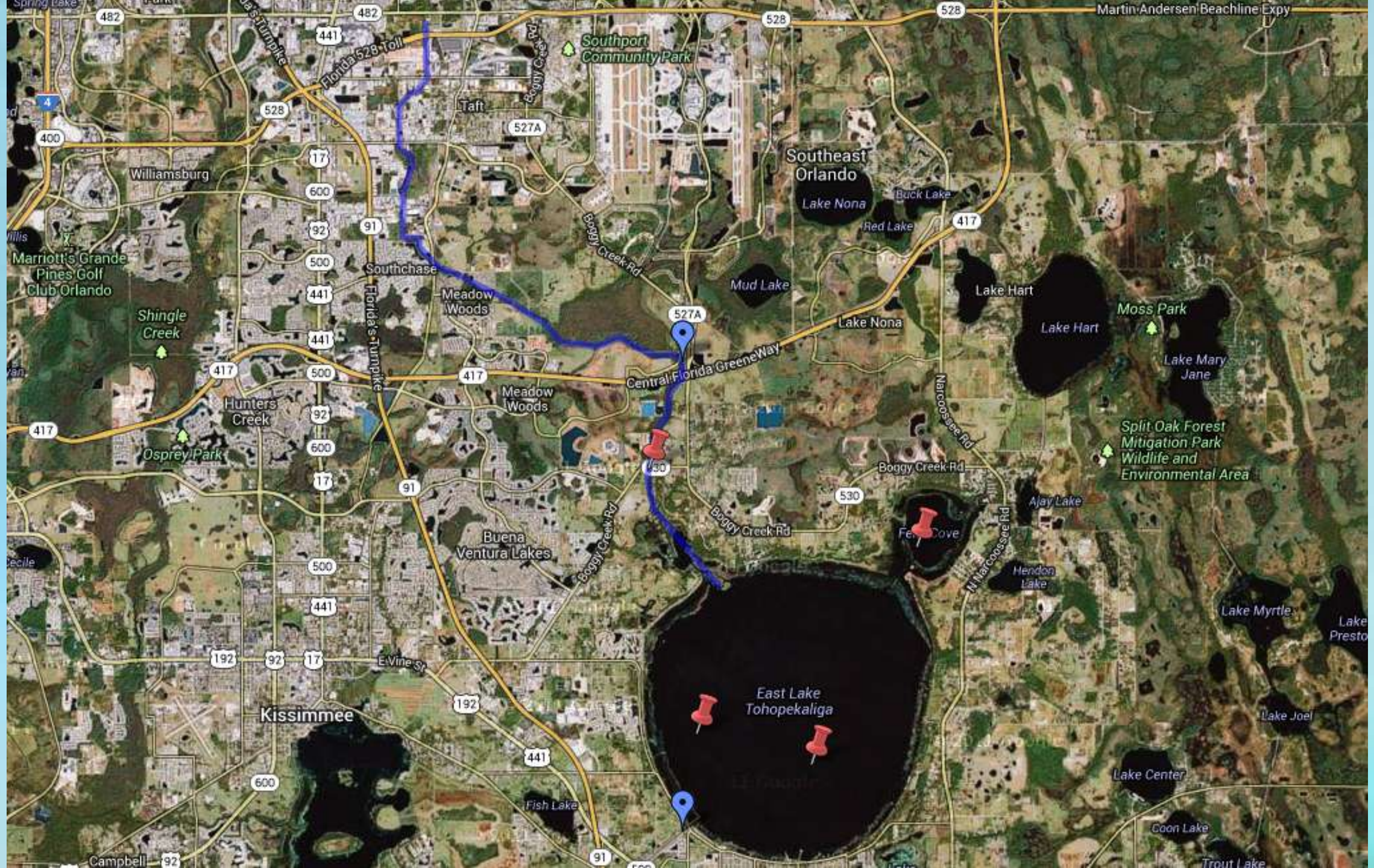
- C&SF Project conveys Upper Basin runoff through the Chain of Lakes to the Kissimmee River and Lake Okeechobee
  - S-58 is divide structure
    - ❖West Chain Flows North from S-58
    - ❖East Chain Flows South from S-58
  - Boggy, Shingle and Reedy Creek drain the northern portion of the basin



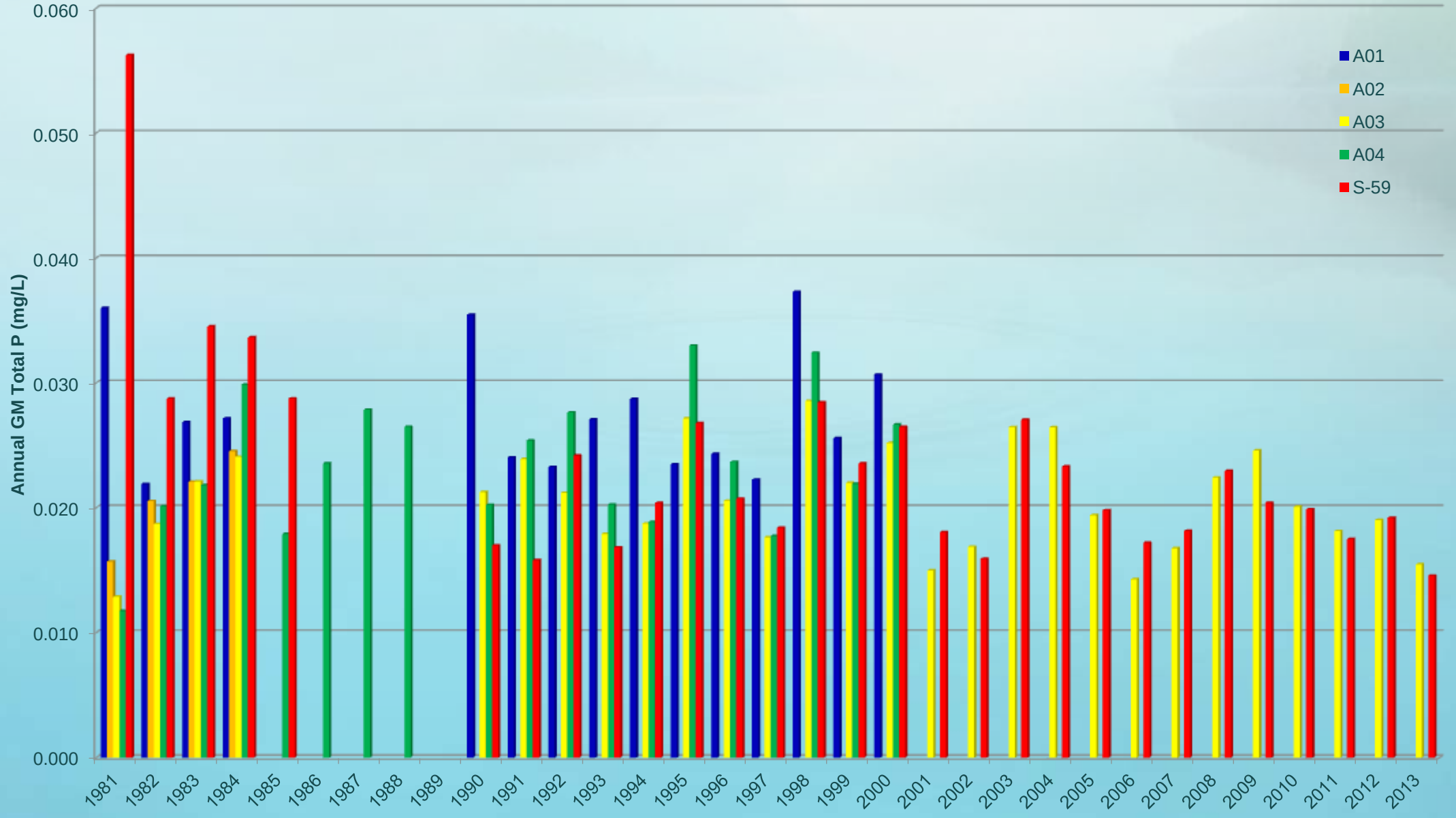
Boggy Creek TP Concentrations (+/- 1 SE)

Boggy Creek Flow Data Frequency Distribution (1959-2013)

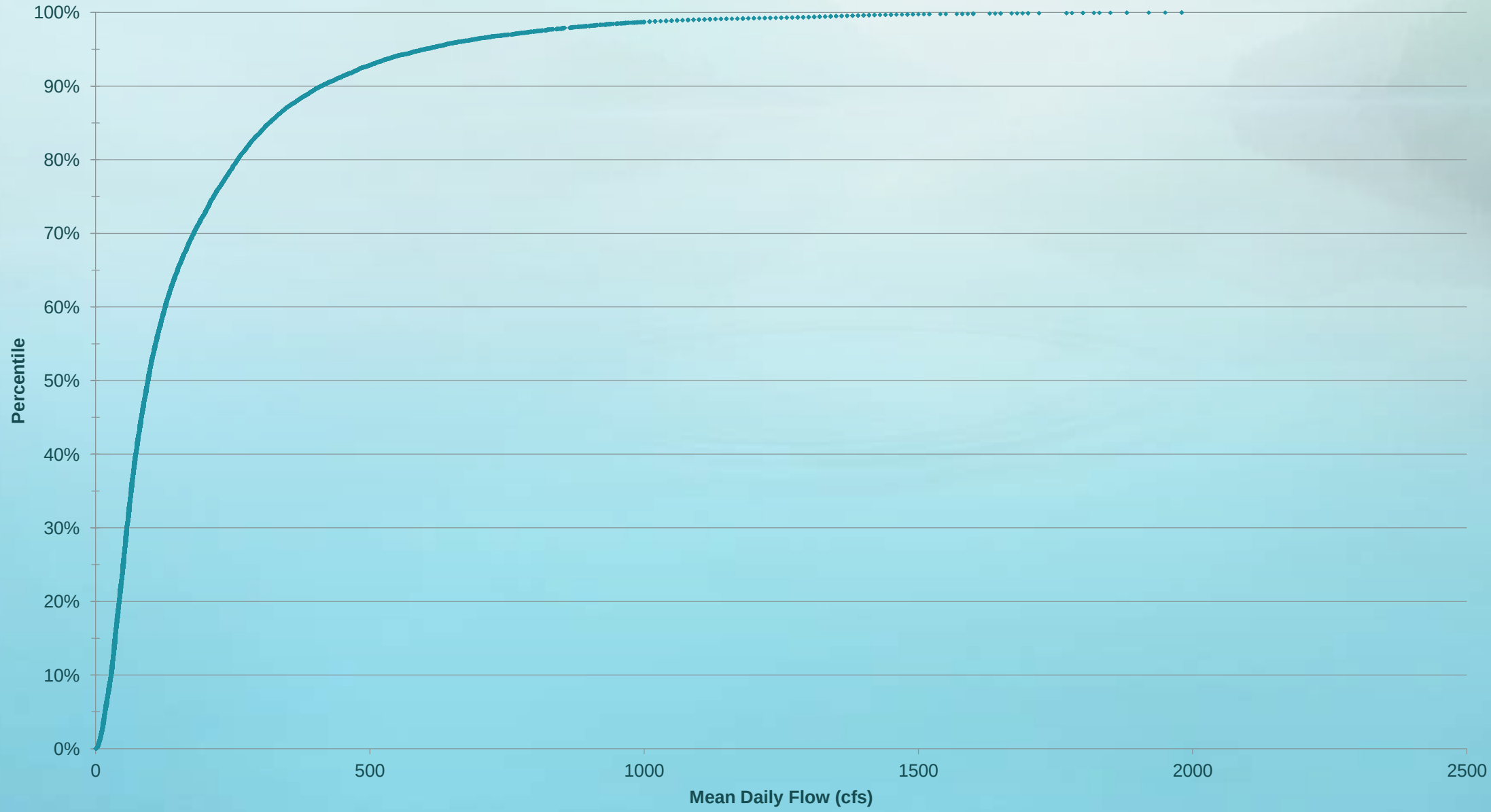


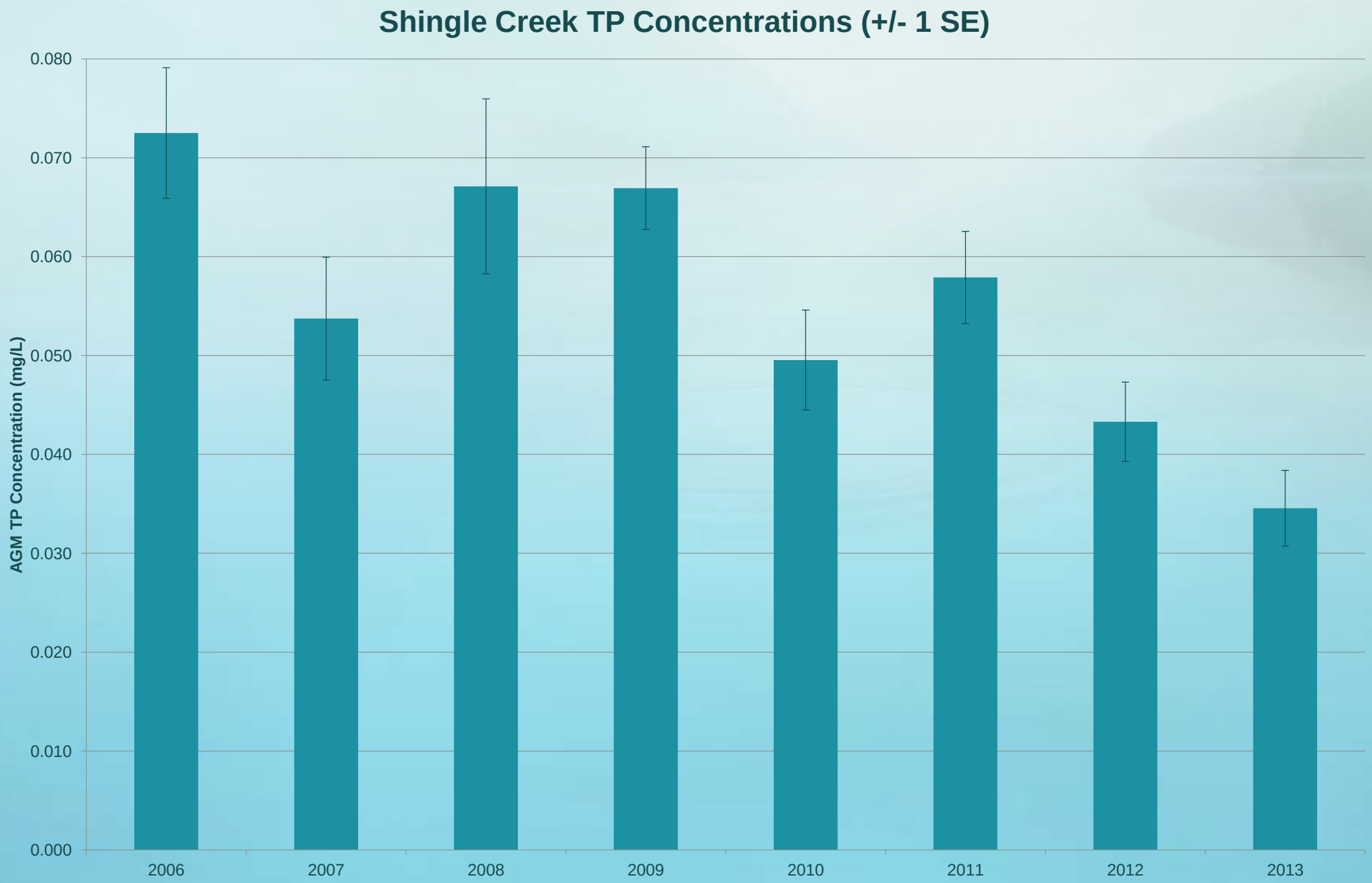

Martin Andersen Beachline Expy
Florida 528 Toll
Southport Community Park
Taft
Boggy Creek Rd
Southeast Orlando
Lake Nona
Buck Lake
Red Lake
Williamsburg
Marriott's Grande Pines Golf Club Orlando
Shingle Creek
Southchase
Meadow Woods
Florida's Turnpike
Mud Lake
Lake Hart
Moss Park
Lake Mary Jane
Central Florida GreeneWay
Hunters Creek
Osprey Park
Narcoossee Rd
Split Oak Forest Mitigation Park Wildlife and Environmental Area
Ajay Lake
Buena Ventura Lakes
Hendon Lake
Lake Myrtle
Kissimmee
East Lake Tohopekaliga
Lake Joel
Lake Center
Fish Lake
Coon Lake
Trout Lake
Campbell
E Vine St

E Lake Tohopekaliga Total Phosphorus (1981-2013)

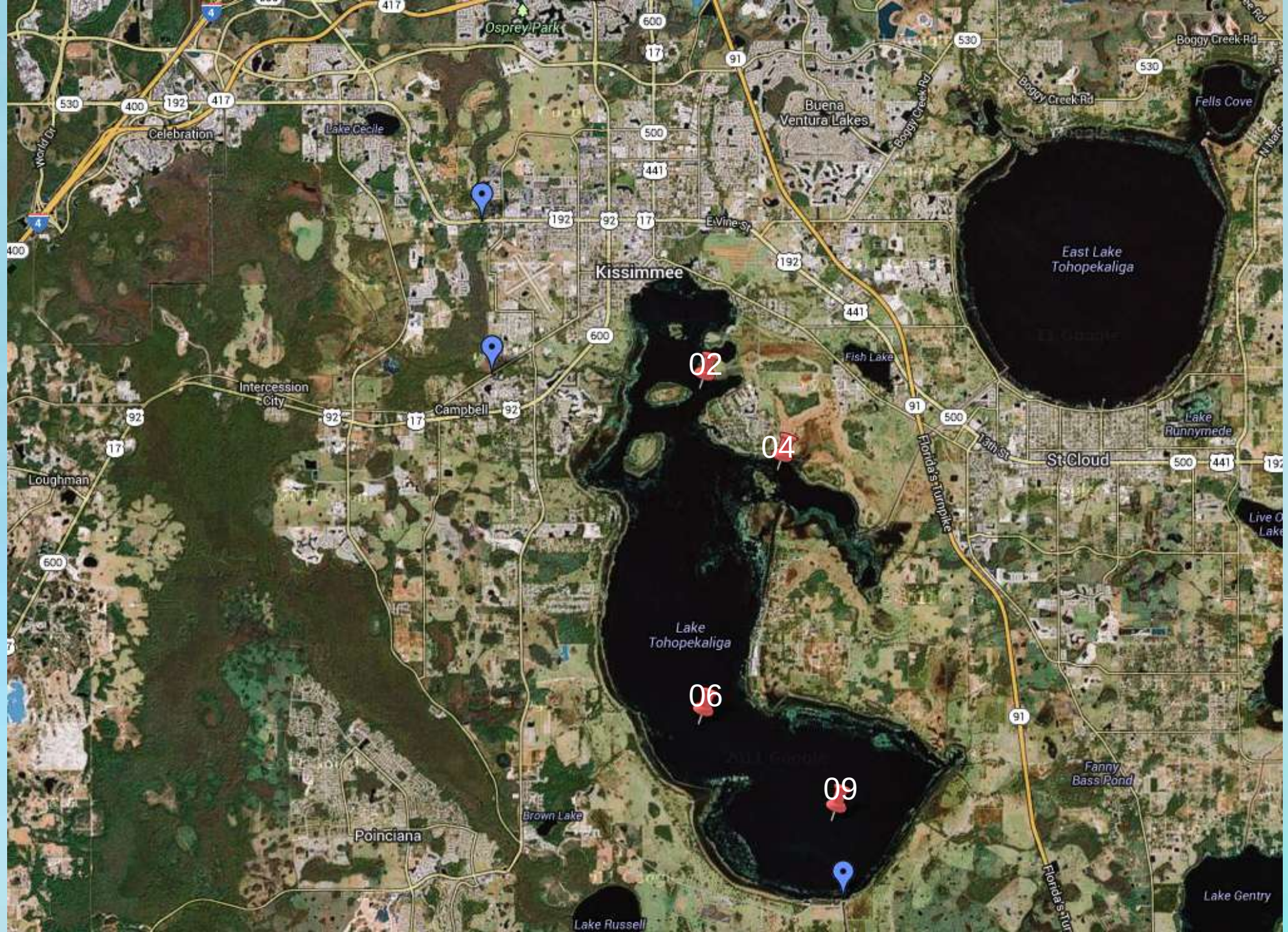


Shingle Creek USGS Gauge Data Distribution (Oct 1968 - May 2013)

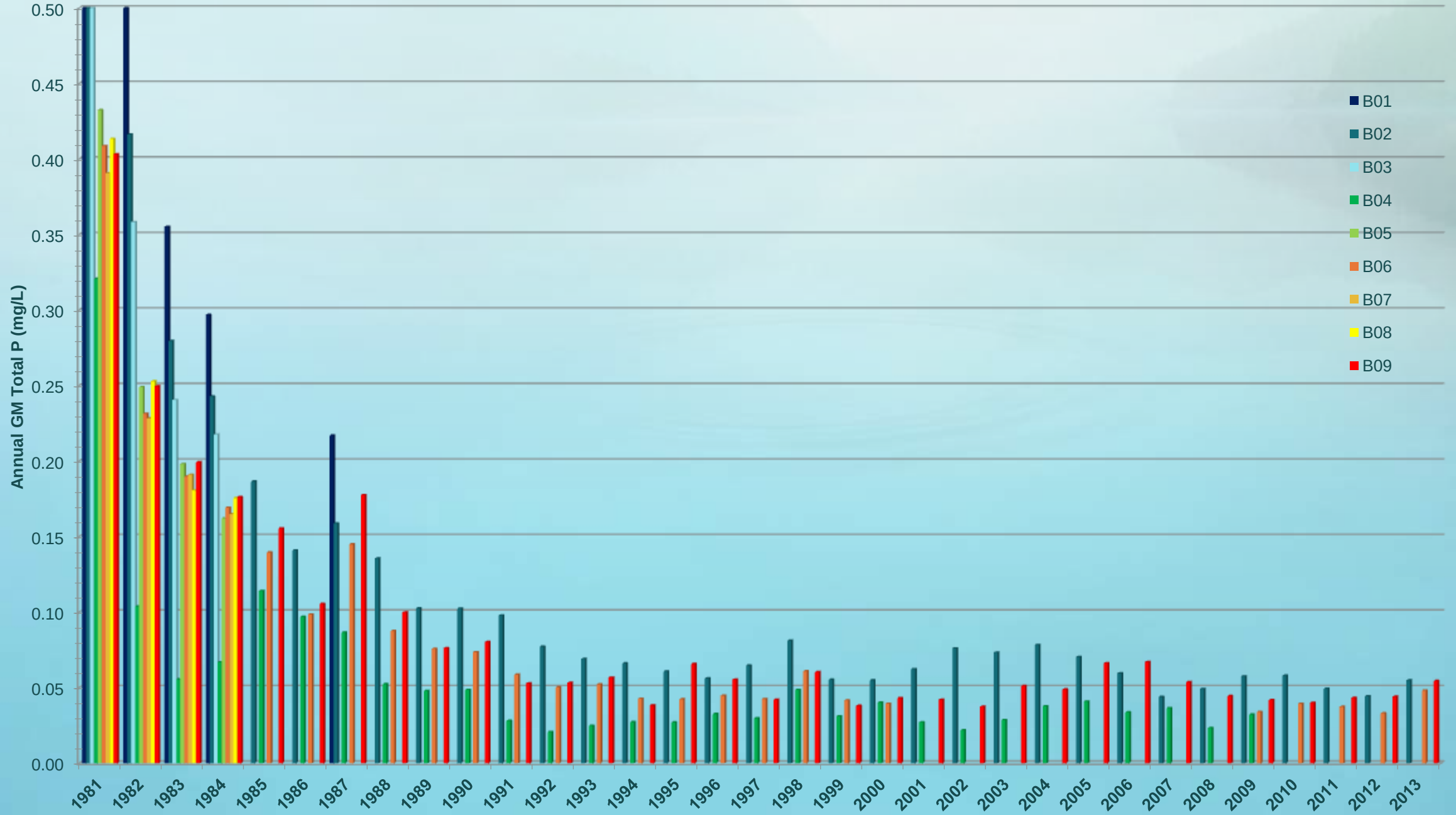



Shingle Creek TP Concentrations (+/- 1 SE)
AGM TP Concentration (mg/L)
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
2006
2007
2008
2009
2010
2011
2012
2013

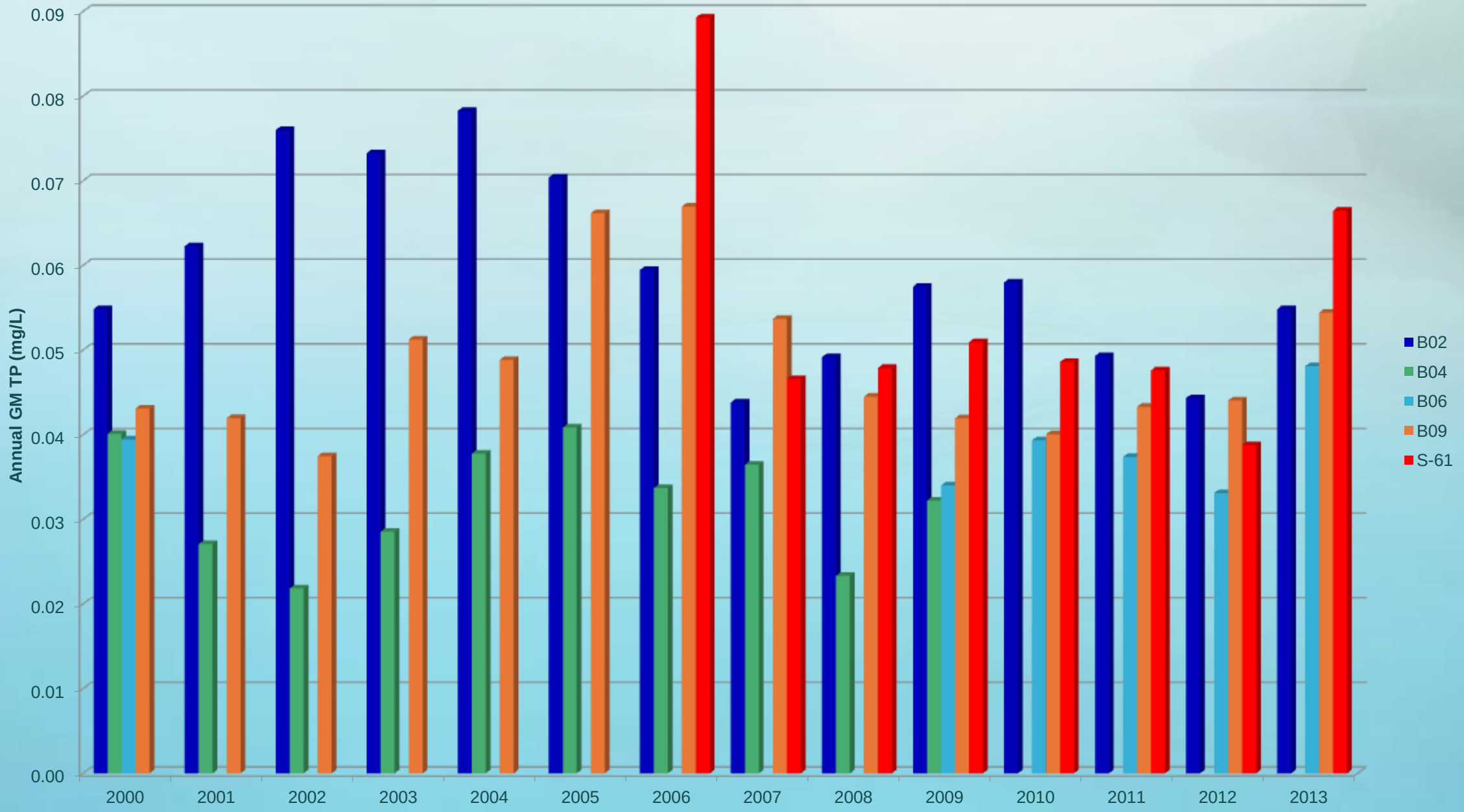
Why You Should Always Buy the Computer Warranty

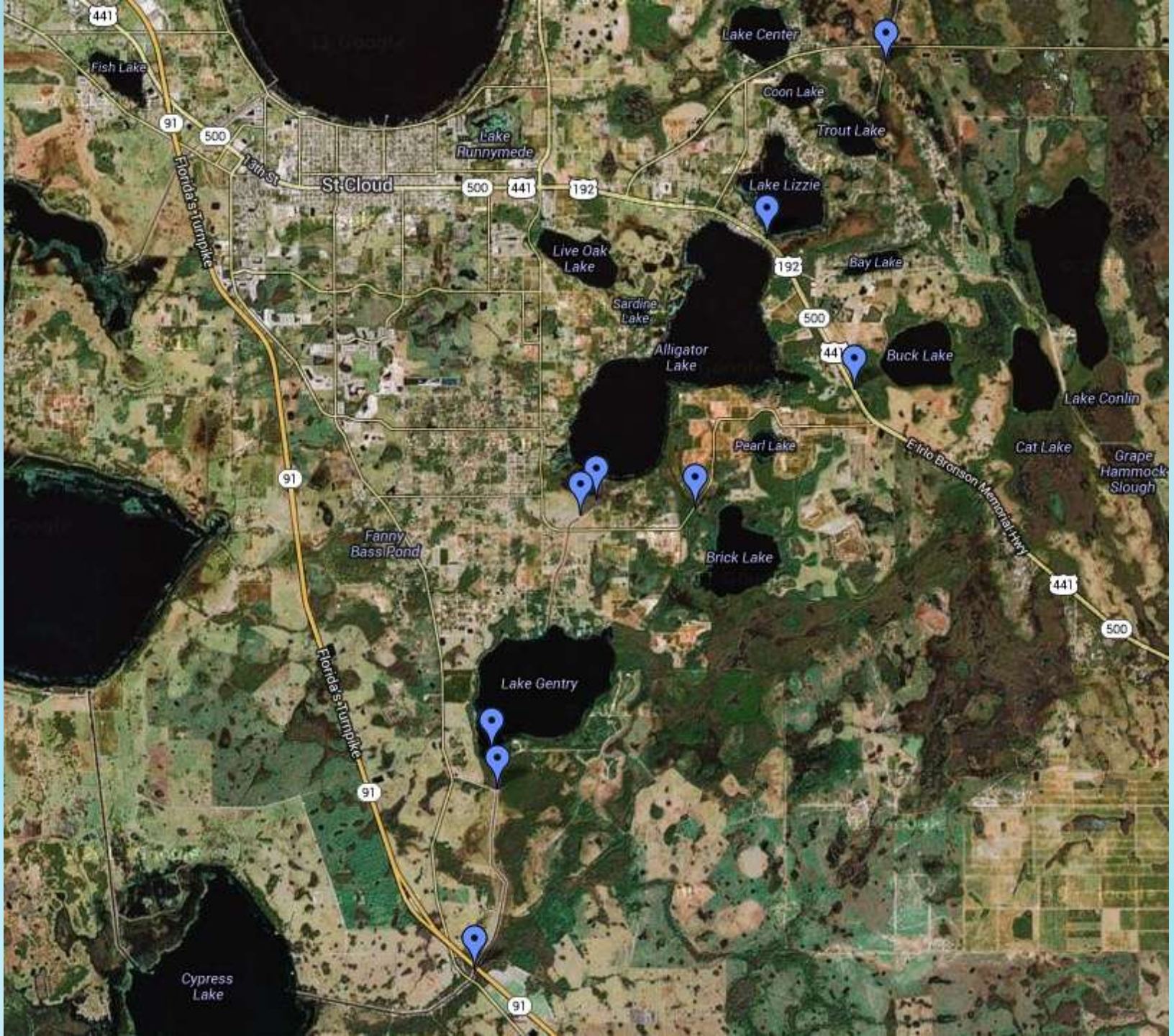

02
04
06
09
Kissimmee
Campbell
Intercession City
Loughman
Poinciana
Celebration
Osprey Park
Lake Cecile
Buena Ventura Lakes
East Lake Tohopekaliga
Lake Tohopekaliga
Fish Lake
St Cloud
Lake Runnymede
Fanny Bass Pond
Brown Lake
Lake Russell
Lake Gentry
Fells Cove
Boggy Creek Rd
E Vine St
Florida's Turnpike
13th St

Lake Tohopekaliga Total Phosphorus Data (1981-2013)

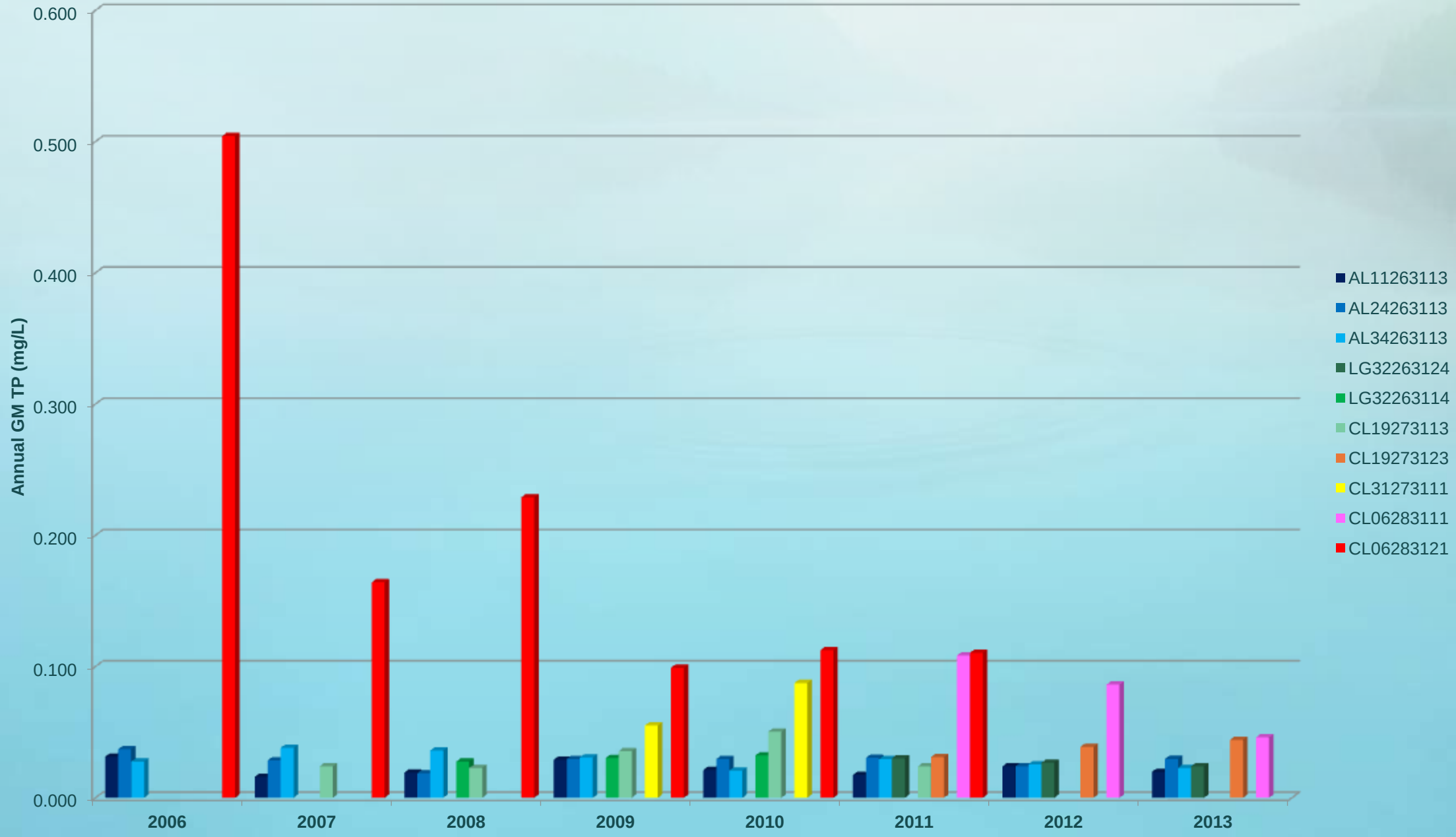


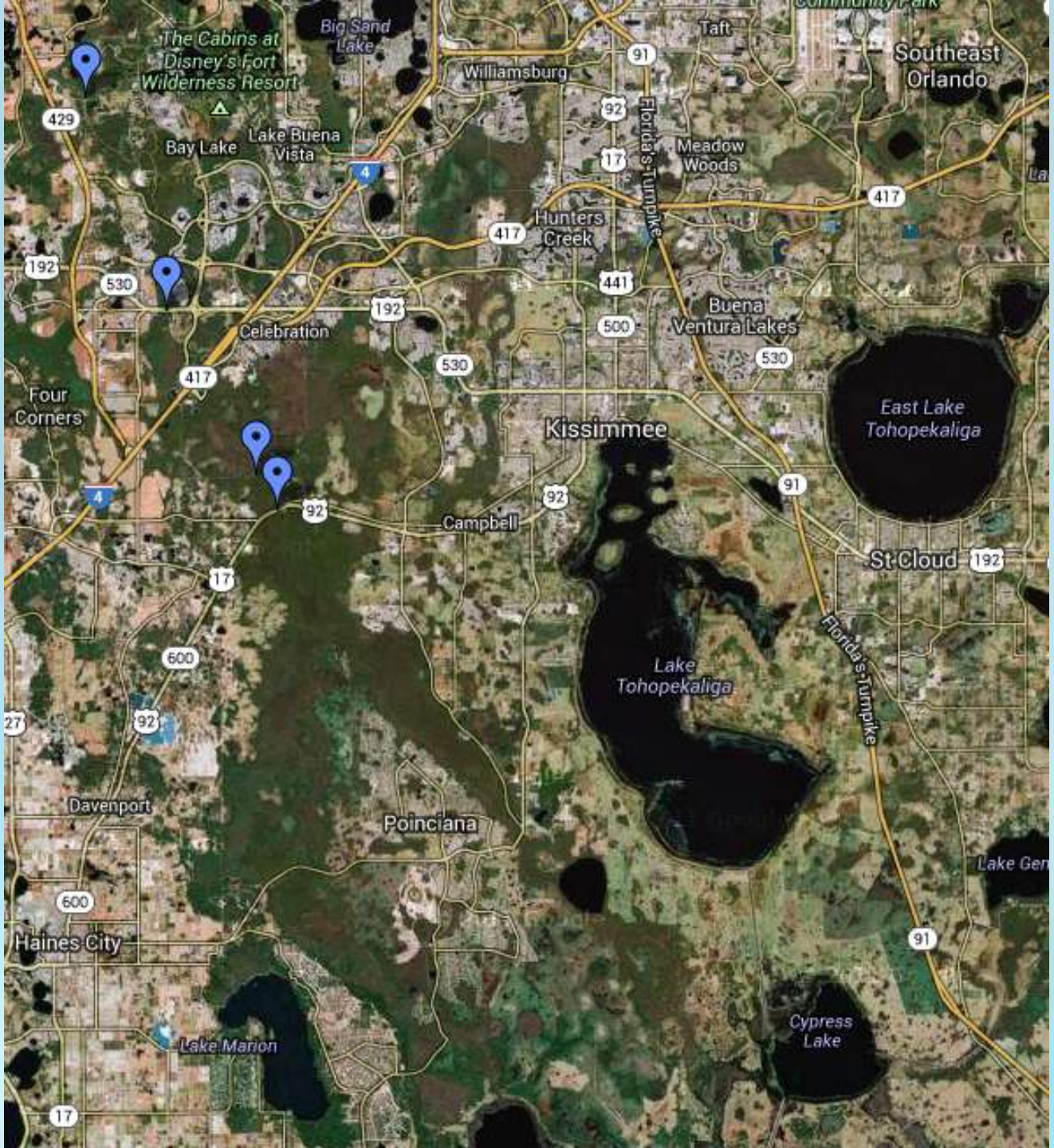
Lake Toho In-lake + Outfall Station TP Data



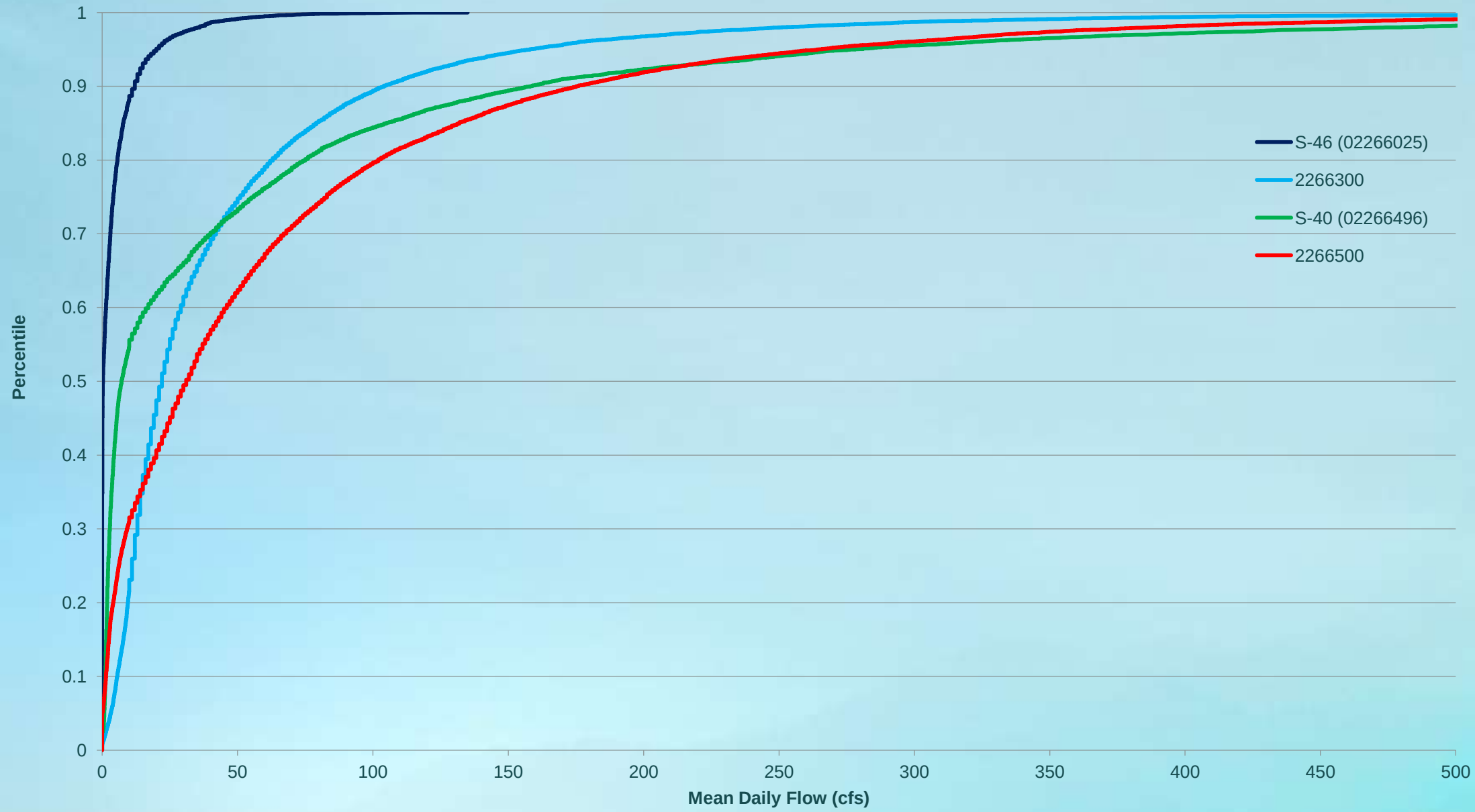

441
Fish Lake
91
500
Florida's Turnpike
14th St
St Cloud
500
441
192
Lake Runnymede
Lake Center
Coon Lake
Trout Lake
Lake Lizzie
Live Oak Lake
192
Bay Lake
Sardine Lake
500
Alligator Lake
441
Buck Lake
Lake Conlin
Pearl Lake
E Irlo Bronson Memorial Hwy
Cat Lake
Grape Hammock Slough
91
Fanny Bass Pond
Brick Lake
441
500
Florida's Turnpike
Lake Gentry
91
Cypress Lake
91

East Chain (Alligator Lake, Lake Gentry) Total Phosphorus

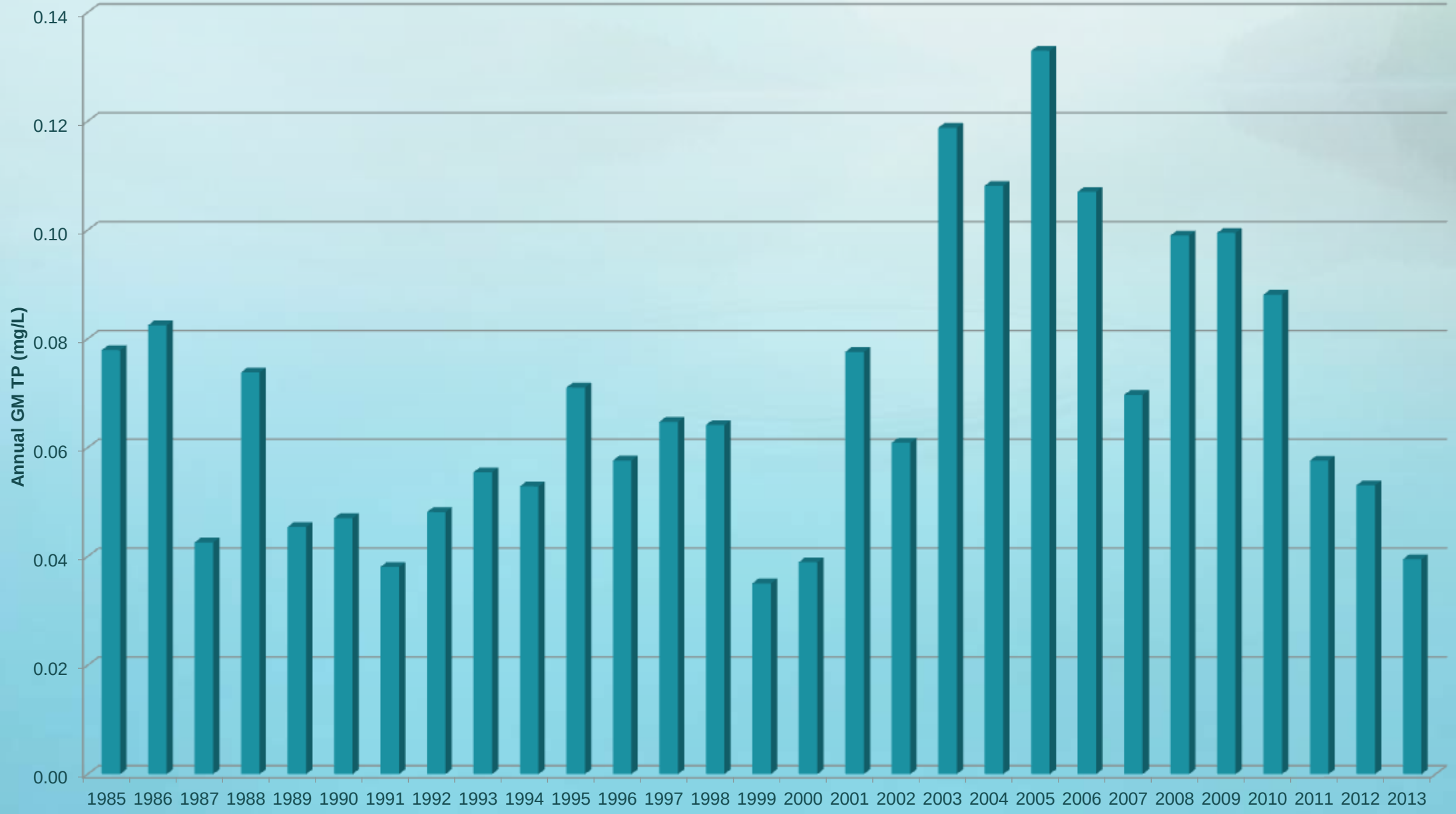



The Cabins at Disney's Fort Wilderness Resort
Big Sand Lake
Taft
Williamsburg
Southeast Orlando
Bay Lake
Lake Buena Vista
Meadow Woods
Florida's Turnpike
Hunters Creek
Celebration
Buena Ventura Lakes
Four Corners
Kissimmee
East Lake Tohopekaliga
Campbell
St Cloud
Lake Tohopekaliga
Davenport
Poinciana
Haines City
Lake Marion
Cypress Lake
429
192
530
417
441
500
4
92
91
17
600
27

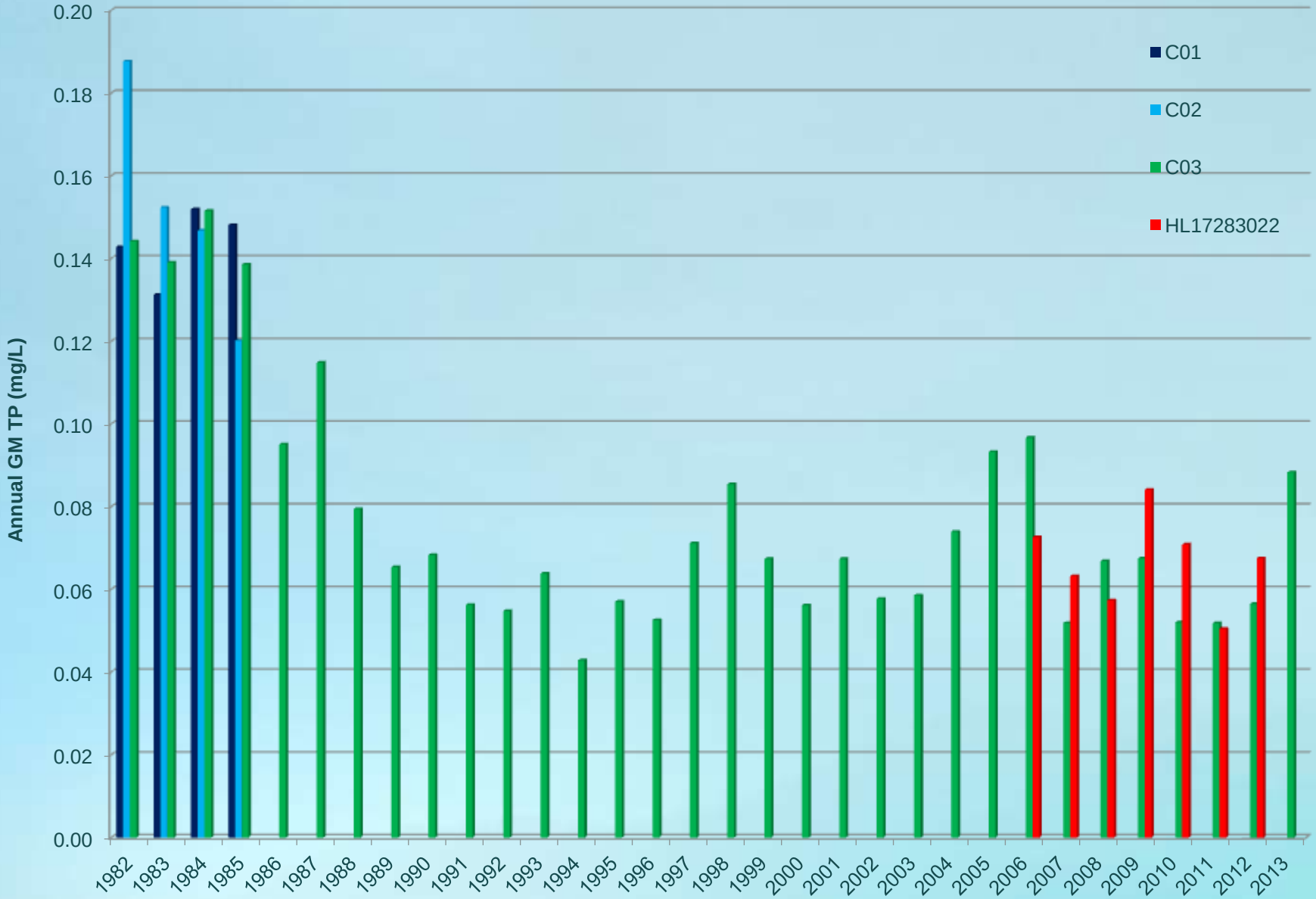
Reedy Creek Flow Stations - Frequency Distribution



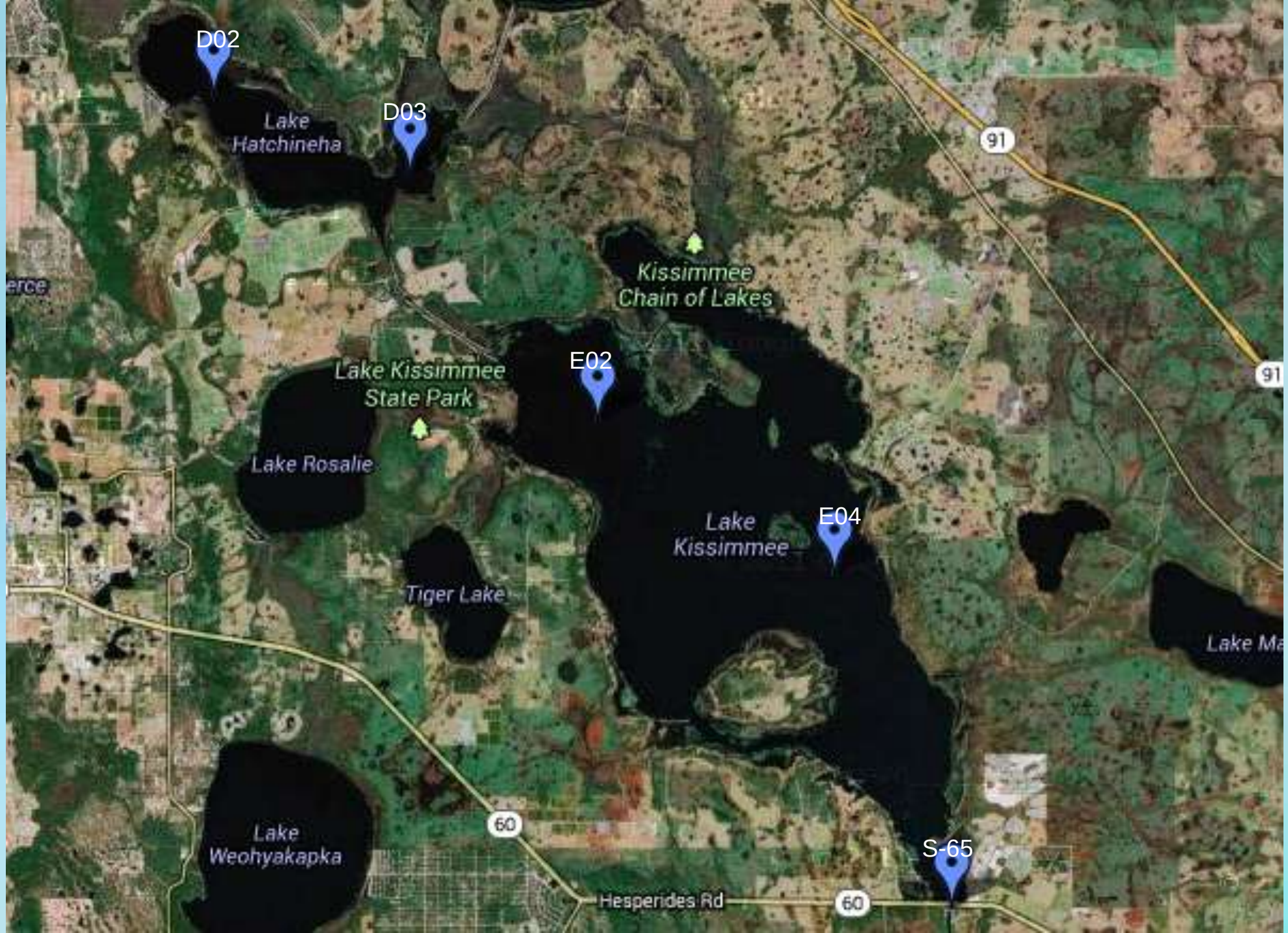
Reedy Creek Total Phosphorus (1985-2013)



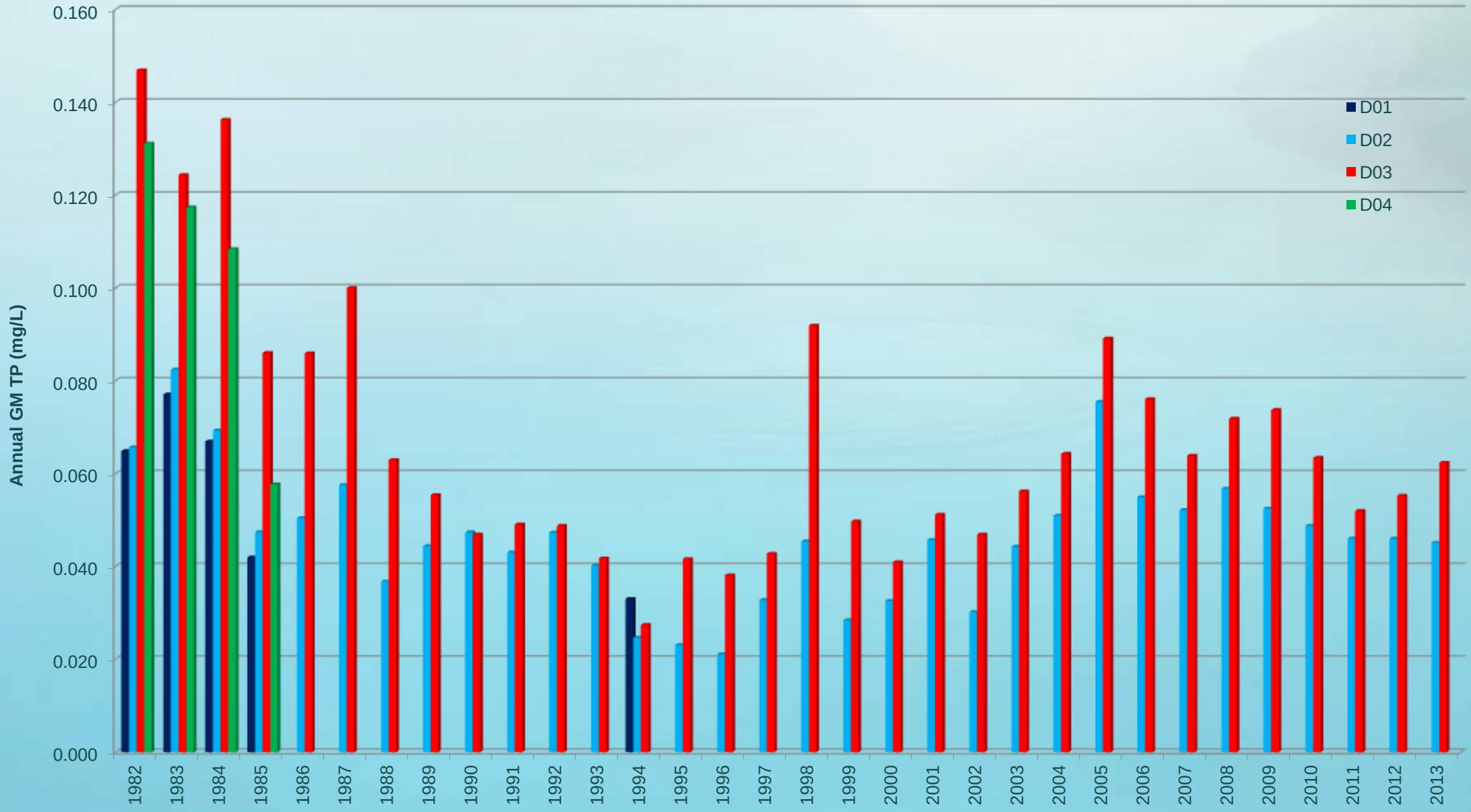
Cypress Lake Total Phosphorus (1982-2013)



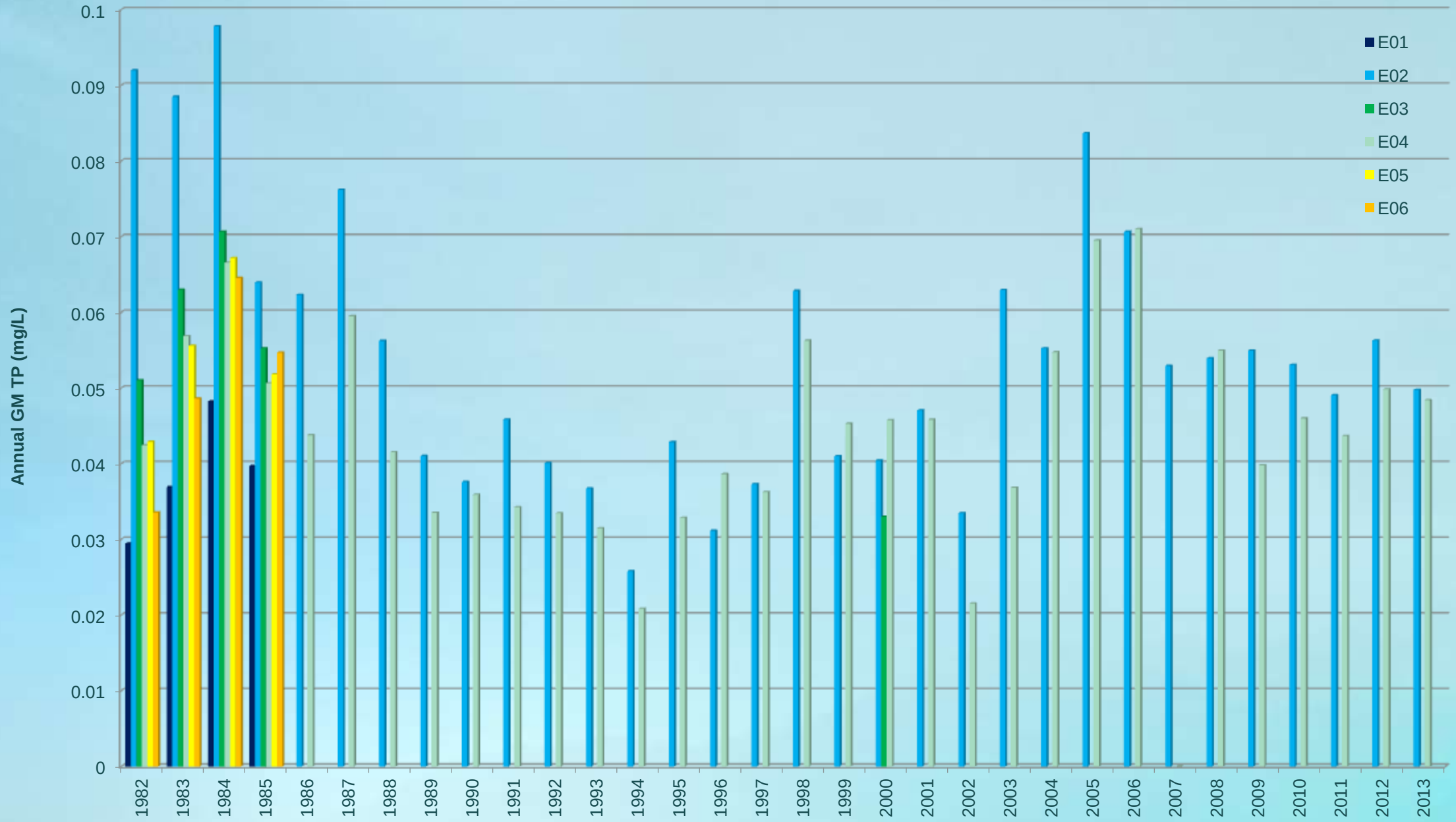
Batman's Secret Seems to Have Been Compromised


D02
D03
Lake Hatchineha
Kissimmee Chain of Lakes
E02
Lake Kissimmee State Park
Lake Rosalie
E04
Lake Kissimmee
Tiger Lake
Lake Weohyakapka
S-65
Hesperides Rd
91
91
60
60

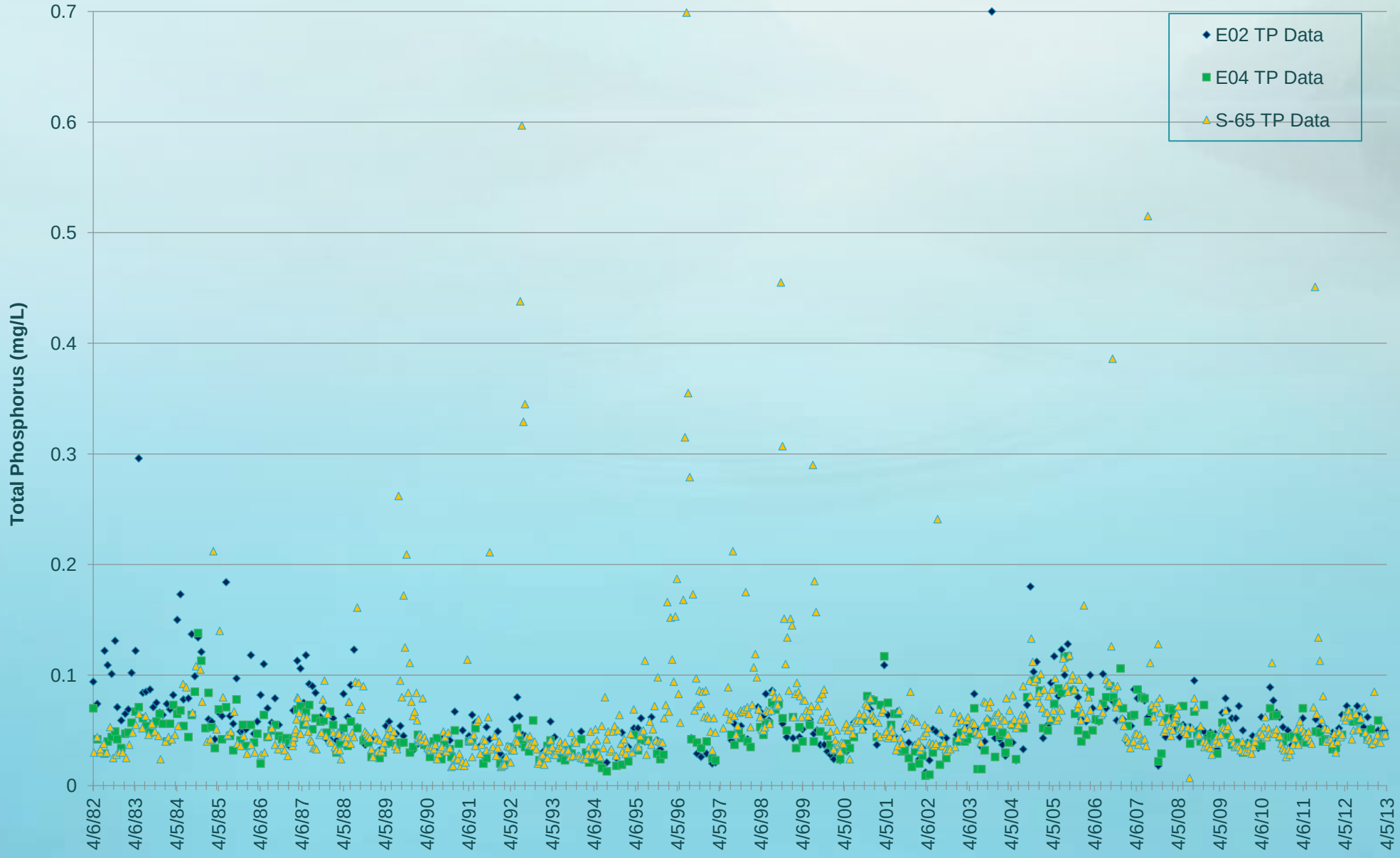
Lake Hatchineha Total Phosphorus (1982-2013)



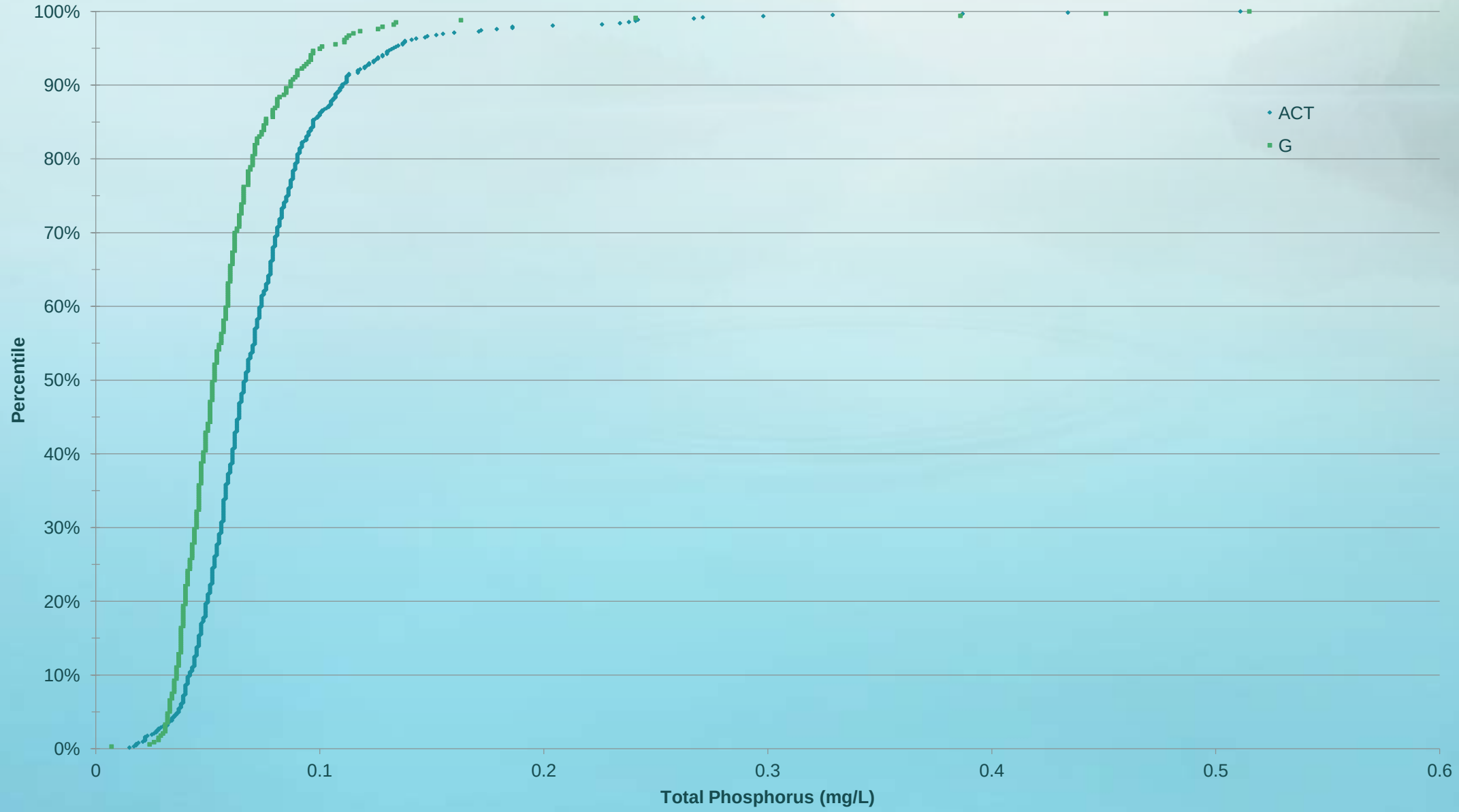
Lake Kissimmee Total Phosphorus



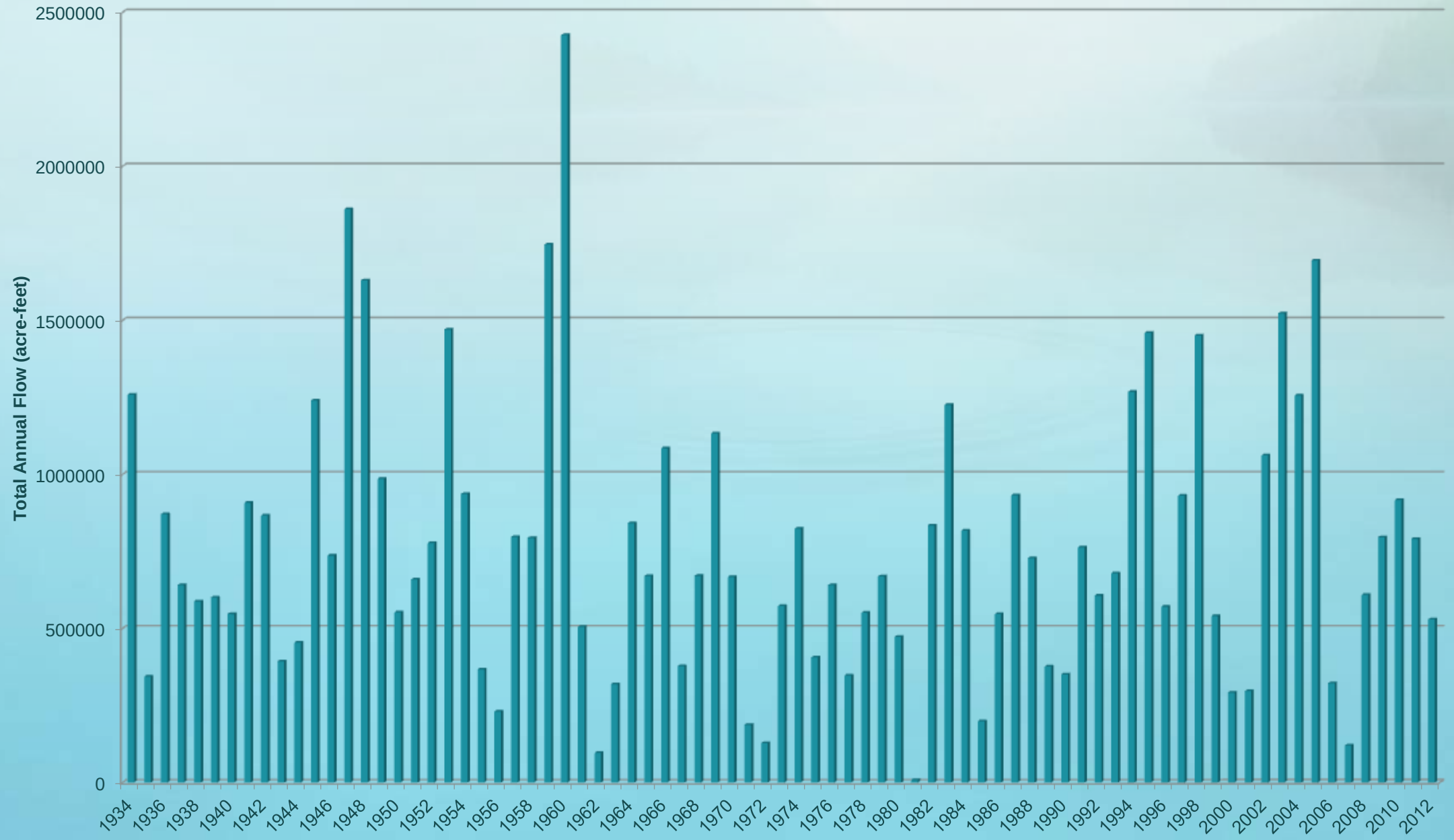
Lake Kissimmee In-Lake and S-65 Total Phosphorus

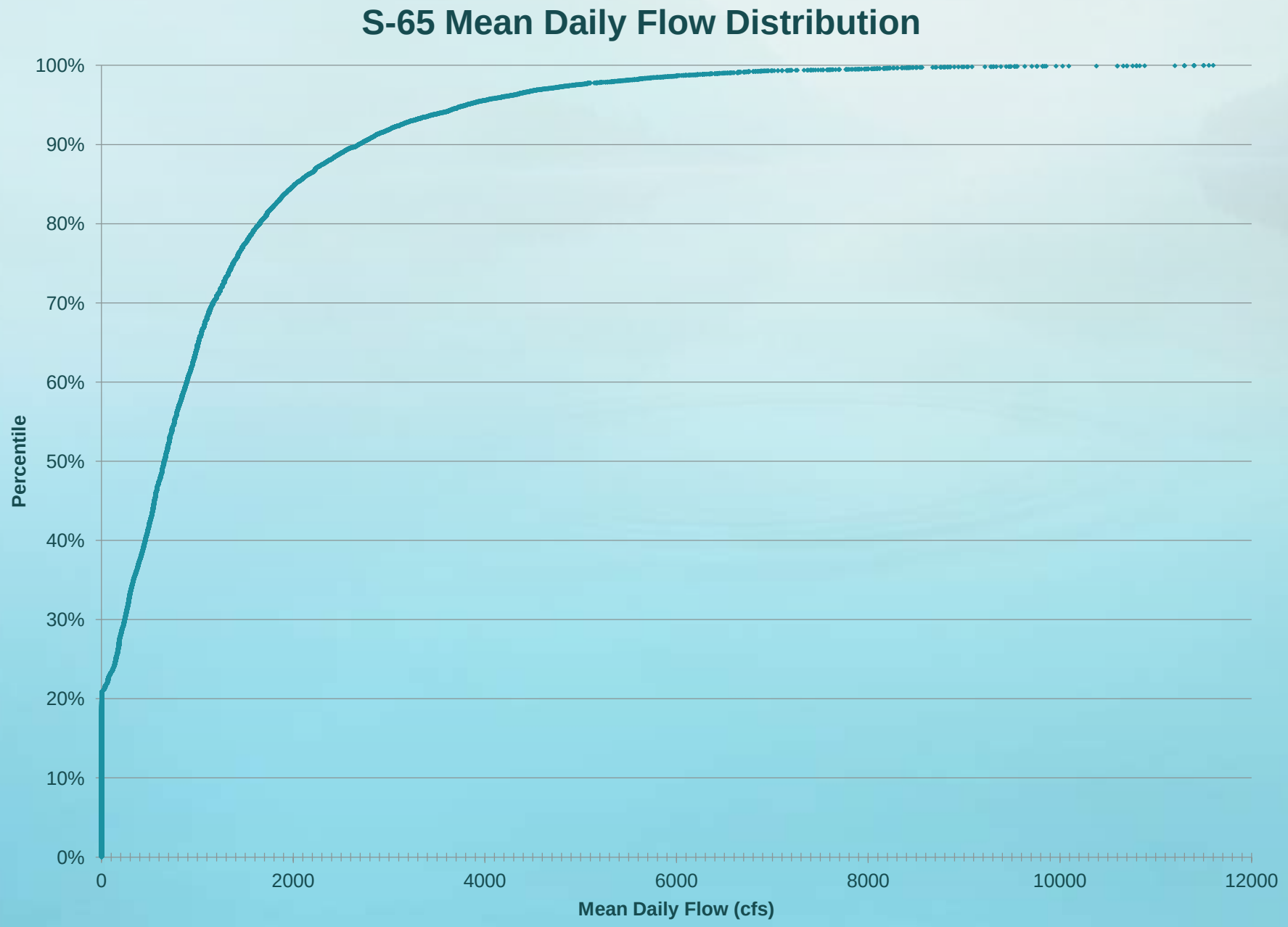


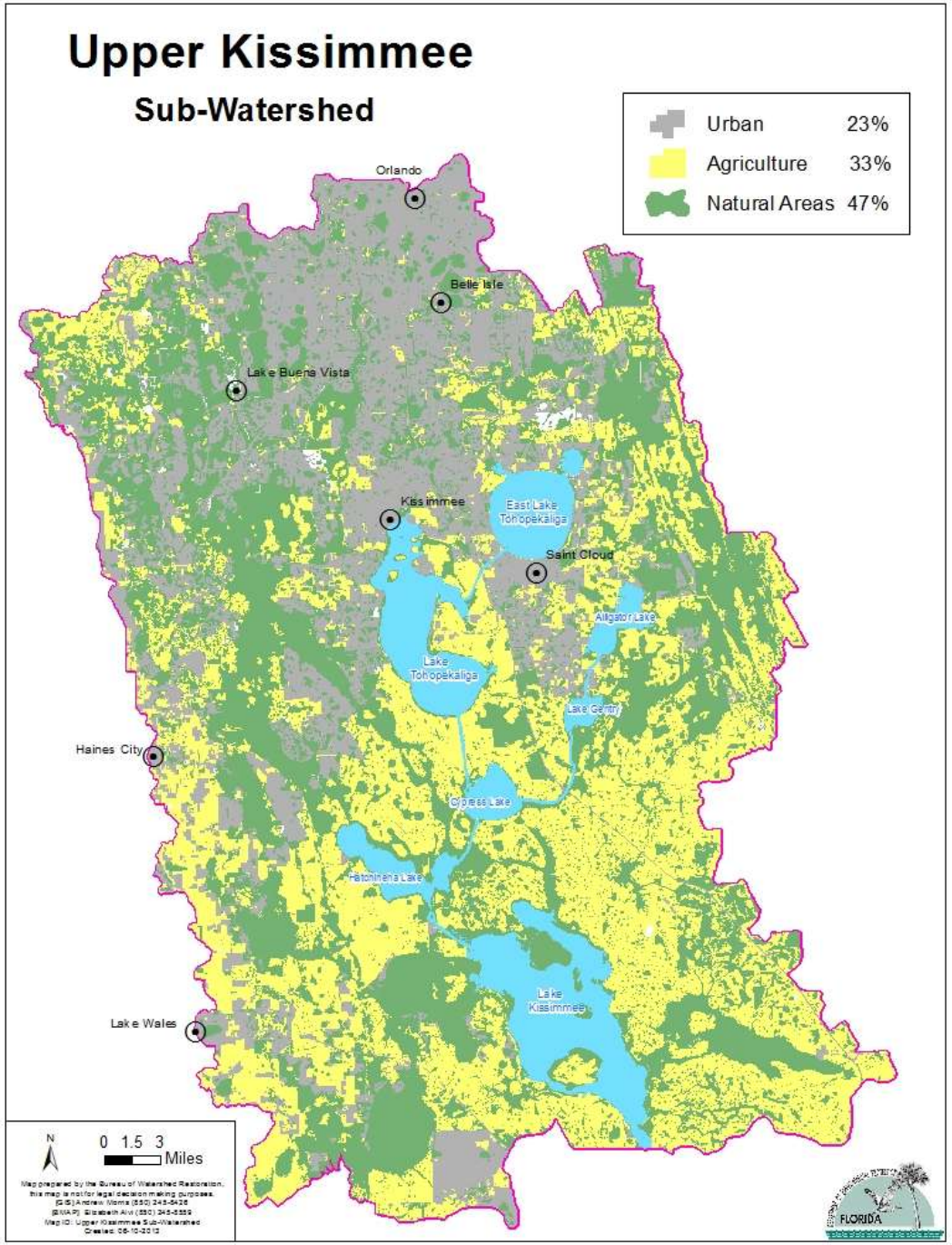
S-65 ACT Data vs Grab Samples



S-65 Total Annual Flows (1934-2012)




S-65 Mean Daily Flow Distribution
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Percentile
0
2000
4000
6000
8000
10000
12000
Mean Daily Flow (cfs)

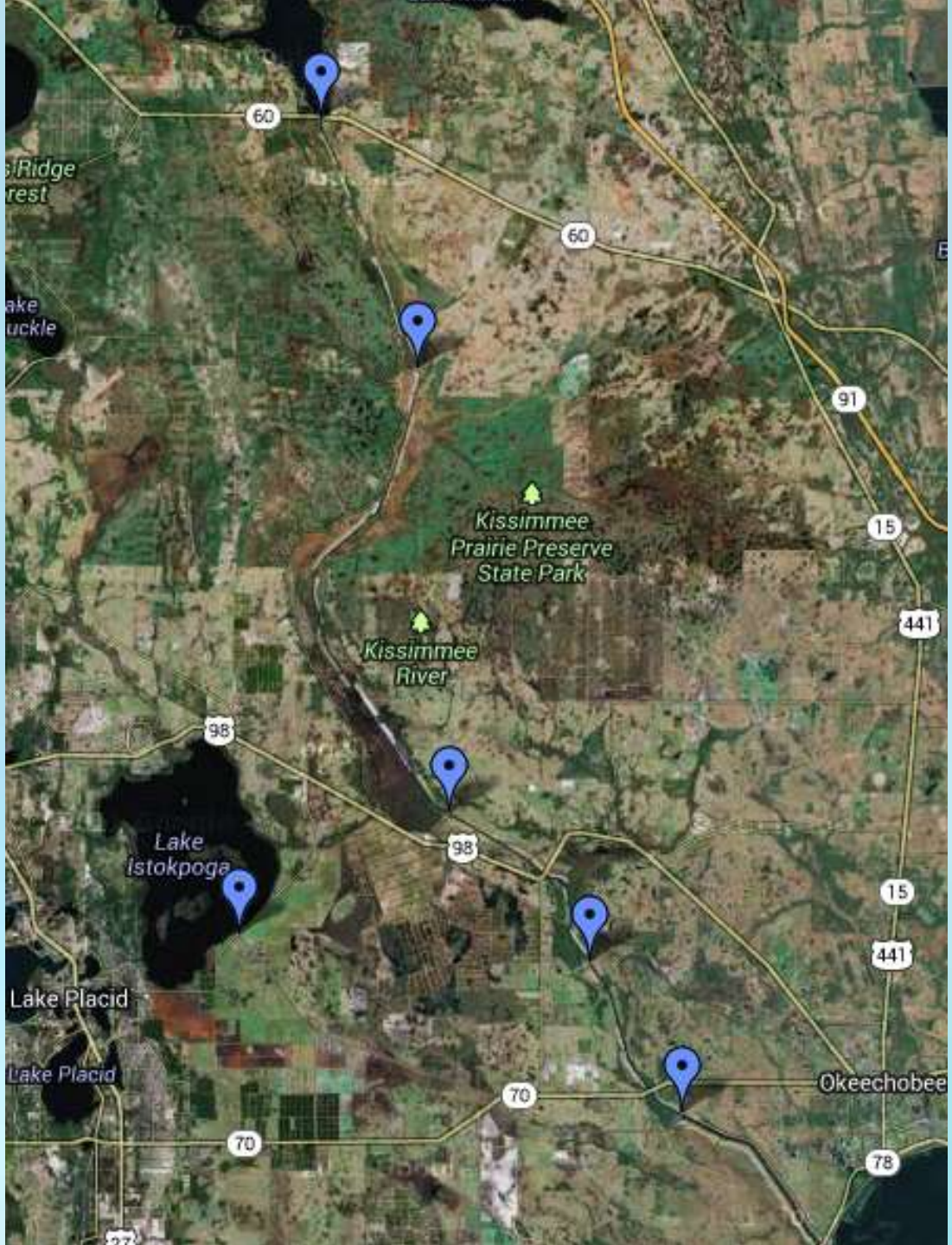

Upper Kissimmee
Sub-Watershed
Urban 23%
Agriculture 33%
Natural Areas 47%
Orlando
Belle Isle
Lake Buena Vista
Kissimmee
East Lake Tohopekaliga
Saint Cloud
Alligator Lake
Lake Tohopekaliga
Lake Gentry
Haines City
Cypress Lake
Hatchineha Lake
Lake Kissimmee
Lake Wales
N
0 1.5 3
Miles
FLORIDA

An Example of More Clear Computer Messages

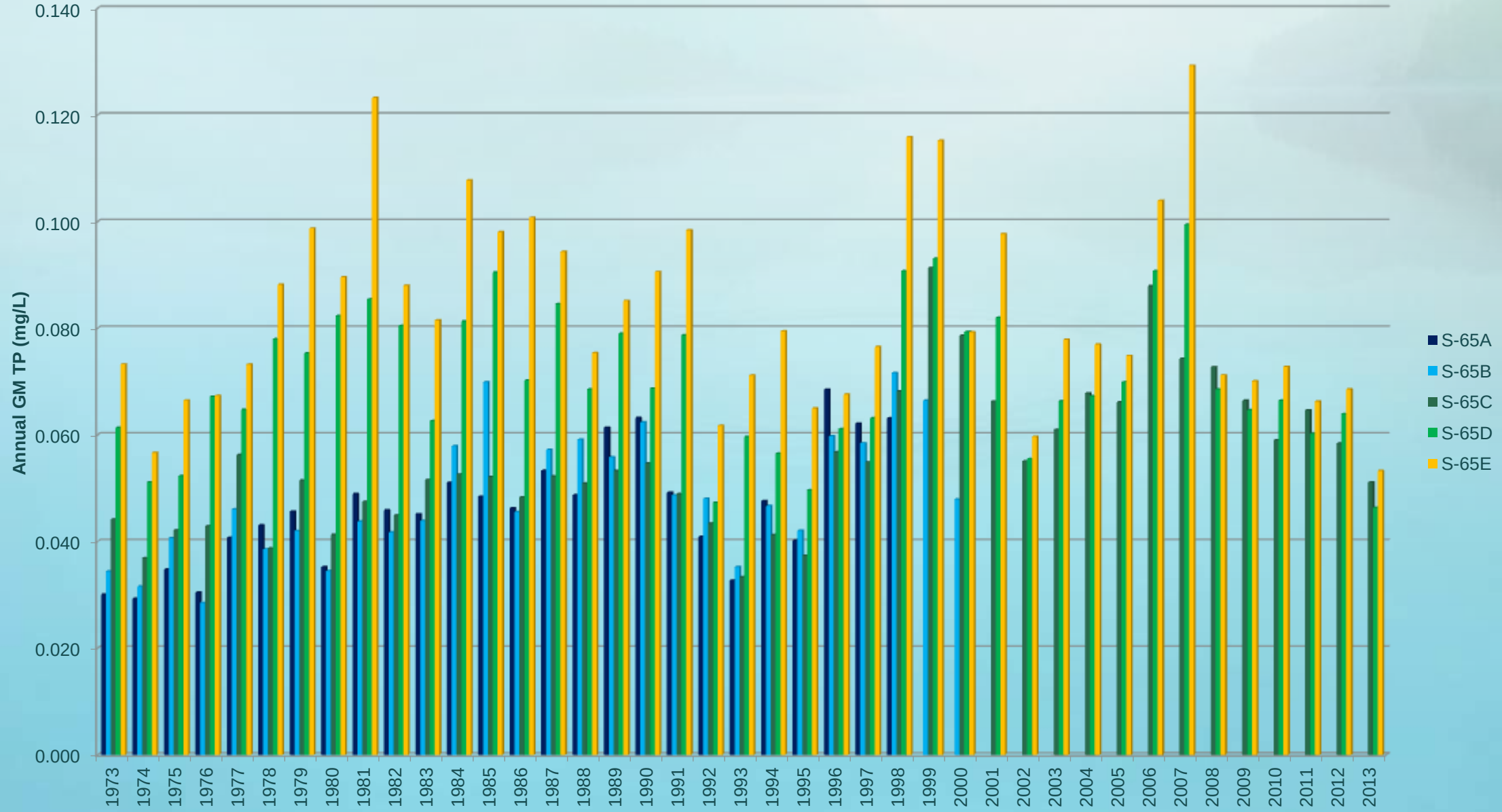
Upper Kissimmee Watershed Data Summary

- TP Levels generally low
- Some indications in data of local sources
- Flow data typically “flashy”

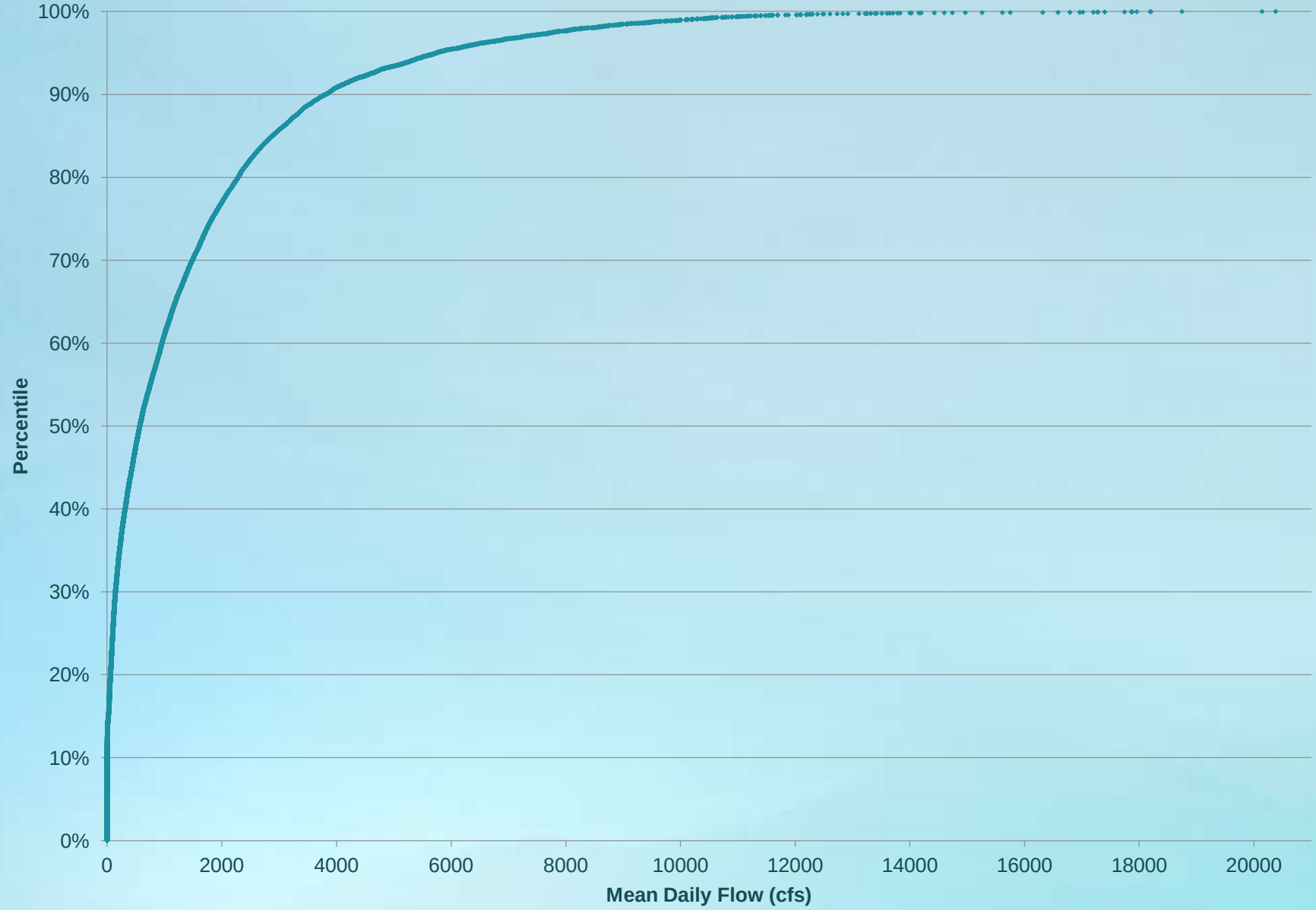
Lower Kissimmee Sub-Watershed

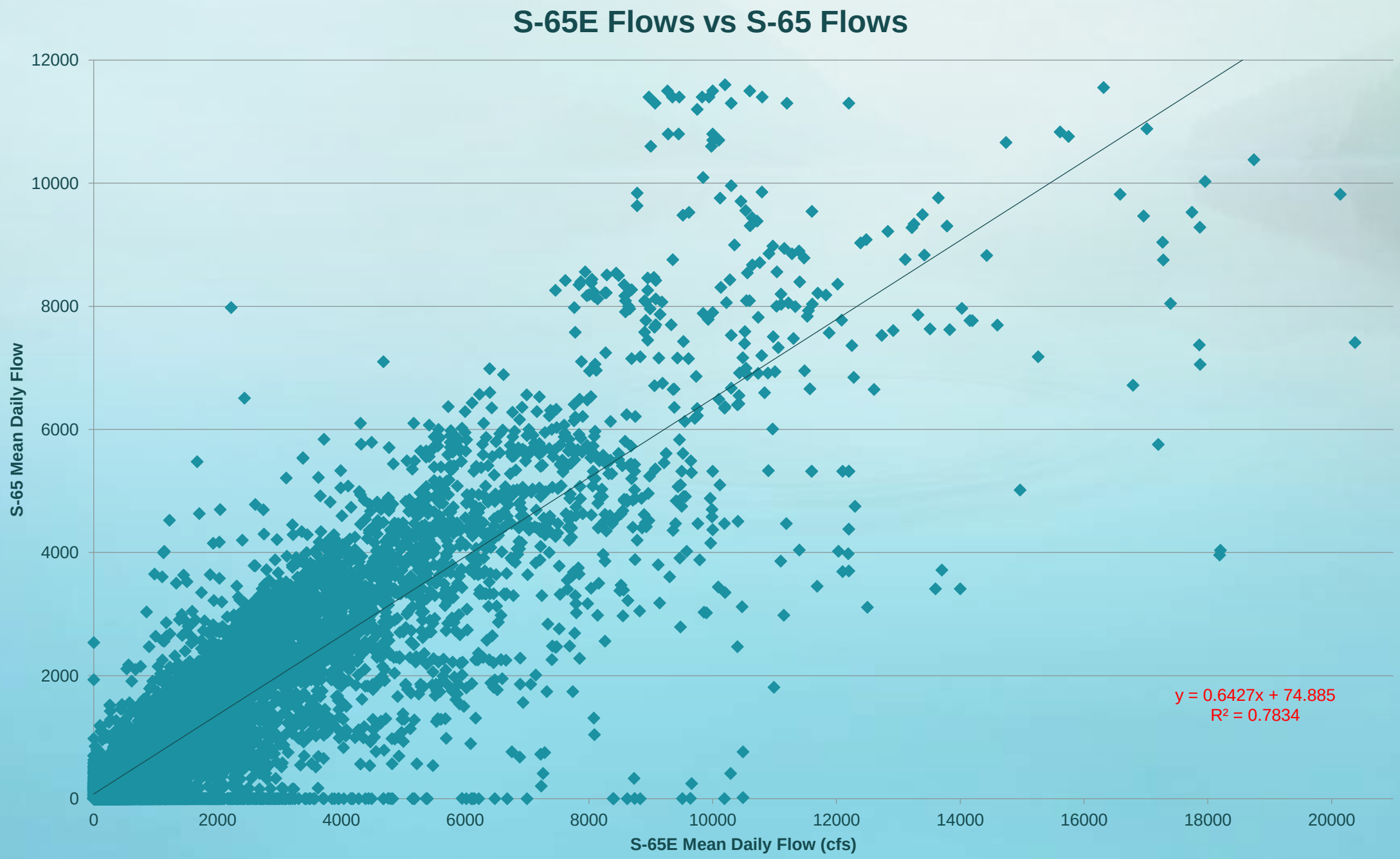

60
60
91
15
441
98
98
15
441
70
70
78
Kissimmee
Prairie Preserve
State Park
Kissimmee
River
Lake
Istokpoga
Lake Placid
Lake Placid
Okeechobee

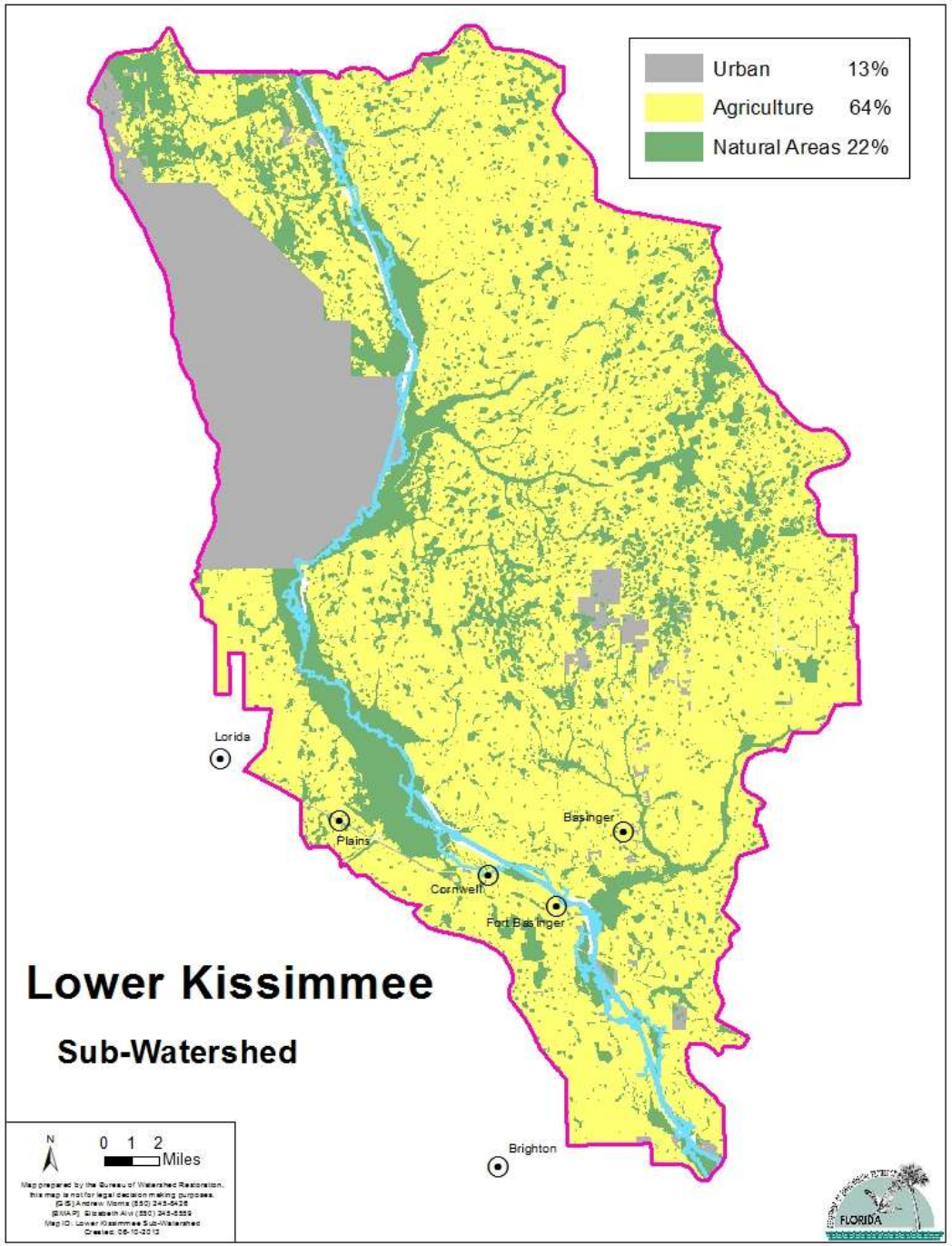
S-65A, B, C, D, & E Total Phosphorus



S-65E Flow Distribution




S-65E Flows vs S-65 Flows
S-65 Mean Daily Flow
S-65E Mean Daily Flow (cfs)
0
2000
4000
6000
8000
10000
12000
14000
16000
18000
20000
y = 0.6427x + 74.885
R² = 0.7834


Urban 13%
Agriculture 64%
Natural Areas 22%
Lorida
Plains
Basinger
Cornwell
Fort Basinger
Brighton
Lower Kissimmee
Sub-Watershed
N
0 1 2
Miles
FLORIDA

Take Home Message

- Continue emphasis on storage/hydrologic restoration to attenuate peak flows.
- Continue to implement source controls – may need targeted program to identify and remediate specific sources.
  - TP in upper Kissimmee sub-watershed generally lower than in lower Kissimmee sub-watershed
  - Upper Kissimmee sub-watershed provides ~ 64% of total flow from total of two sub-watersheds to Lake O

Questions?