



**SANIBEL**  
A BARRIER ISLAND SANCTUARY



# Sanibel Comprehensive Nutrient Management Plan

## Phase 3: Groundwater Nutrient Loads

Mark Thompson SCCF Marine Lab



**SCCF**

Sanibel-Captiva Conservation Foundation

*Come explore our natural world*





# SANIBEL

A BARRIER ISLAND SANCTUARY



## Sanibel Comprehensive Nutrient Management Plan

### Phase 1

- Existing Data → Surface and Stormwater Estimates
- Recommendations → Sanibel Specific Info

### Phase 2

- Stormwater Nutrient Runoff/Load Determination
- Maps → Areas of Concern



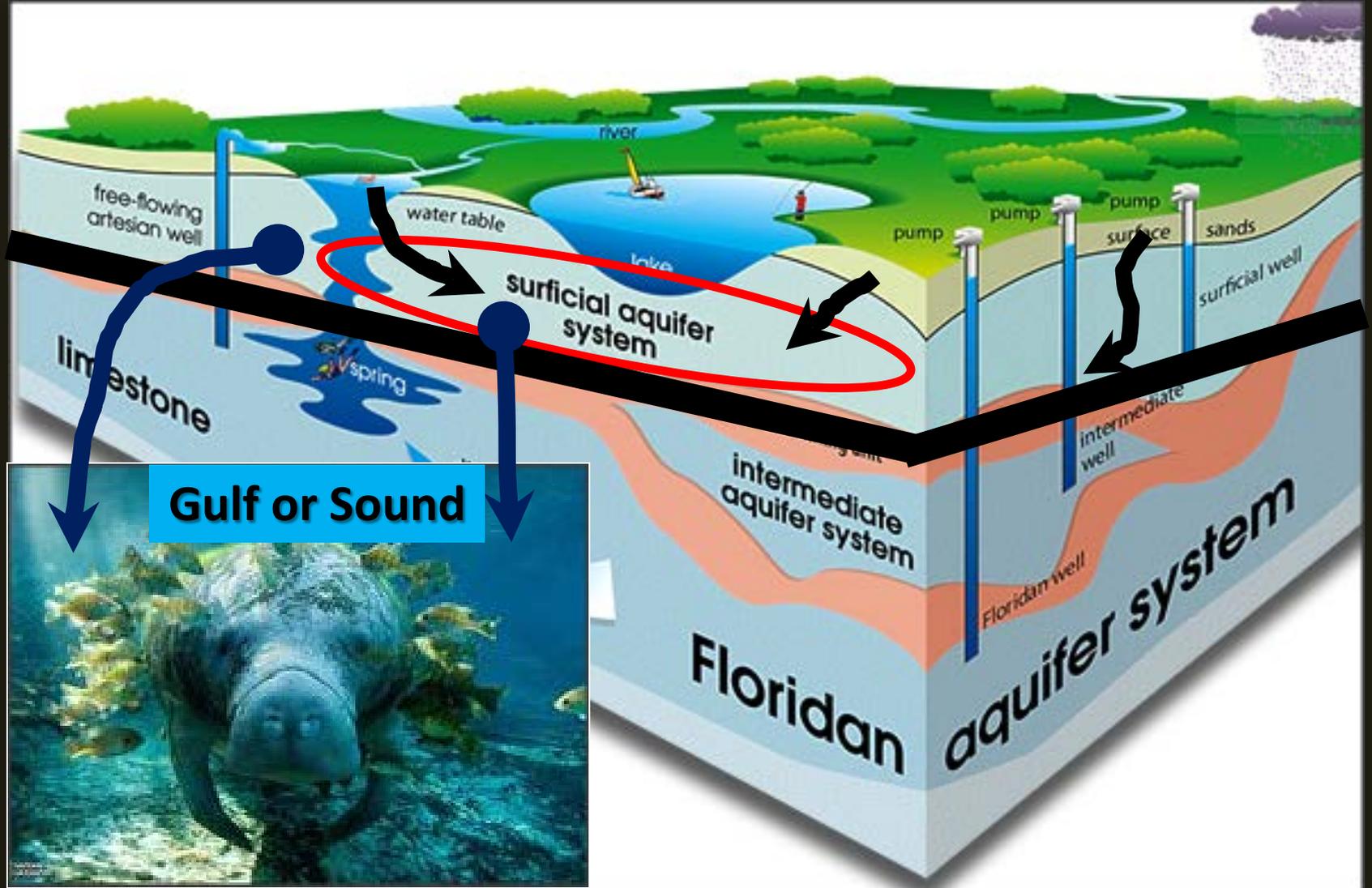
# SCCF

Sanibel-Captiva Conservation Foundation

*Come explore our natural world*



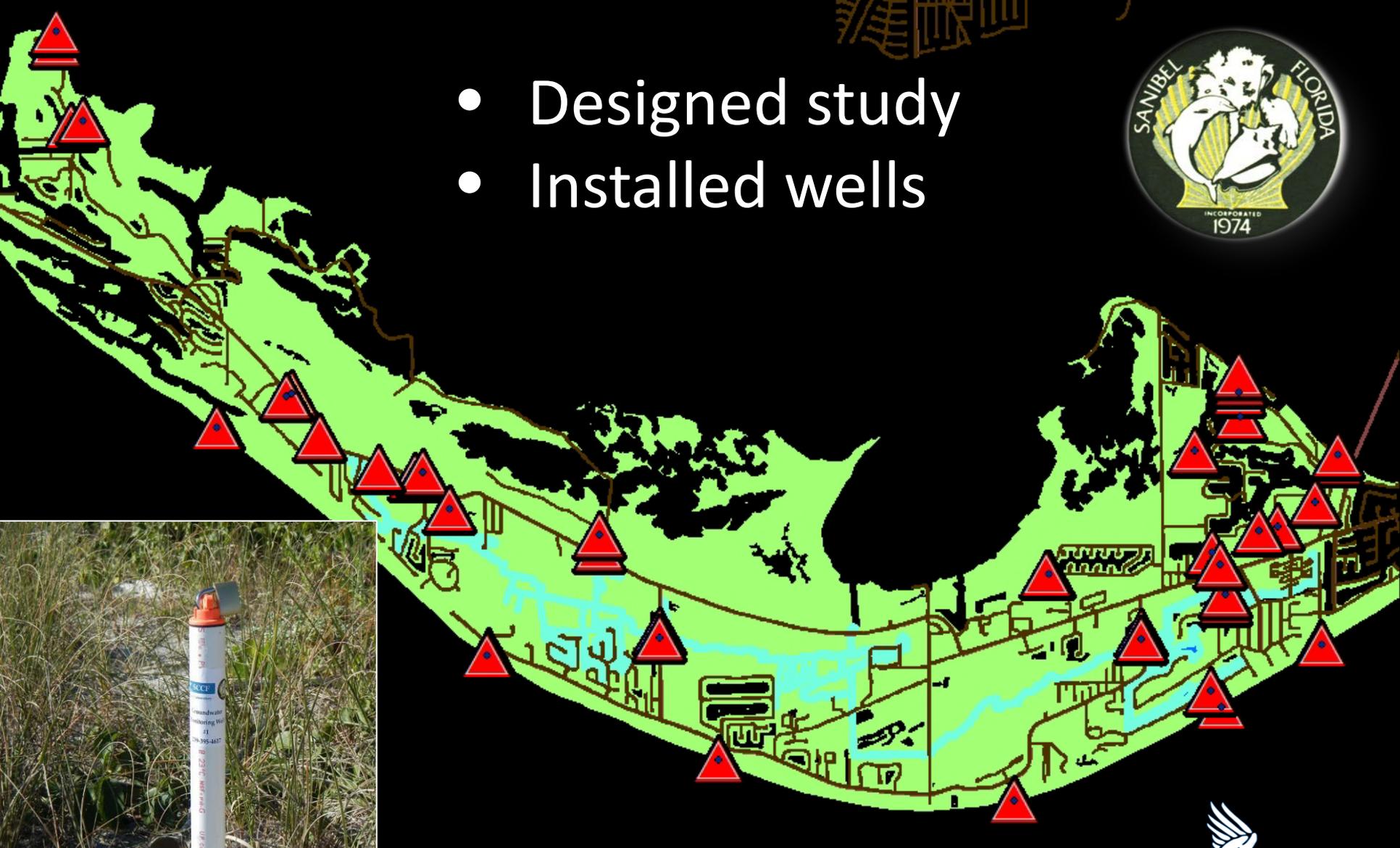
# Phase 3: Groundwater Flows, Concentrations and Loads



Gulf or Sound



- Designed study
- Installed wells



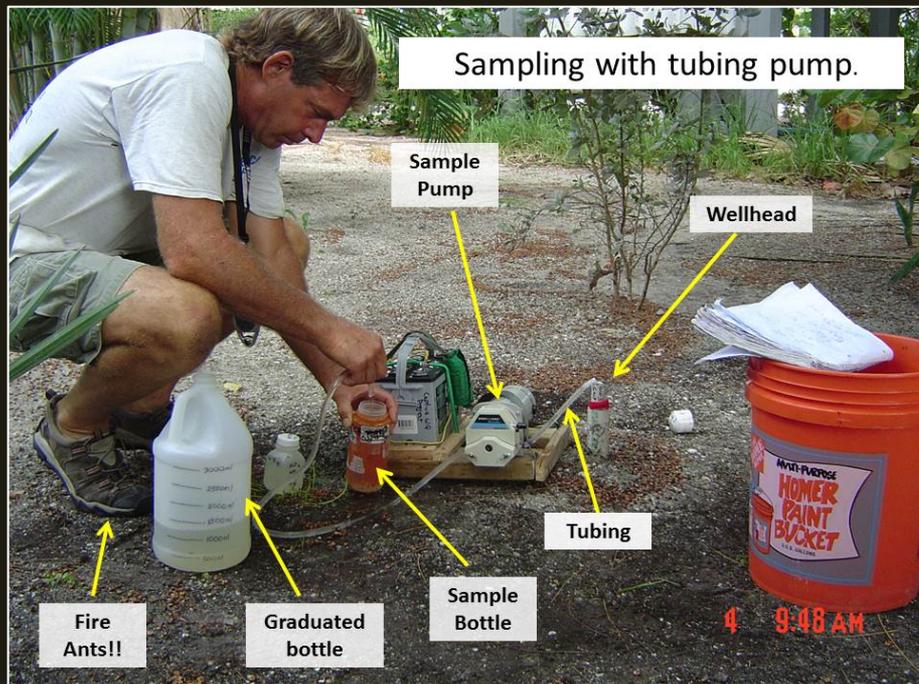


# SANIBEL

A BARRIER ISLAND SANCTUARY



- Installed level loggers
- Pumped samples



# SCCF

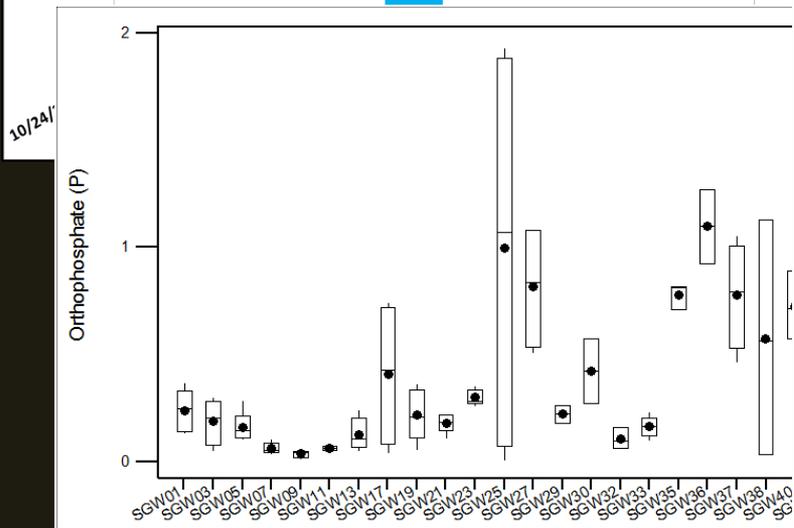
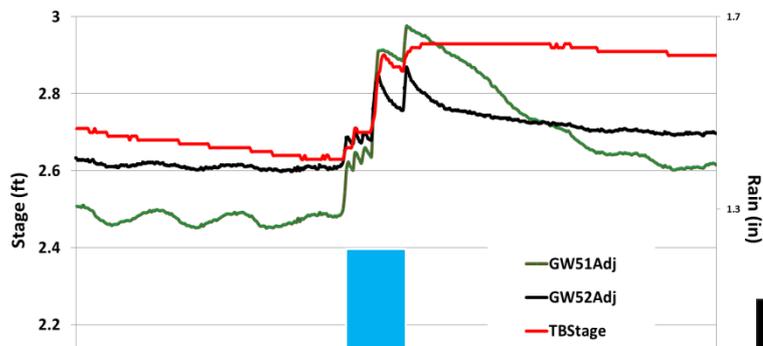
Sanibel-Captiva Conservation Foundation  
Come explore our natural world





# SANIBEL

A BARRIER ISLAND SANCTUARY



- Graphed
- Statistical Analyses
- GIS Maps



## SCCF

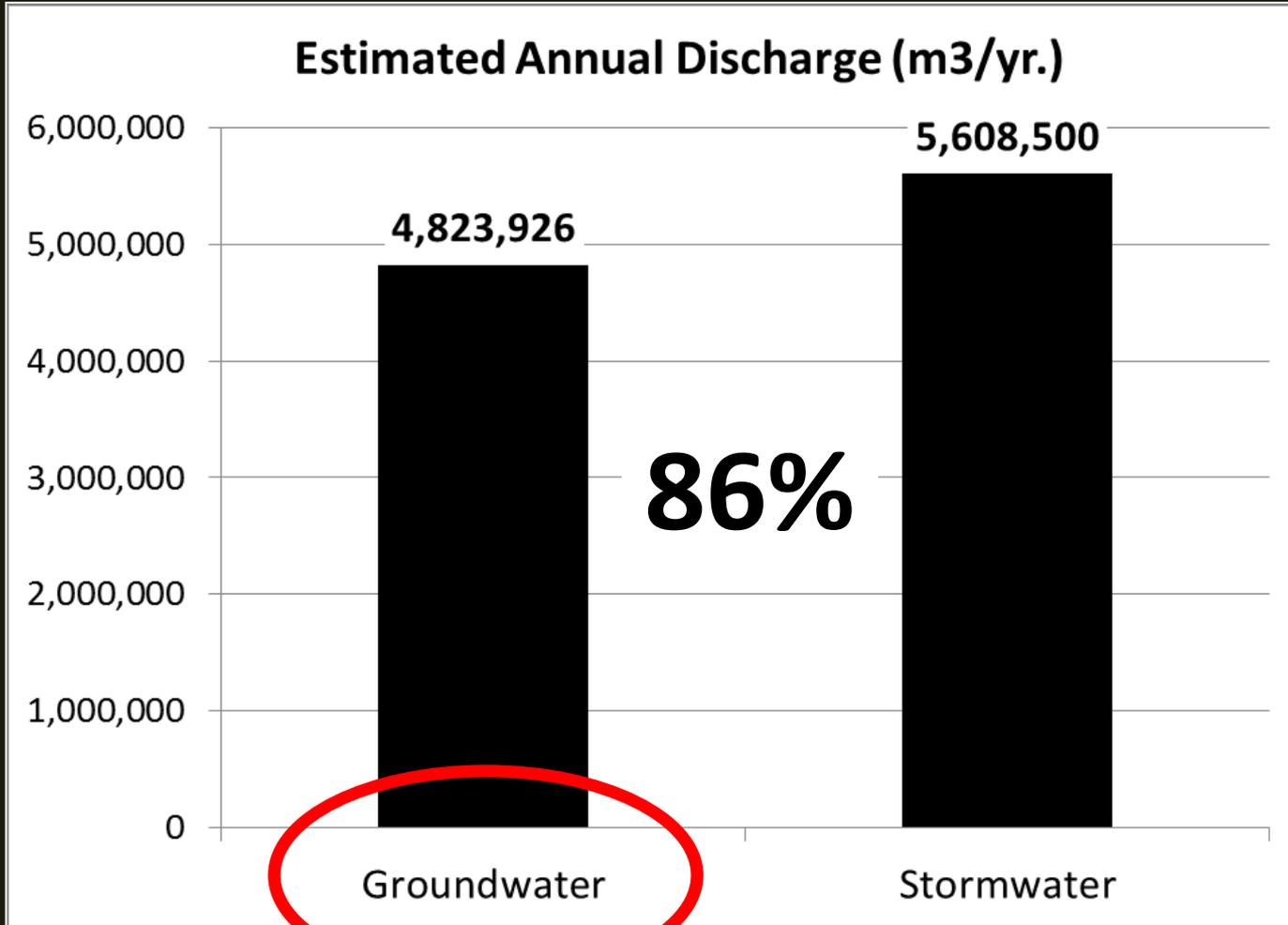
Sanibel-Captiva Conservation Foundation

Come explore our natural world





# What We Found Flows



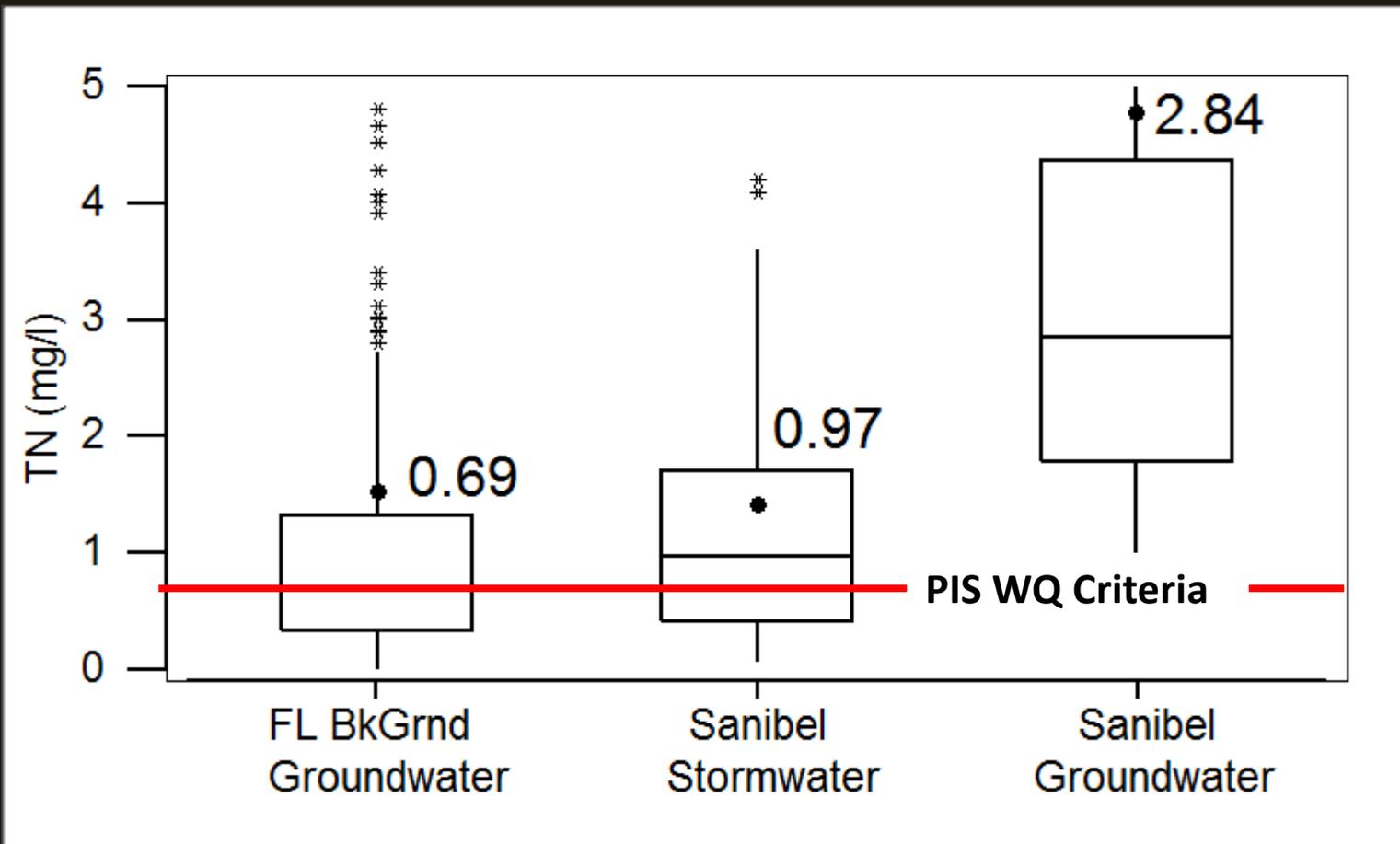


# Groundwater Flows



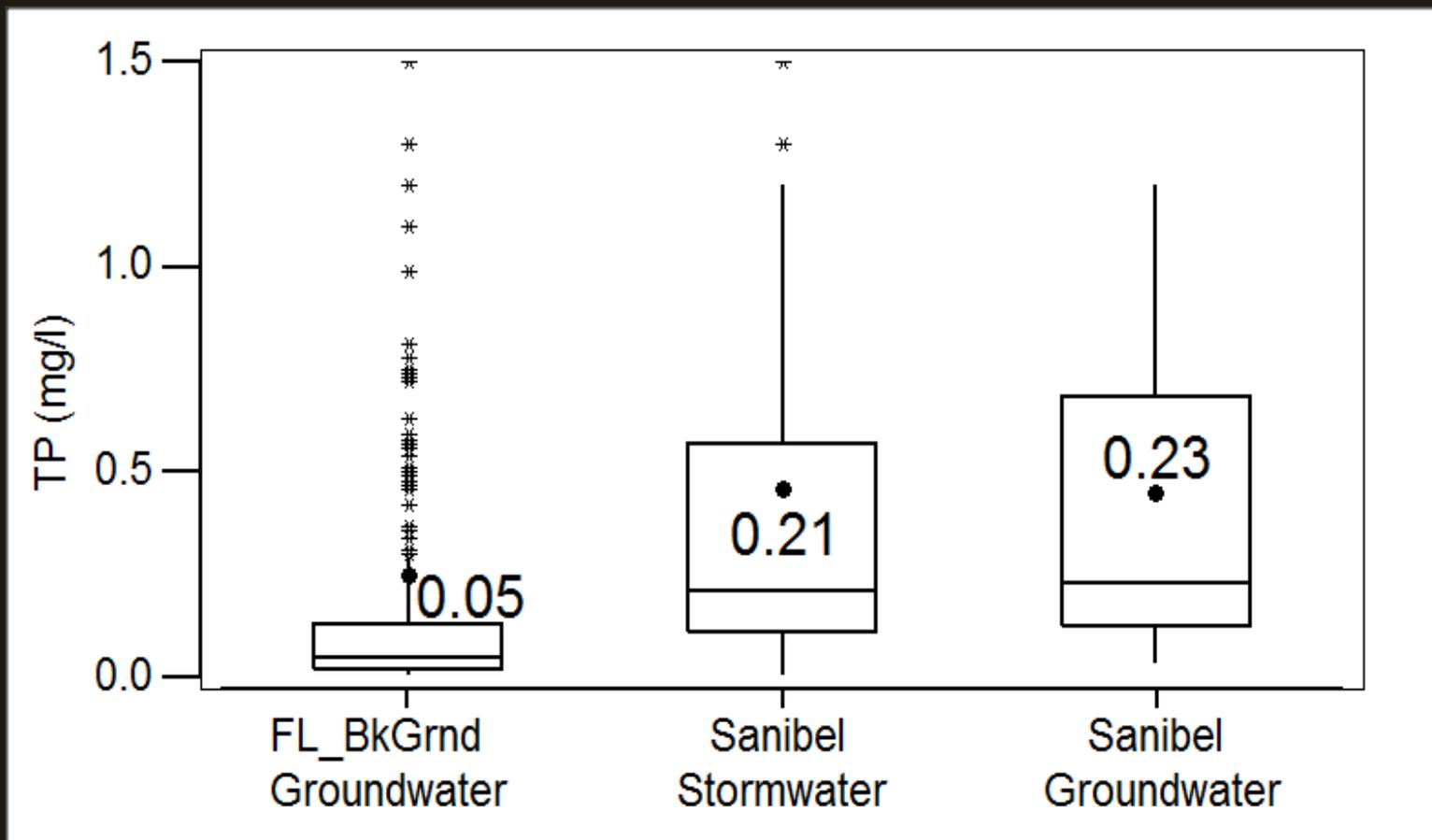


# How High Are Concentrations?



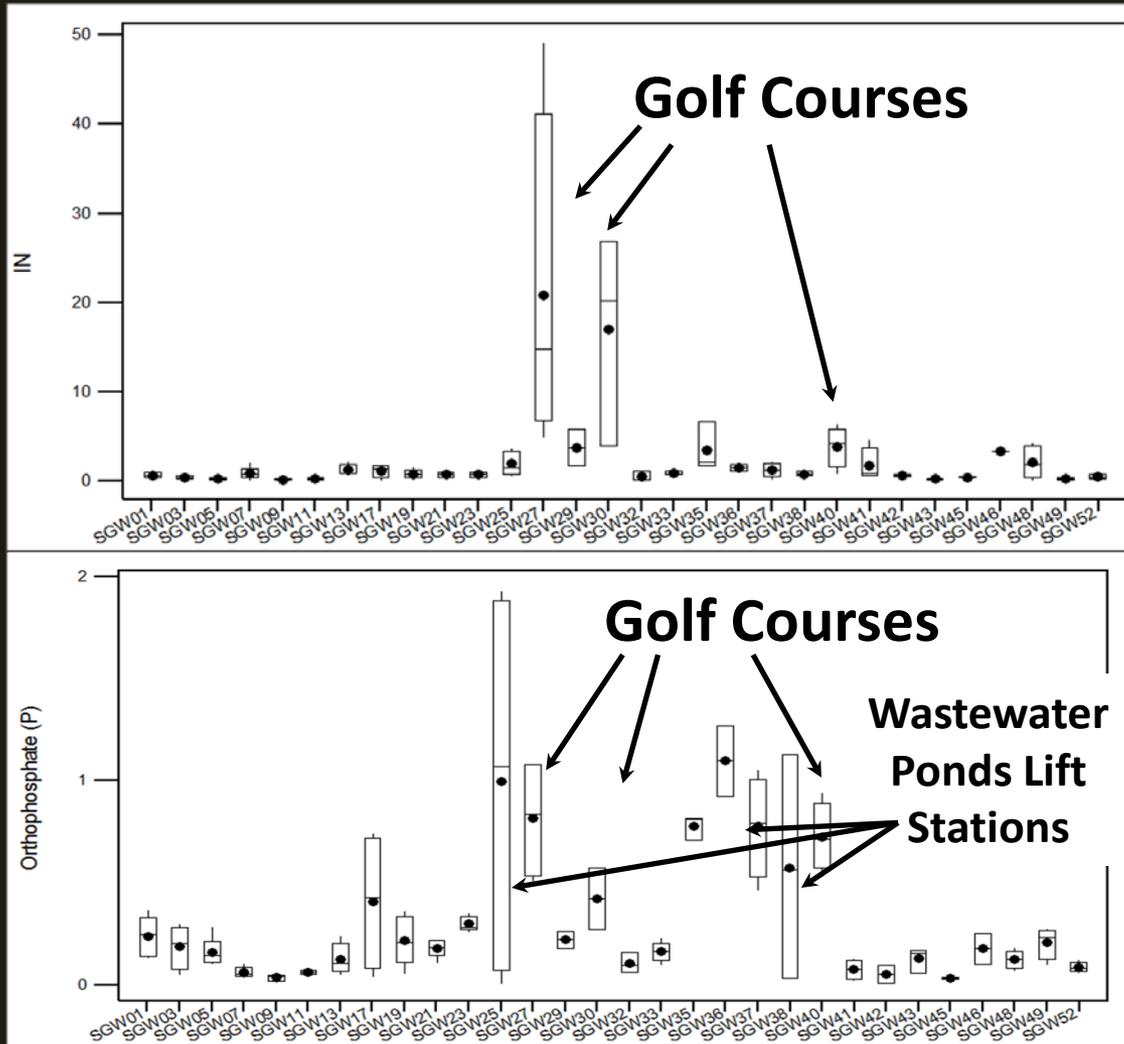


# How High Are Concentrations?



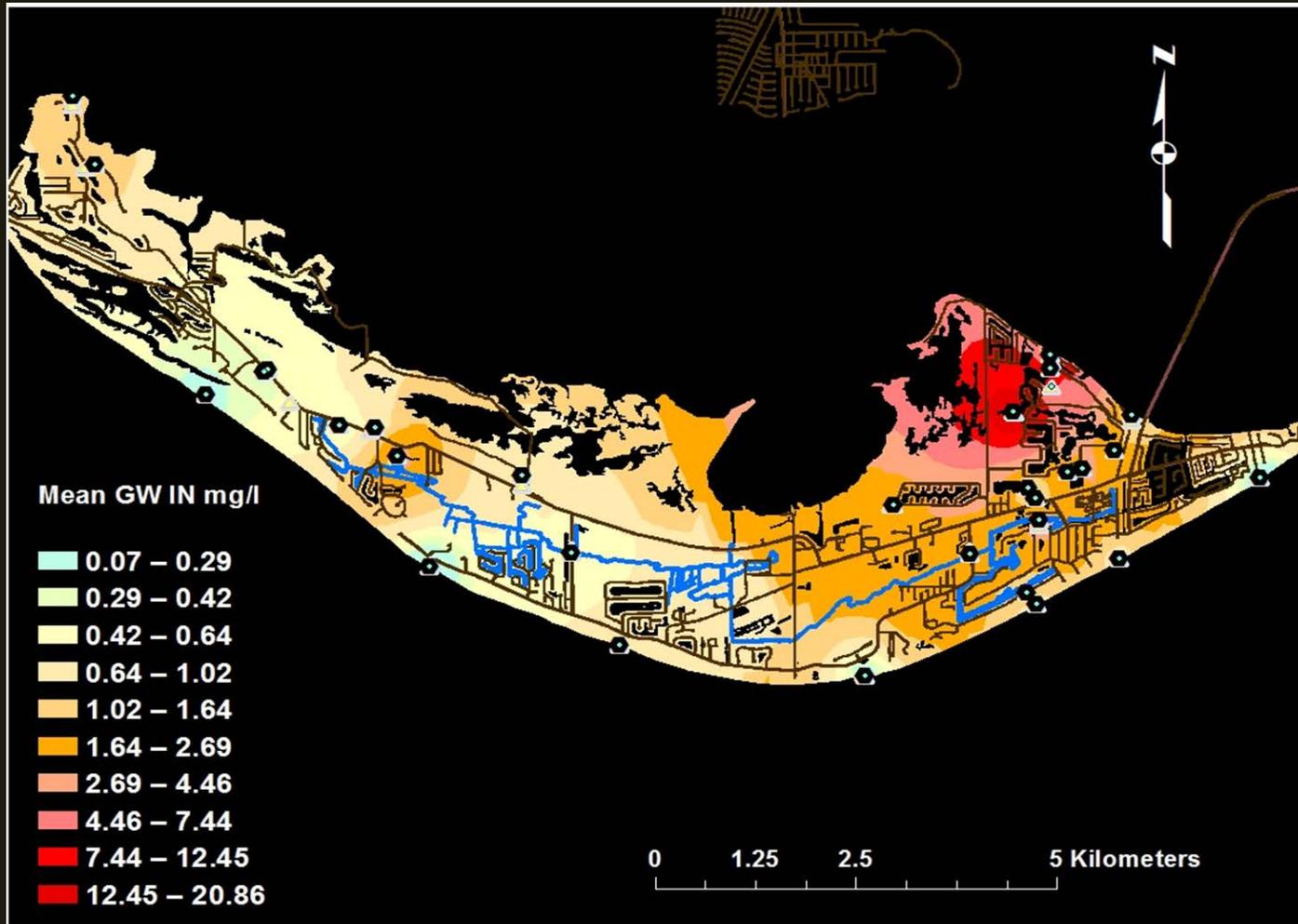


# Where Are High Concentrations?



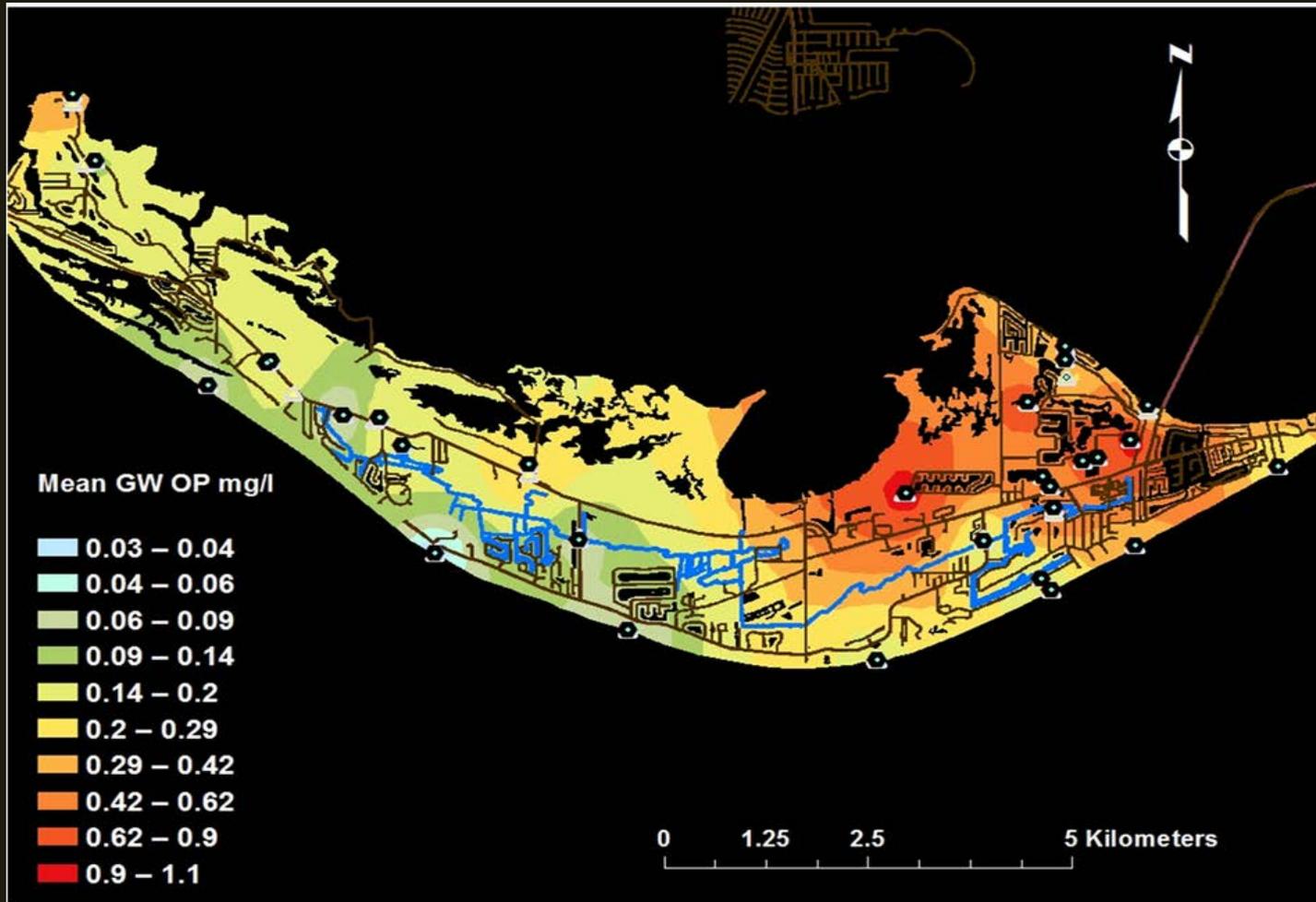


# Inorganic Nitrogen Concentrations





# Inorganic Phosphorus Concentrations

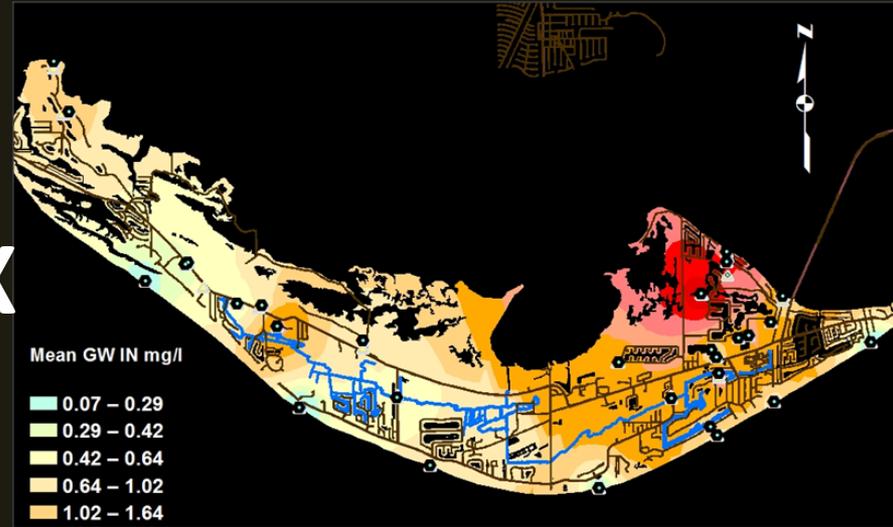




Flows x Concentrations = Loads

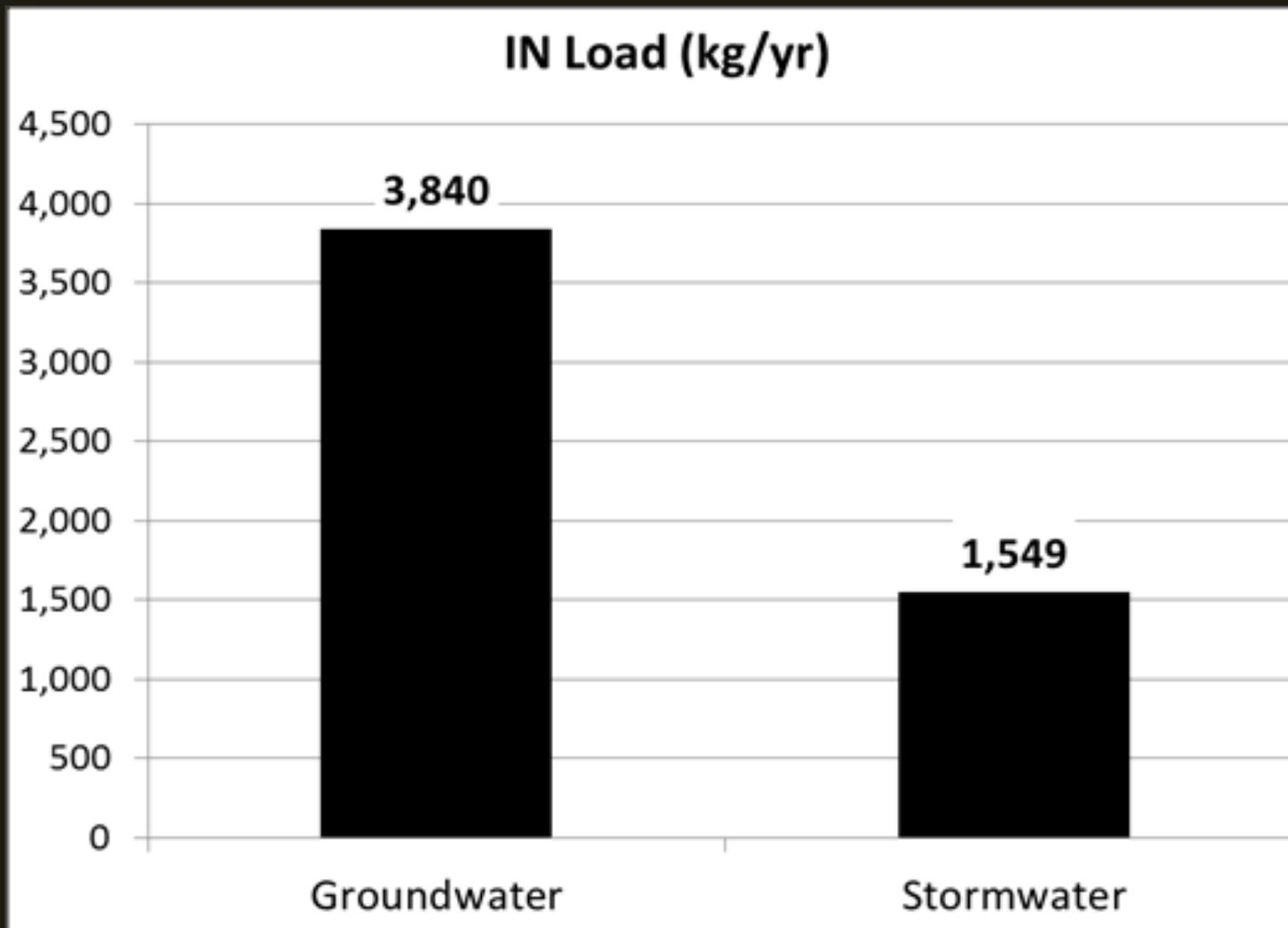


x



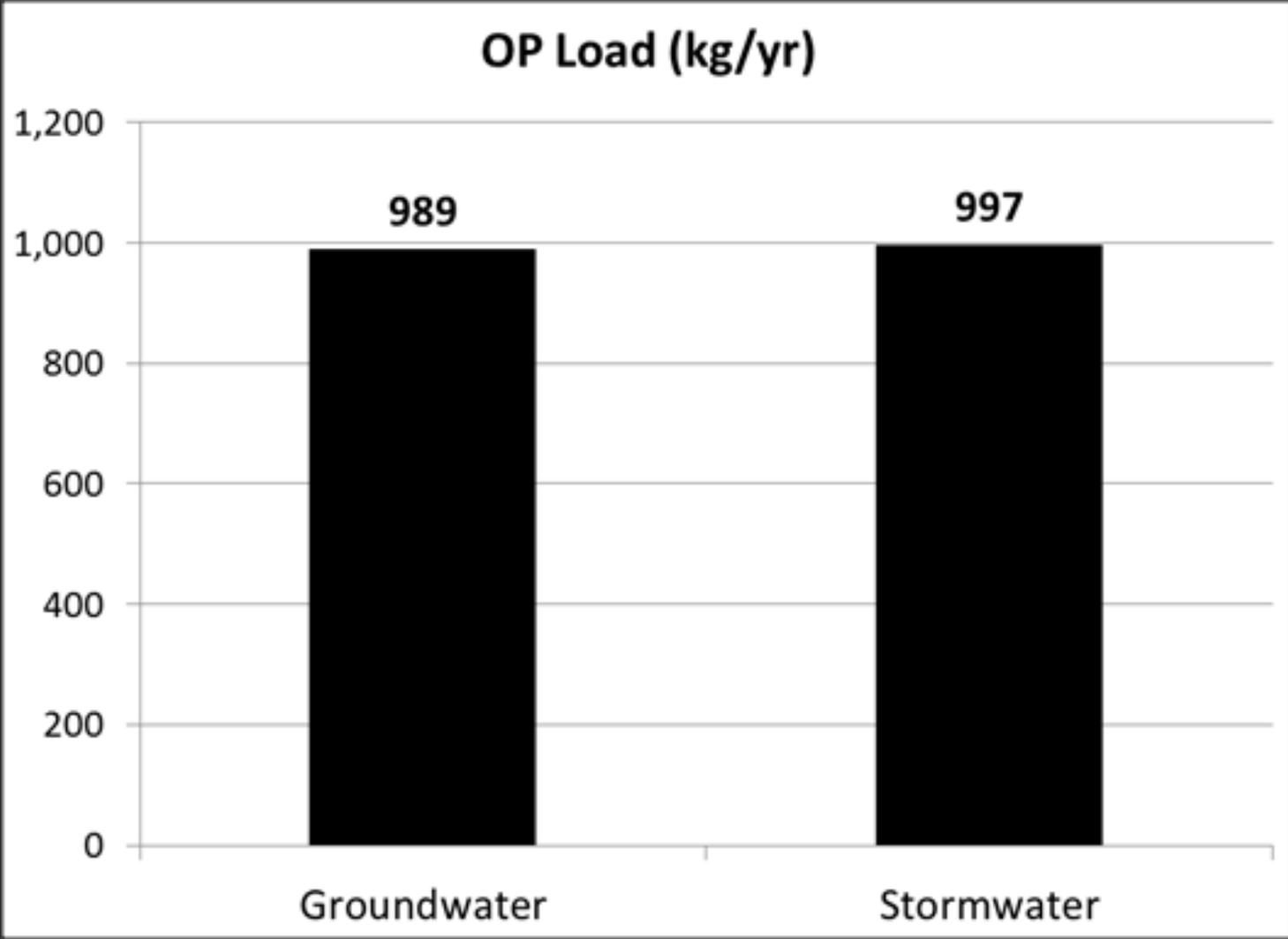


# Groundwater Load





# Groundwater Load





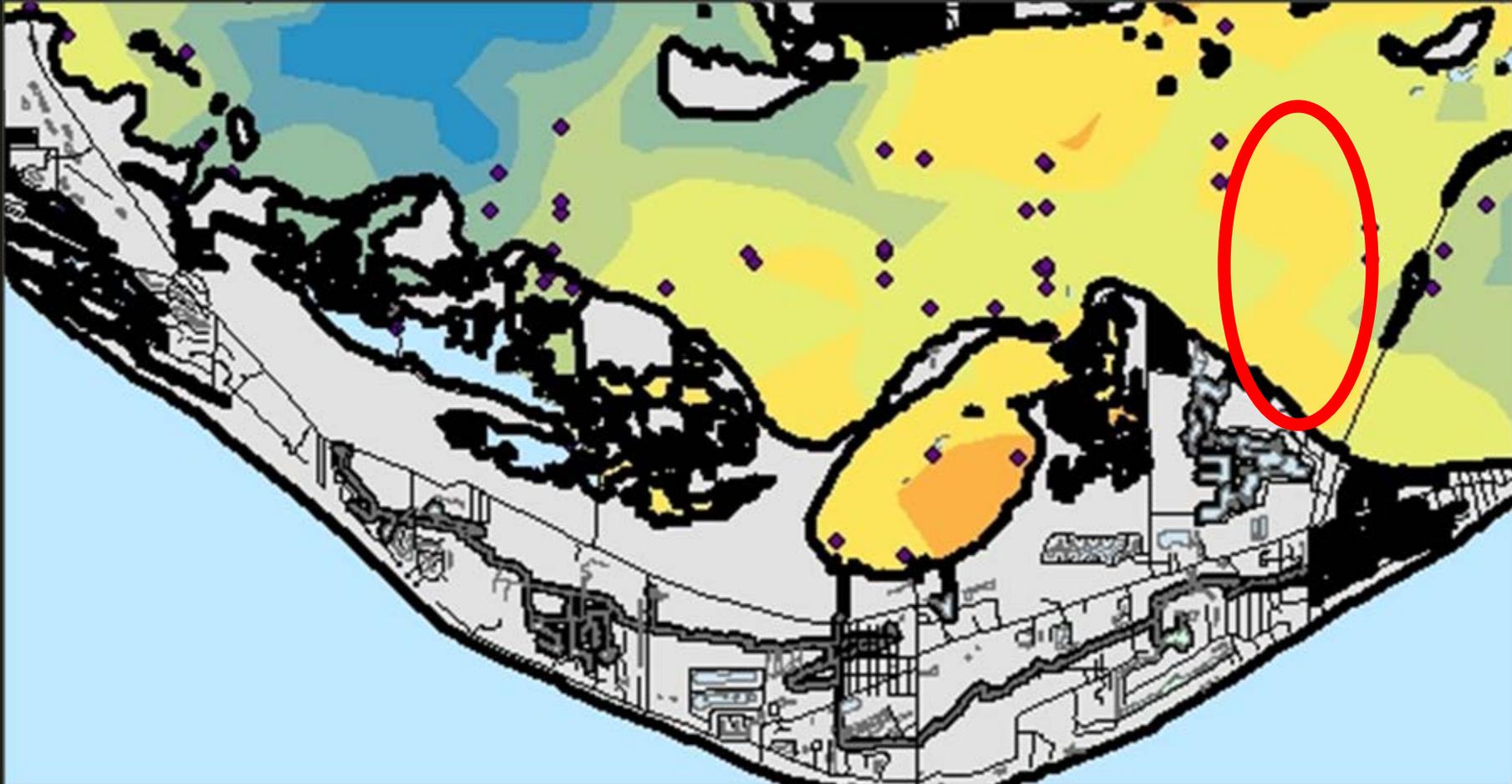
# Inorganic Nitrogen Load



Mean IN Load Wet Season kg/day-km



# Groundwater Load





# Inorganic Phosphorus Load



Mean OP Load Wet Season kg/day-km

N



# Conclusions



- Groundwater flow volume from Sanibel as significant as stormwater.
- Groundwater nutrient concentrations generally higher than stormwater.
- Groundwater nutrient loads as important as stormwater load.
- Golf courses are largest load contributor.
- Reclaimed water use and fertilization





## Sanibel Slough

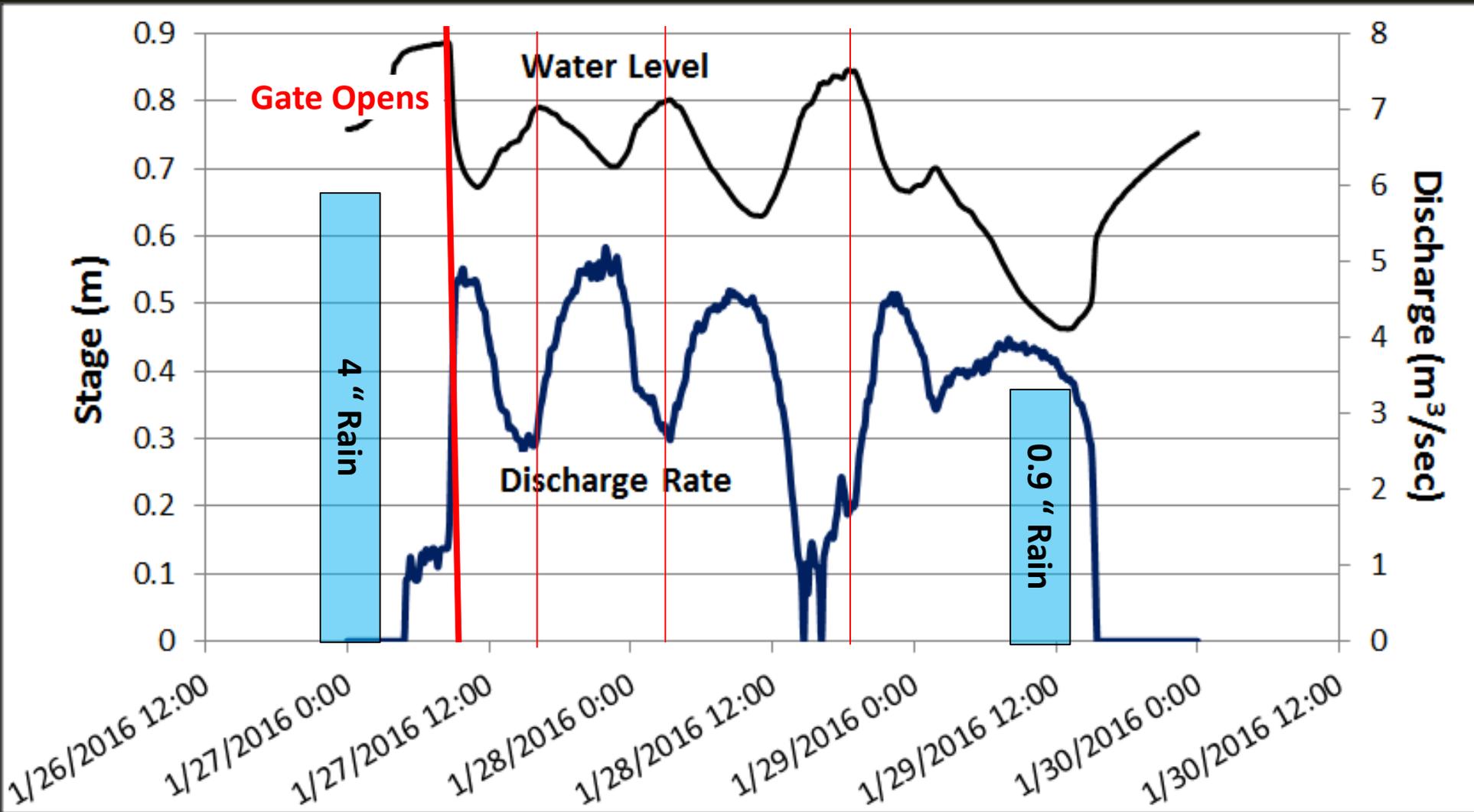
Data presented on this page is provisional and subject to revision



<http://marinelab.sccf.org/research/sanibel-slough/>



# Beach Road Weir



# Calculation of Nutrient Load



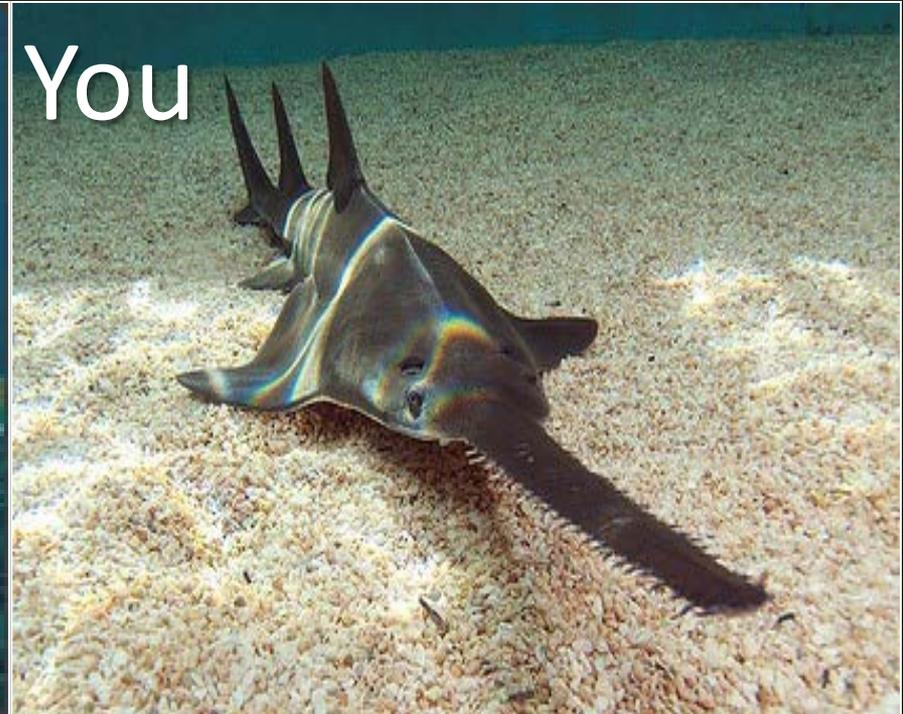


# SANIBEL

A BARRIER ISLAND SANCTUARY



Thank You



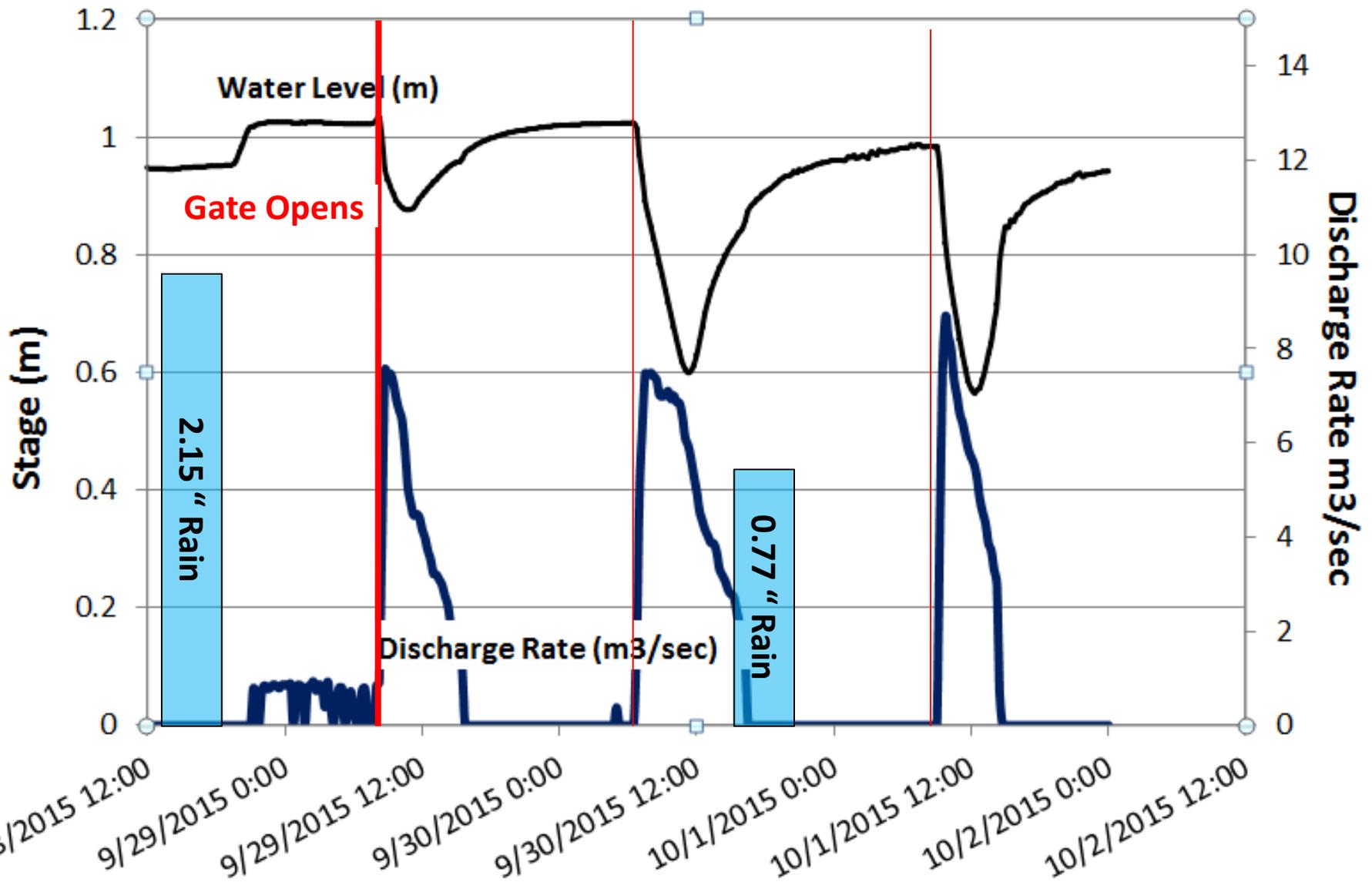
# SCCF

Sanibel-Captiva Conservation Foundation

*Come explore our natural world*



# Tarpon Bay Weir





 SanibelRiver\_GWSites

0 0.5 1 2 Kilometers

