Comments to USEPA Science Advisory Board

Pertaining to

Numeric Nutrient Criteria for Florida's Southern Inland Flowing Waters (FSIFW)

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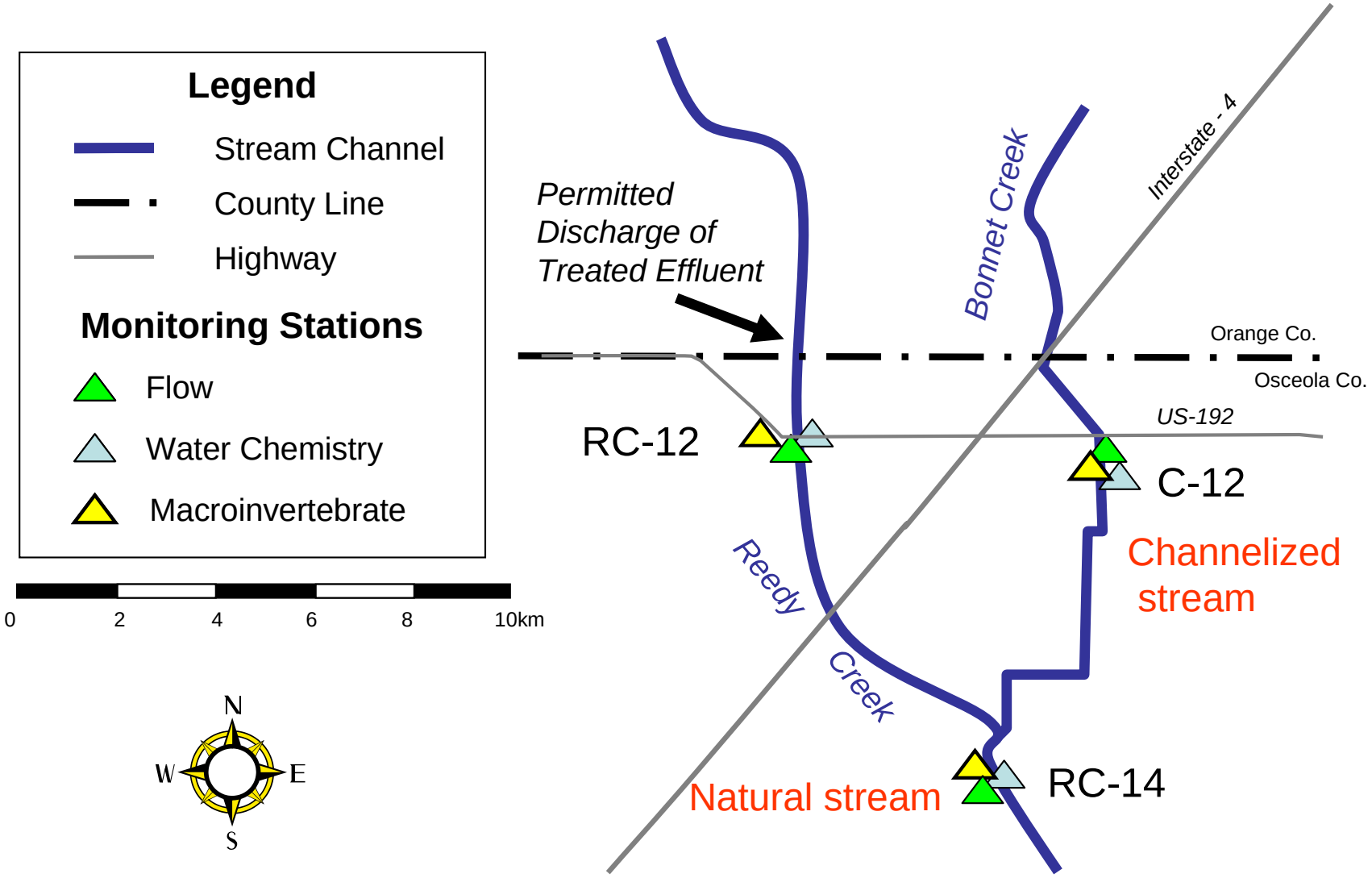
Overview

- SAB Charge, with respect to numeric criteria for FSIFW:
  - Data sources appropriate?
  - Assessment endpoints appropriate?
  - Compare reference conditions and stressor response
- Existing data demonstrate:
  - Macroinvertebrates in south Florida canals are constrained by habitat and flow characteristics, and show lack of response to nutrients
  - Chlorophyll not an appropriate response variable for nutrients, especially in EAA canals, due to high color
  - Despite marked variability in water quality (with respect to color, chlorophyll and nutrients) among S. FL canals, excellent fisheries are common

Decades-long macroinvertebrate monitoring program in natural and channelized streams in central Florida

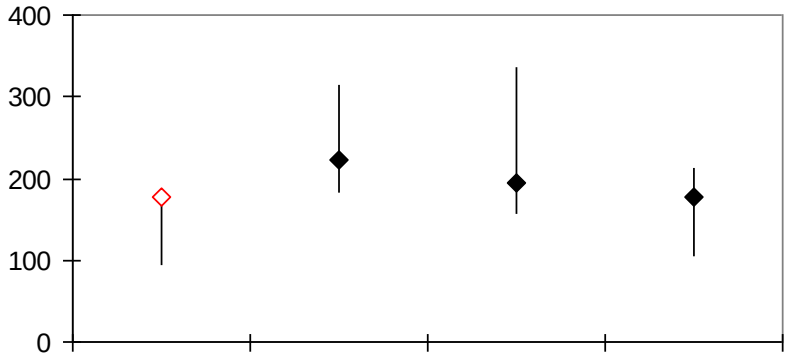


Natural stream (RC-14) >>>

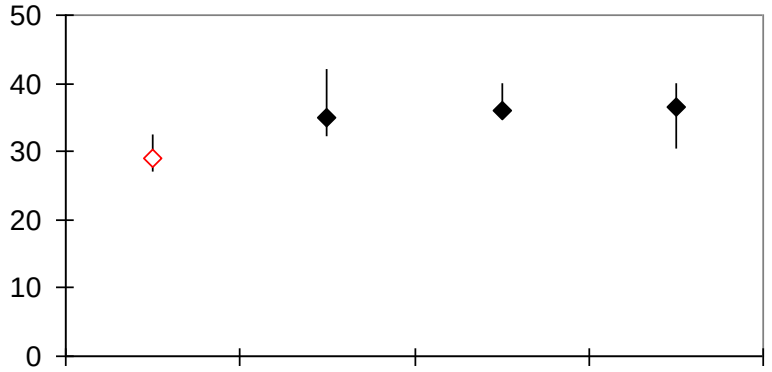
<<< Channelized stream (C-12)

Abundance

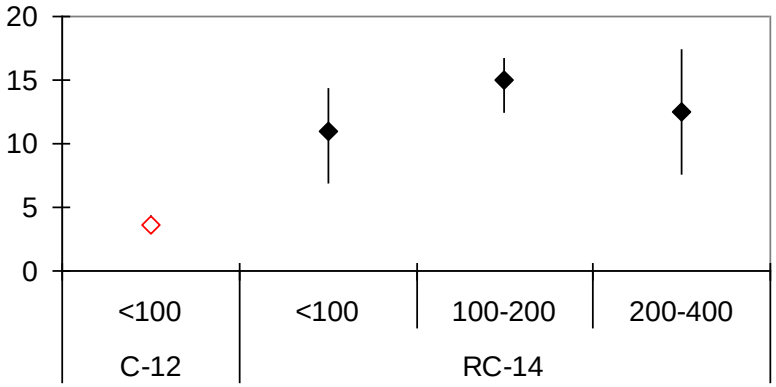
(Individuals per Artificial Substrate)



Total Taxa Richness



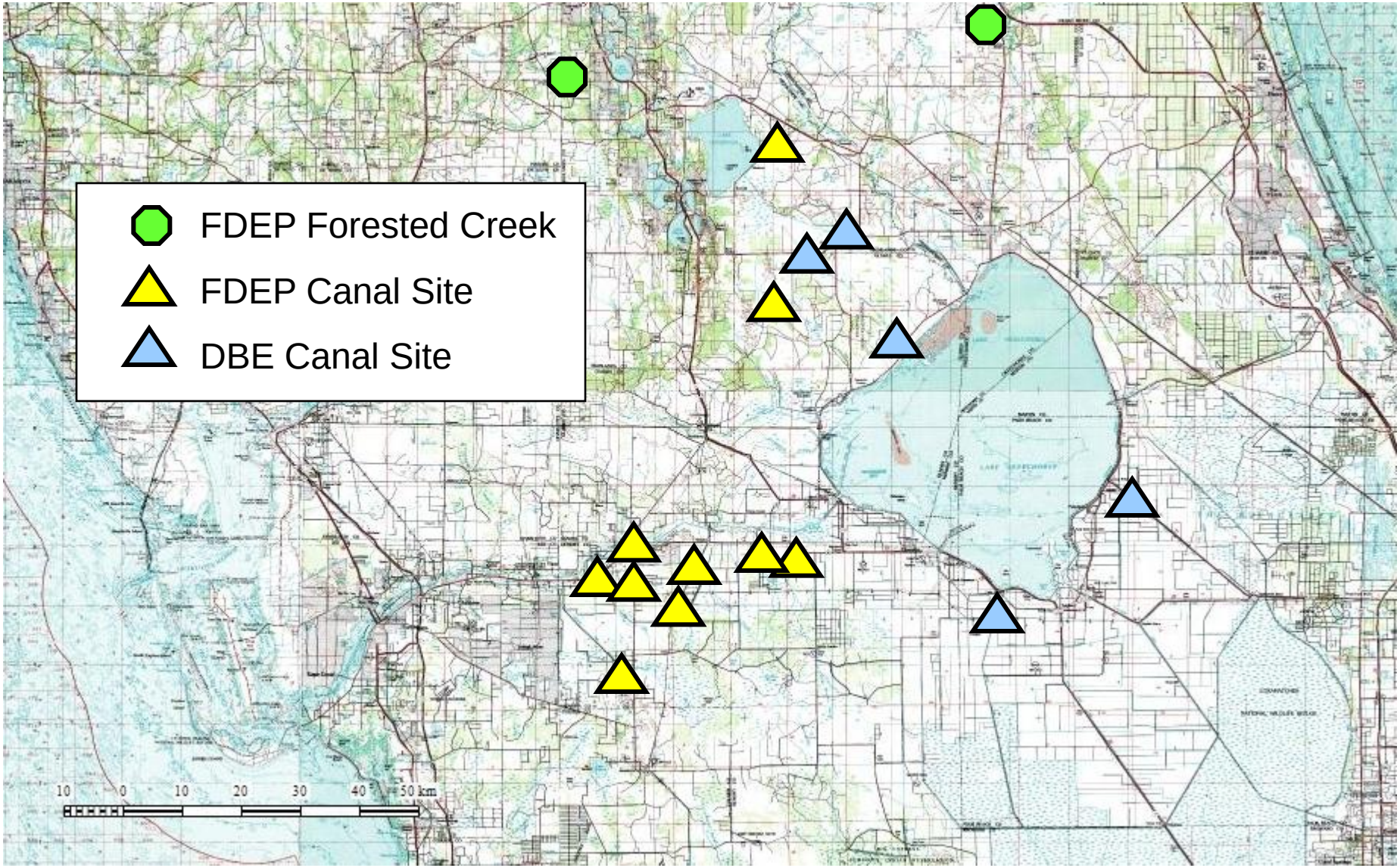
Florida Biotic Index



channelized natural

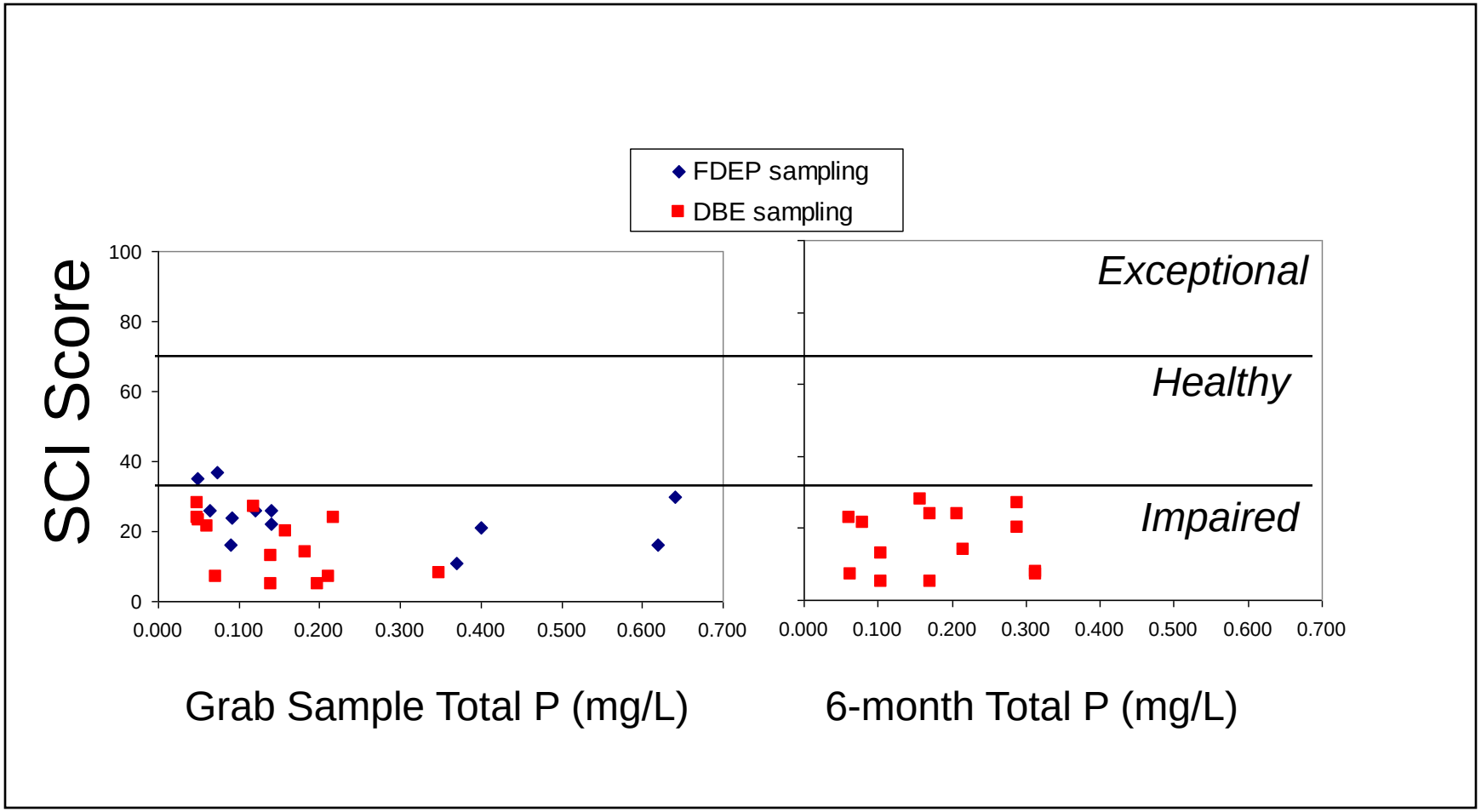
Macroinvertebrate metrics as a function of water column TP (ug/L) & stream type

DBE and FDEP canal macroinvertebrate sampling stations

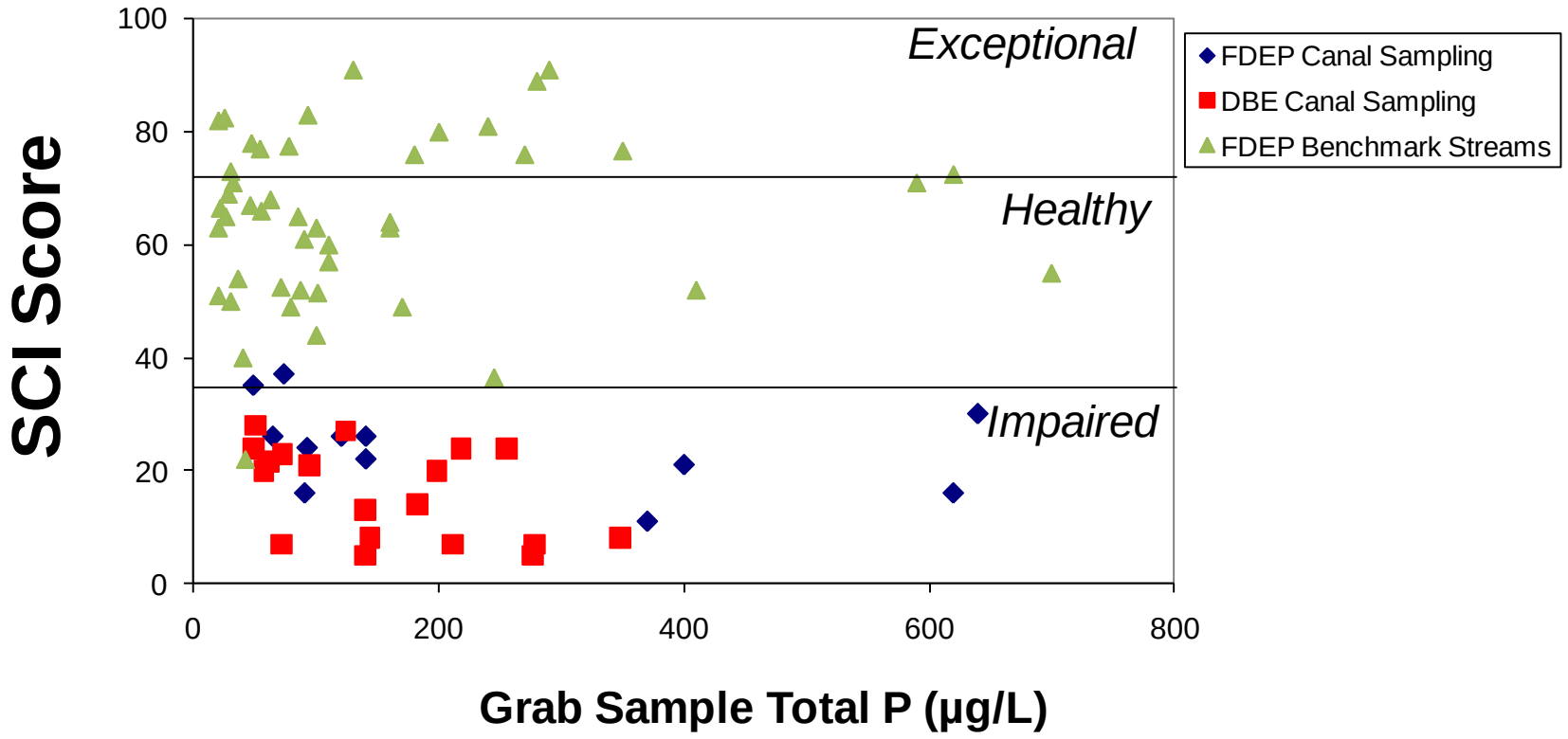


DBE and FDEP macroinvertebrate metrics (Stream Condition Index [SCI]) from **canal** sampling sites

No evidence of biological community improvement across range of TP concentrations



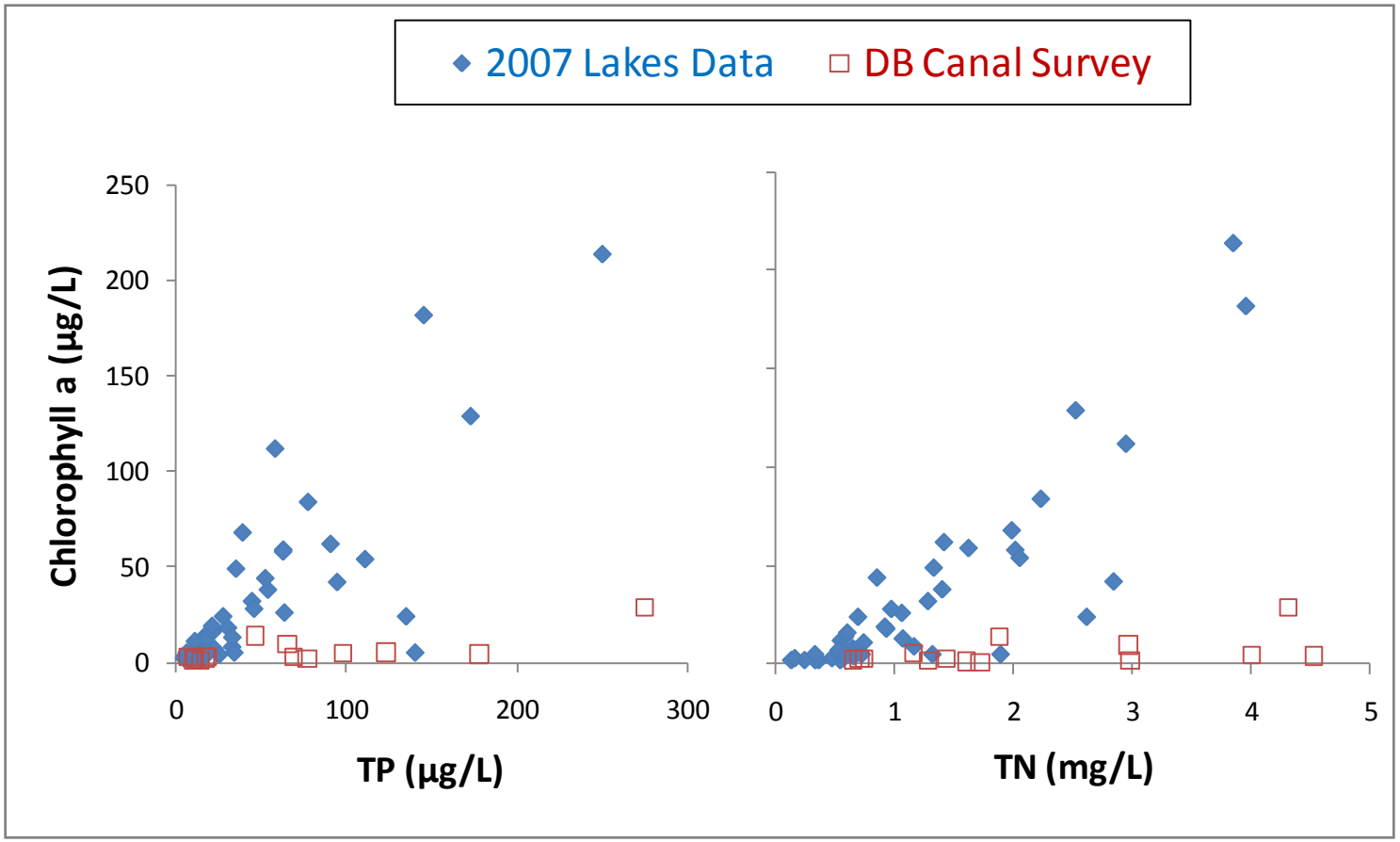
FDEP's "Benchmark Streams" exhibit much higher SCI scores than canals. However, even in these systems with favorable habitats the relationship with TP is weak



Indian Prairie Canal

Removal of shoreline vegetation between DBE's 1st Qtr (left) and 3rd Qtr (below) sampling events

In south Florida, poor canal habitat is exacerbated by management for floodwater conveyance



Relationships between nutrients and chlorophyll concentrations in south Florida canals (N=14) are compared to water quality in 48 Florida lakes during 2007 (FWC 2008, using Lakewatch water quality data).

Three S. Florida canal sites have different water clarity and markedly different TN and TP levels, but all support excellent fisheries. Differences in clarity are related to color, not chlorophyll or nutrient levels.

S-177
TN - 0.71 mg/L
TP - 7 µg/L
Chl. a - 2.7 µg/L

Brow003
TN - 1.16 mg/L
TP - 123 µg/L
Chl. a - 5.4 µg/L

WPB East
TN - 4.02 mg/L
TP - 98 µg/L
Chl. a - 4.7 µg/L

South Florida is dominated by canals, so the unique characteristics of these systems (poor macroinvertebrate assemblages; varied and often poor relationships between chlorophyll and nutrients; good fisheries) must be addressed when establishing FSIFW nutrient criteria