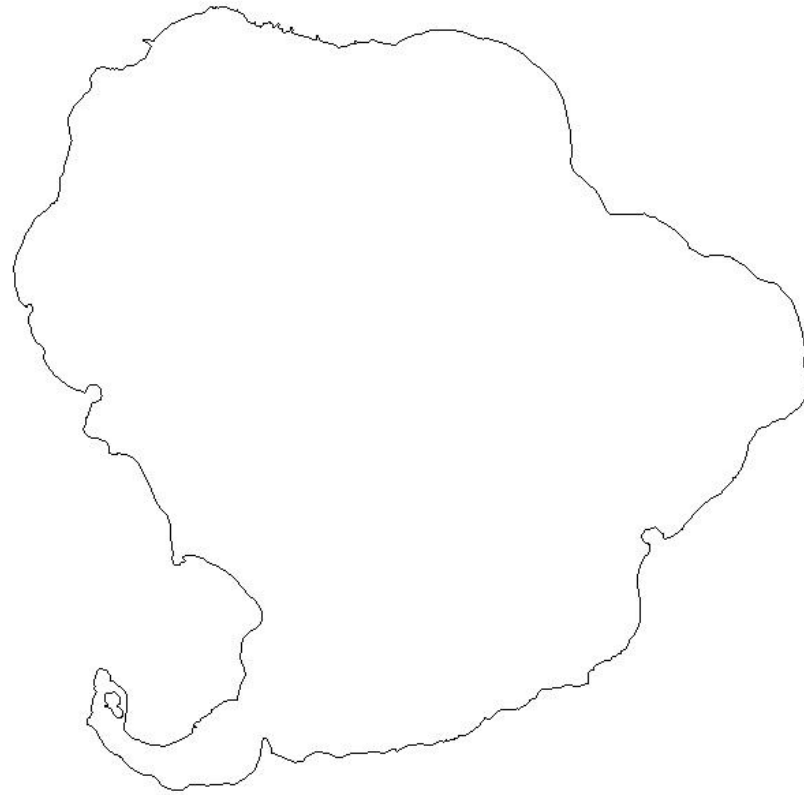


# Lake Apopka

## Trends in Water Quality



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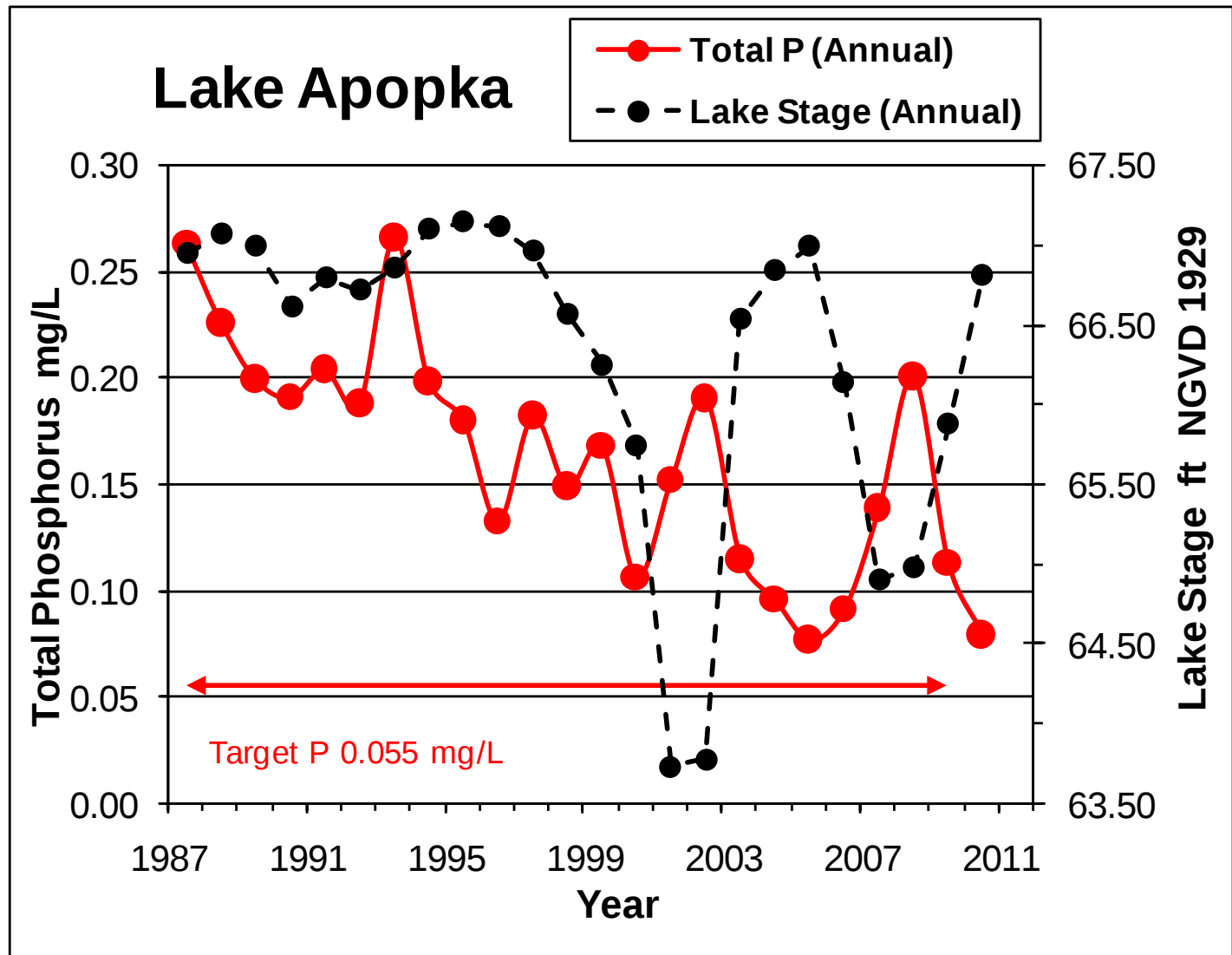


# Introduction and Overview

1. Water Quality (WQ) and hydrology
  - Total phosphorus
  - Chlorophyll *a*
  - Secchi
  - Total suspended solids
  - Water levels.
2. Changes to WQ relative to changes in Basin.
3. Present and Future Monitoring in Basin.



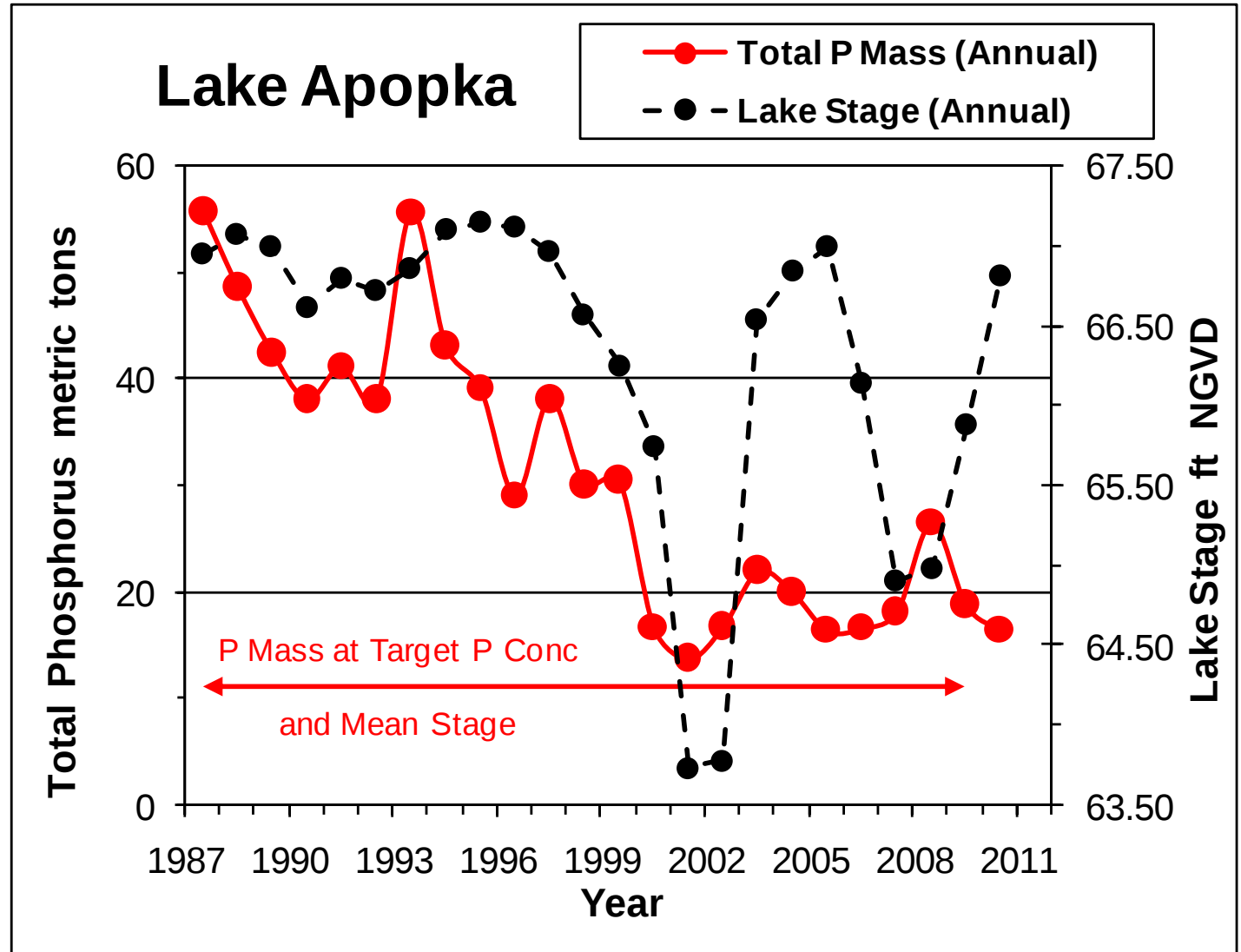
# Total Phosphorus (P) (mg/L)



September 20, 2011 TP values = 0.08 mg/L; stage = 64.48 ft NAVD88

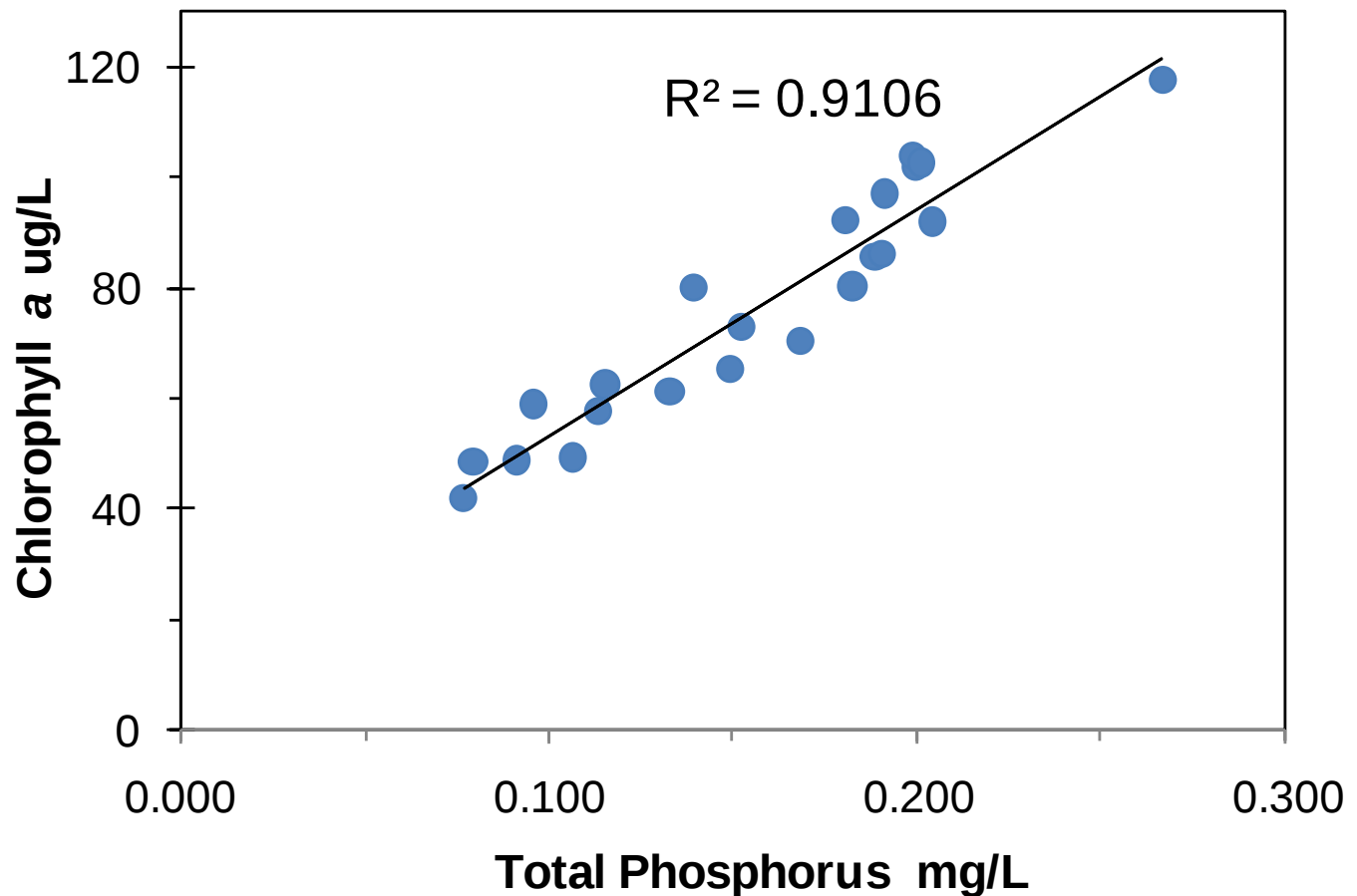


# Total P (metric tons) and Stage

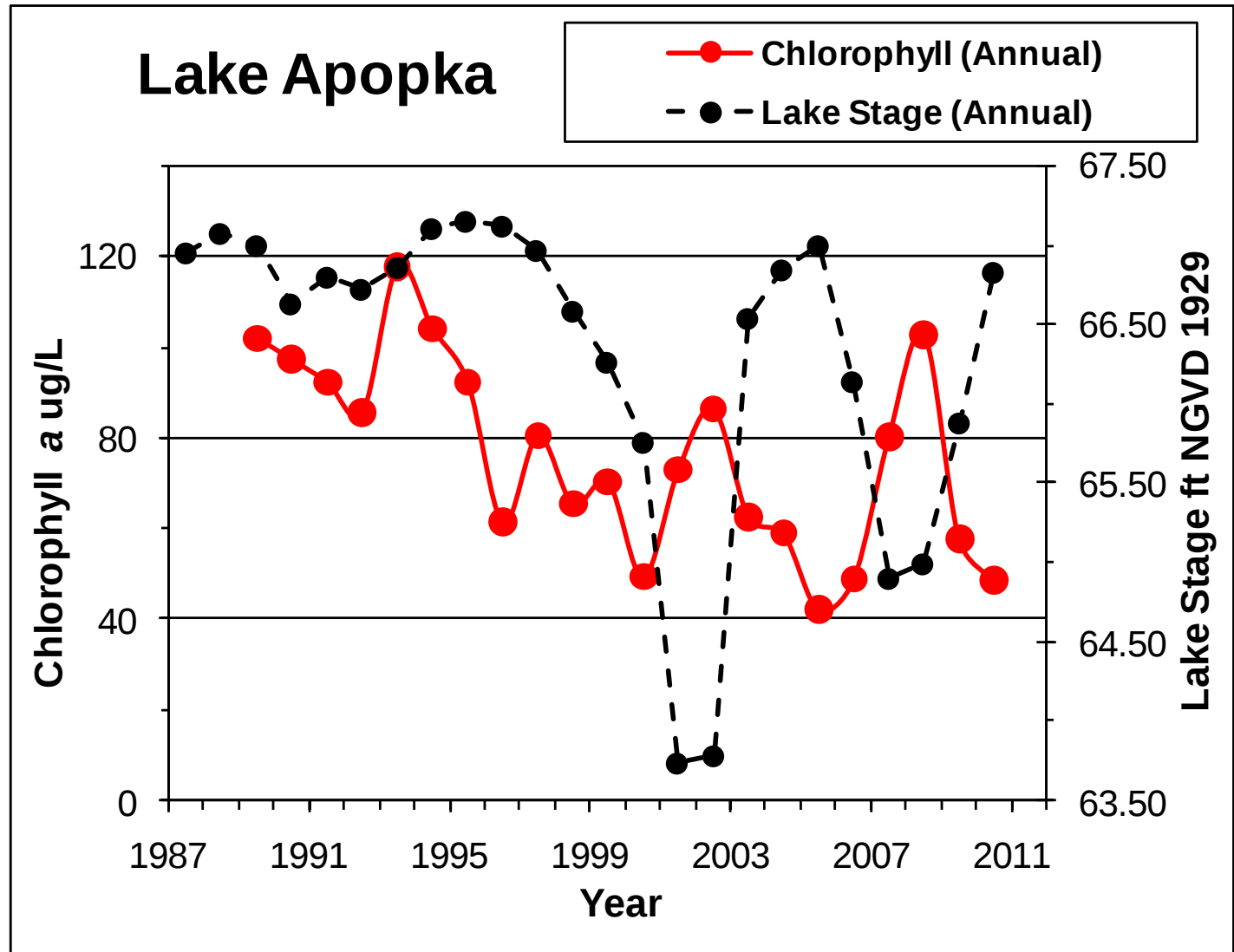


# Relationship between chlorophyll and total P

Lake Apopka, annual mean values  
1989 - 2010



# Chlorophyll *a* ( $\mu\text{g/L}$ ) and Stage

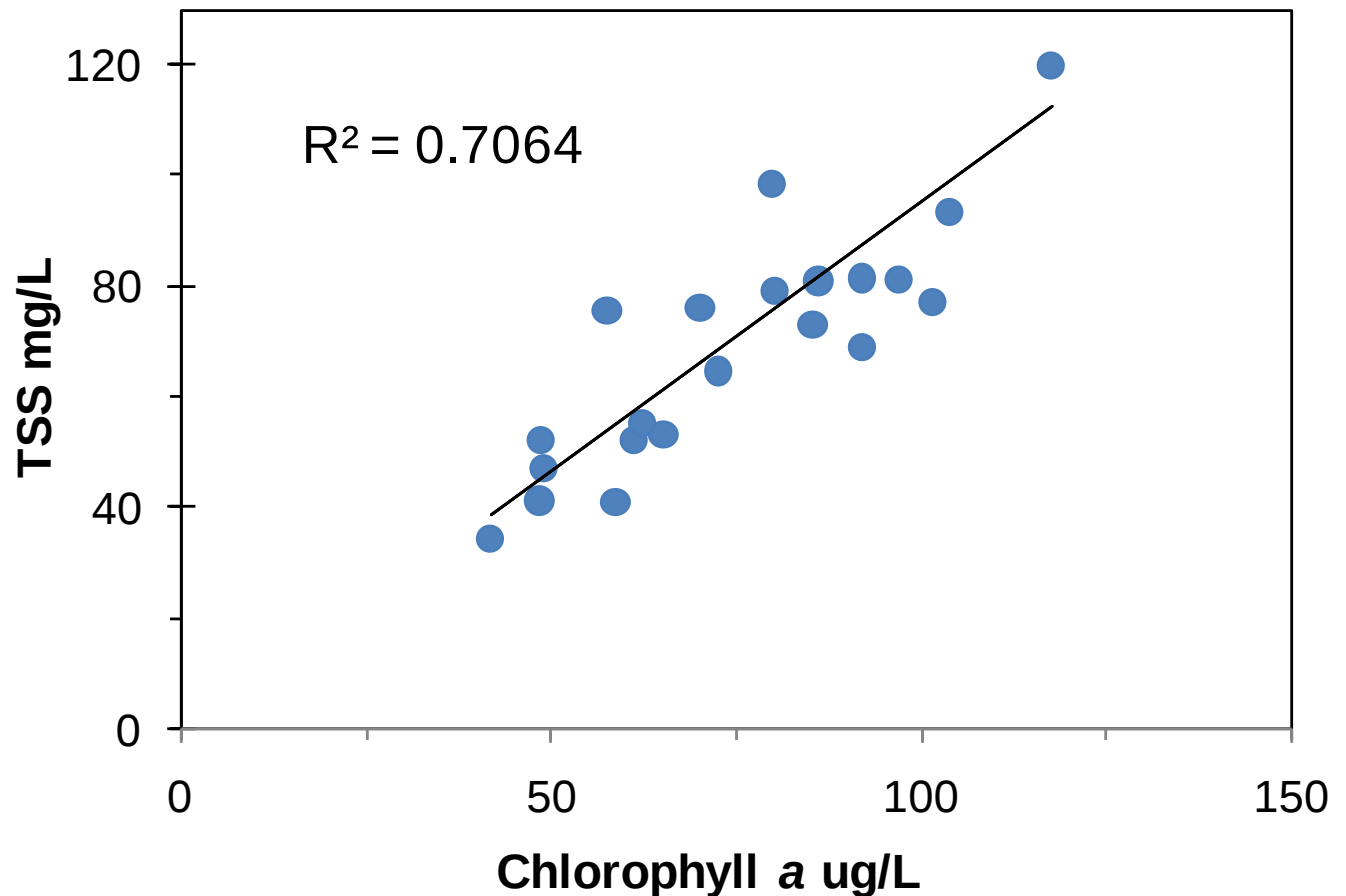


September 8, 2011 Chlorophyll values =  $52 \mu\text{g/L}$

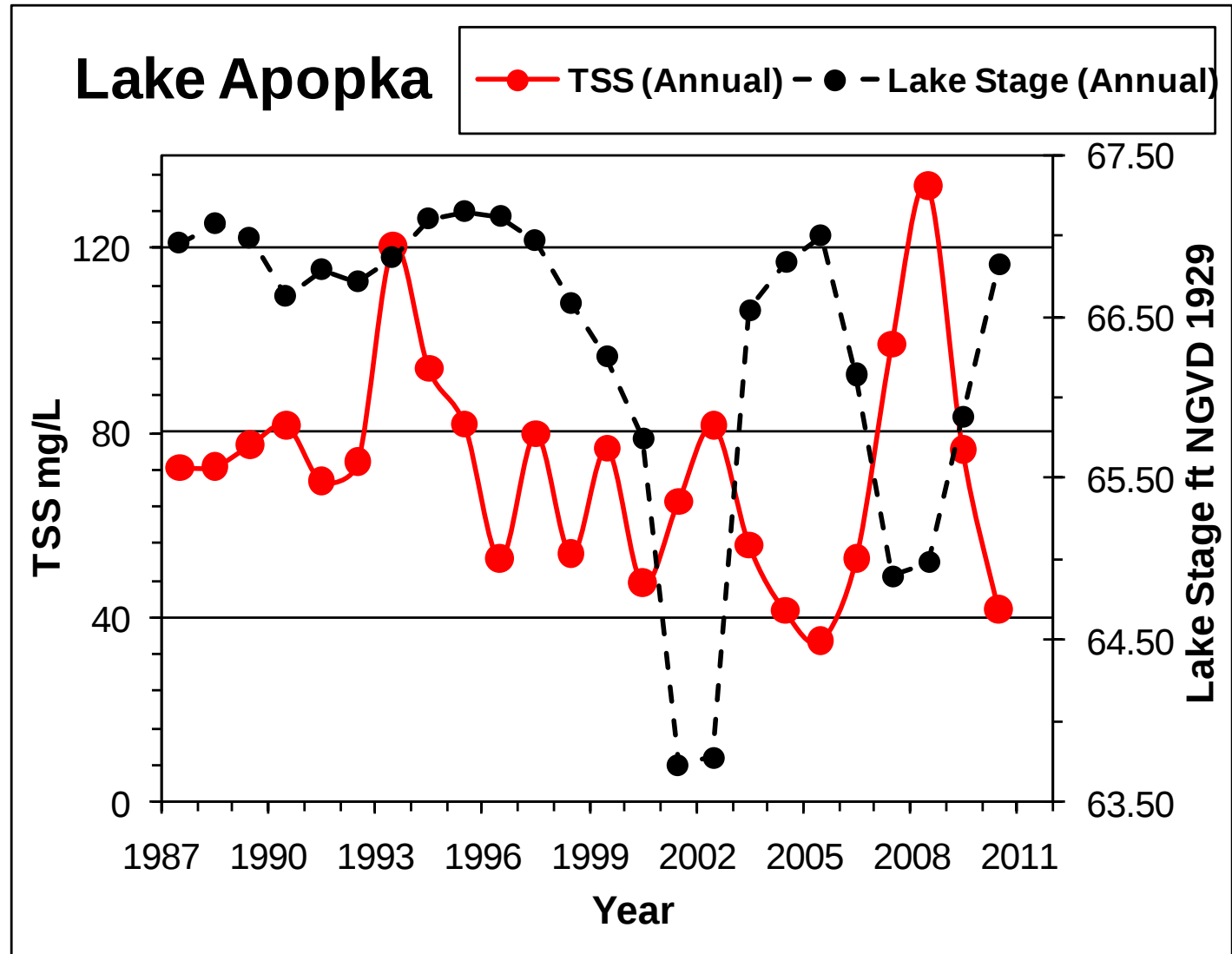


# Relationship between TSS and chlorophyll

Lake Apopka, annual mean values  
1989 - 2010



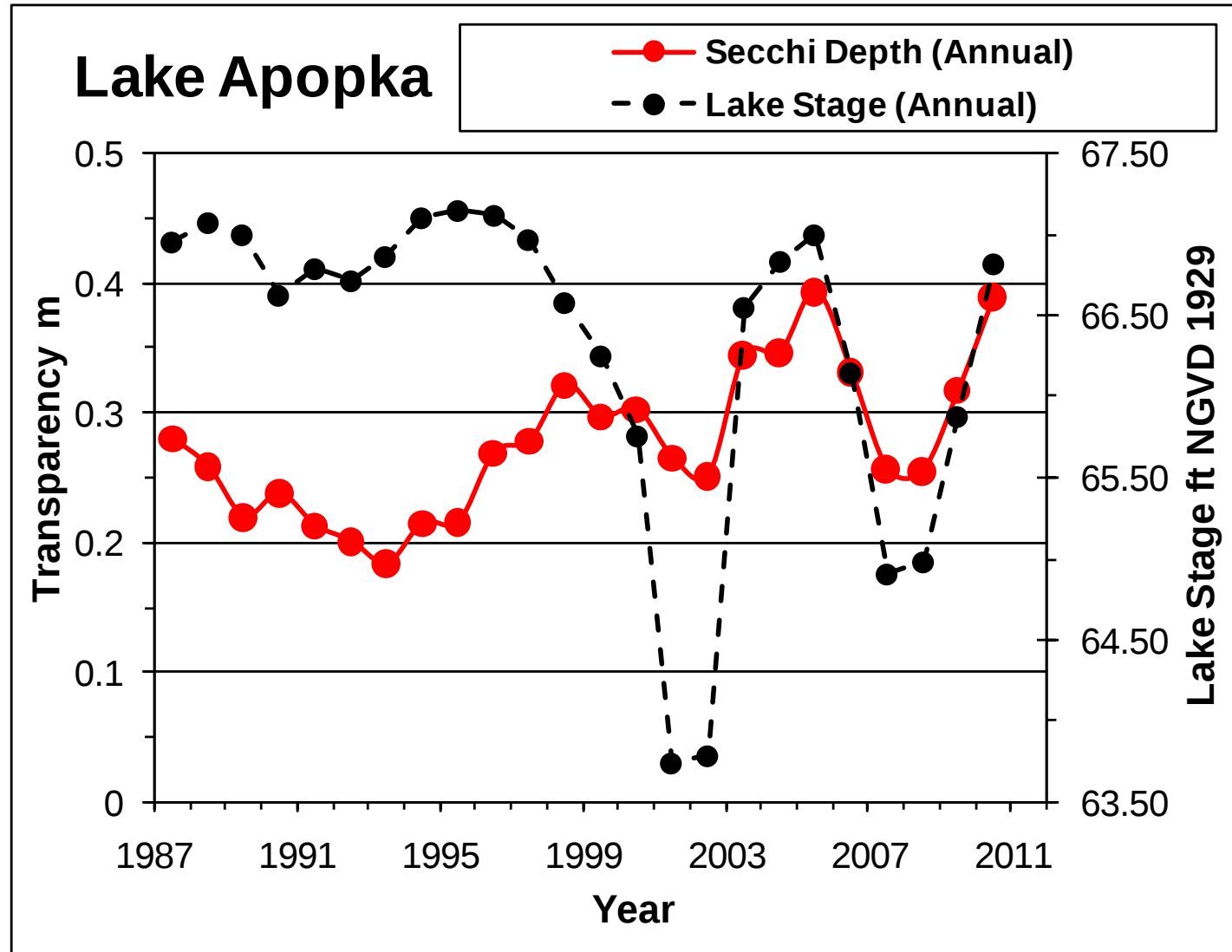
# Total Suspended Solids and Stage



September 8, 2011 TSS values = 51 mg/L



# Secchi (meters) and Stage



September 8, 2011 TSS values = 0.37 m

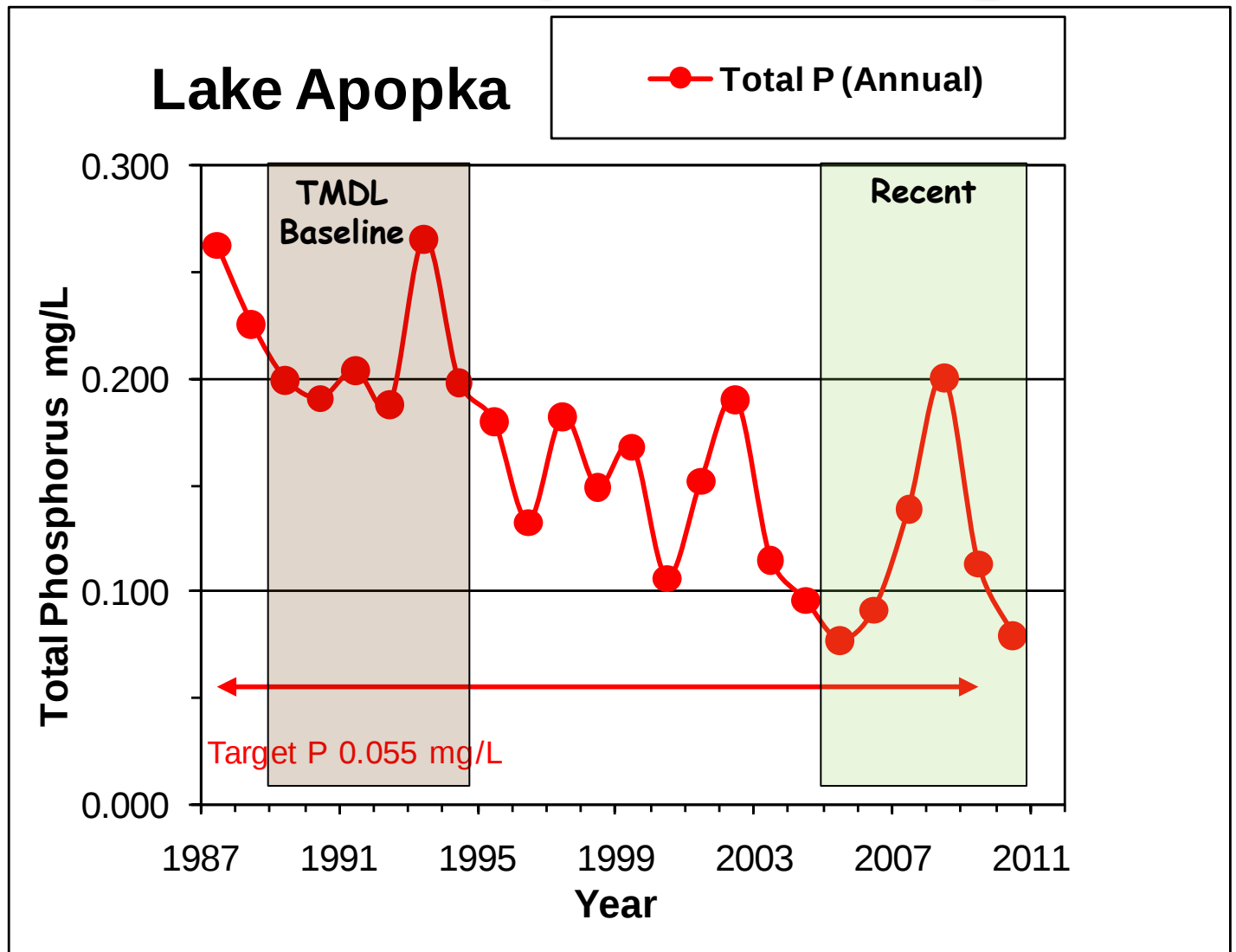


An aerial photograph of a river basin, likely the St. Johns River, showing a city in the background and a large body of water in the foreground. The river flows from the top left towards the bottom right, with a city skyline visible in the distance. The water is a light blue-green color, and the surrounding land is a mix of green and brown.

# Changes to water quality conditions relative to basin changes



# Total Phosphorus (mg/L)



TMDL baseline = period used to measure baseline loading for TMDL development.  
Recent = Period to include conditions over a range of meteorological conditions.

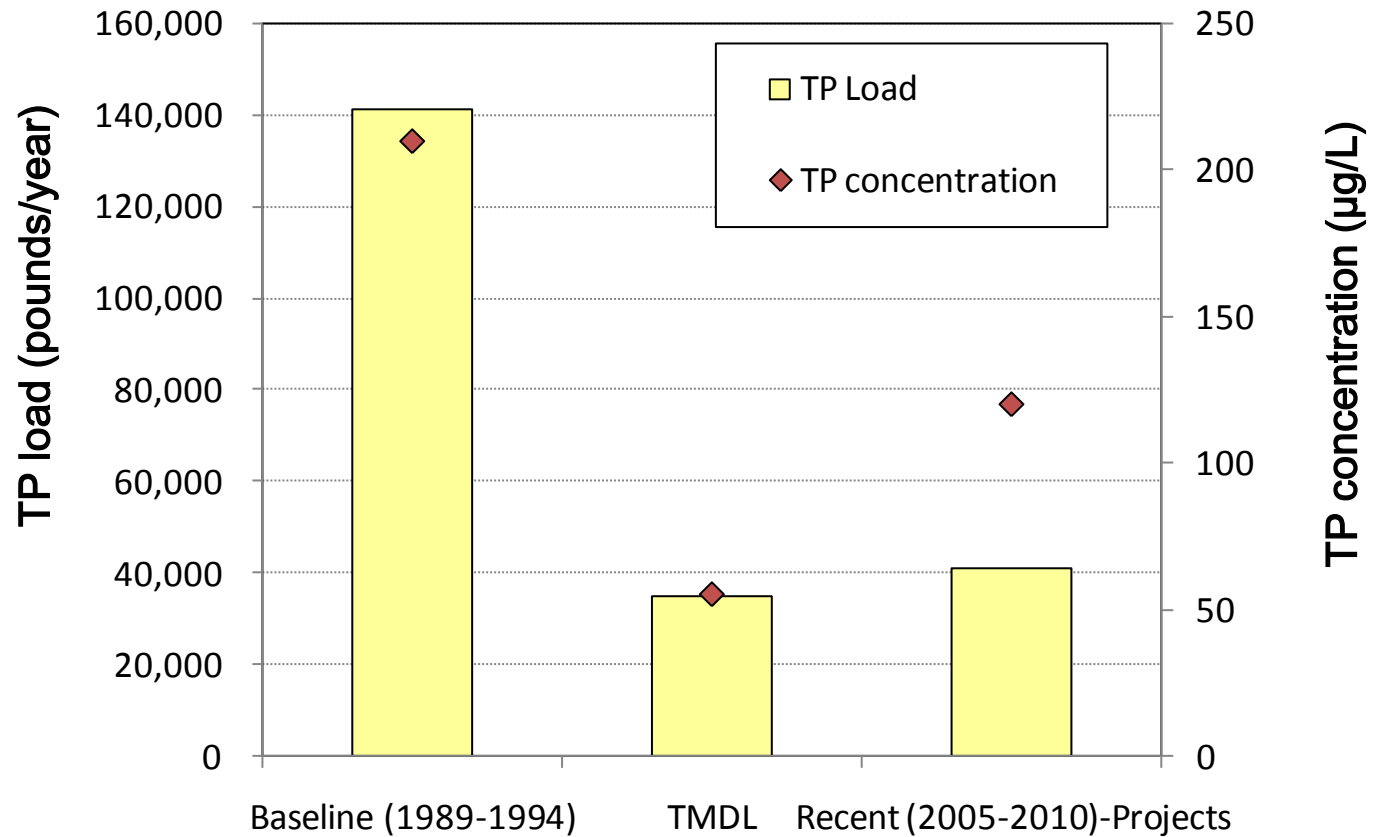


# Changes in loading to and concentrations in Lake Apopka

| Parameter    | Units | Comparison period                  |                                  | Change |
|--------------|-------|------------------------------------|----------------------------------|--------|
|              |       | Baseline<br>( <sup>'89-'94</sup> ) | Recent<br>( <sup>'05-'10</sup> ) |        |
| TP loading   | mT/yr | 64                                 | 19                               | -70%   |
| TP           | mg/L  | 0.21                               | 0.12                             | -44%   |
| Chl <i>a</i> | μg/L  | 99                                 | 63                               | -36%   |
| Secchi       | m     | 0.21                               | 0.32                             | 53%    |
| TSS          | mg/L  | 86                                 | 73                               | -15%   |



# Lake Apopka total phosphorus loads and concentrations



Projects = 7 load reduction BMAP projects.



# Present & Future Monitoring of Ambient Sites

| Site                 | Samples per year |            |
|----------------------|------------------|------------|
|                      | FY-11            | FY-12      |
| Lake Apopka (CLA)    | 24               | 12         |
| Lake Apopka (NLA)    | 12               | 6          |
| Lake Apopka (SLA)    | 12               | 6          |
| NuRFin               | 24               | 12         |
| Lake Beauclair (BCE) | 12               | 12         |
| Beauclair Canal(BBC) | 12               | 0          |
| Apopka Spring        | 4                | 4          |
|                      |                  |            |
| <b>Total</b>         | <b>100</b>       | <b>52</b>  |
| <b>Reduction</b>     |                  | <b>48%</b> |

Operational loading: 16 sites (Flow-way, West Marsh, NuRFOut).

Long-term loading: 10 sites (Johns Lake, atmospheric deposition, NSRA pumps and West Marsh pump).

