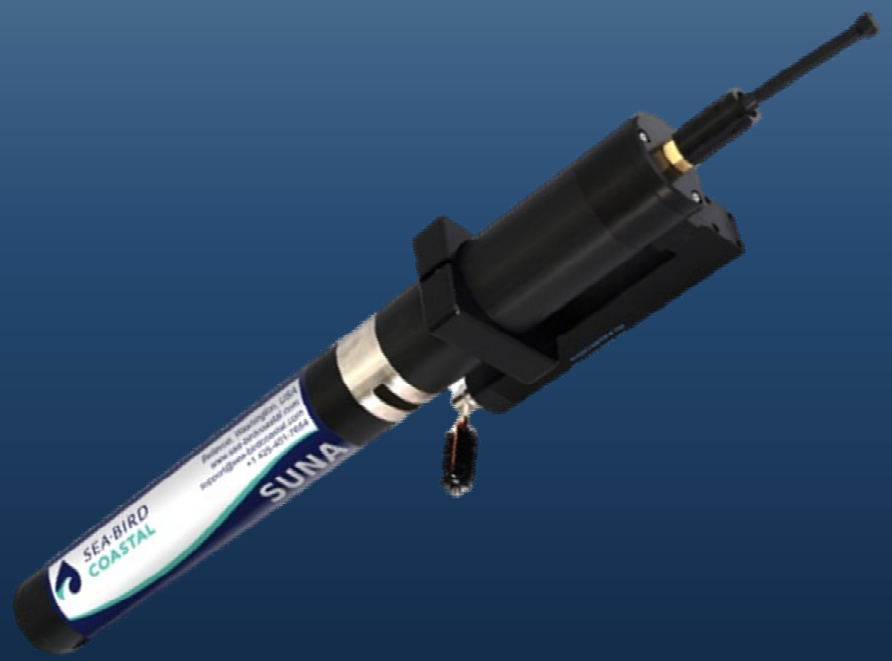
Data, Data, Everywhere!

What Has Continuous Water Quality Monitoring Taught Us About Our Springs?



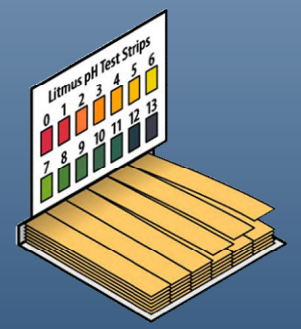
Data collected with funding from the Department of Environmental Protection (DEP) and cooperation from the United States Geological Survey (USGS) and Florida State Parks (FSP).

WQ Parameters Measured

Temperature

Specific Conductivity

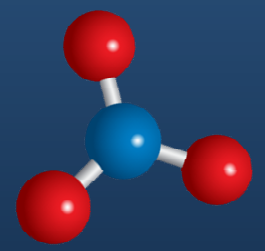
Dissolved Oxygen



pH

Dissolved Organic Matter

Turbidity

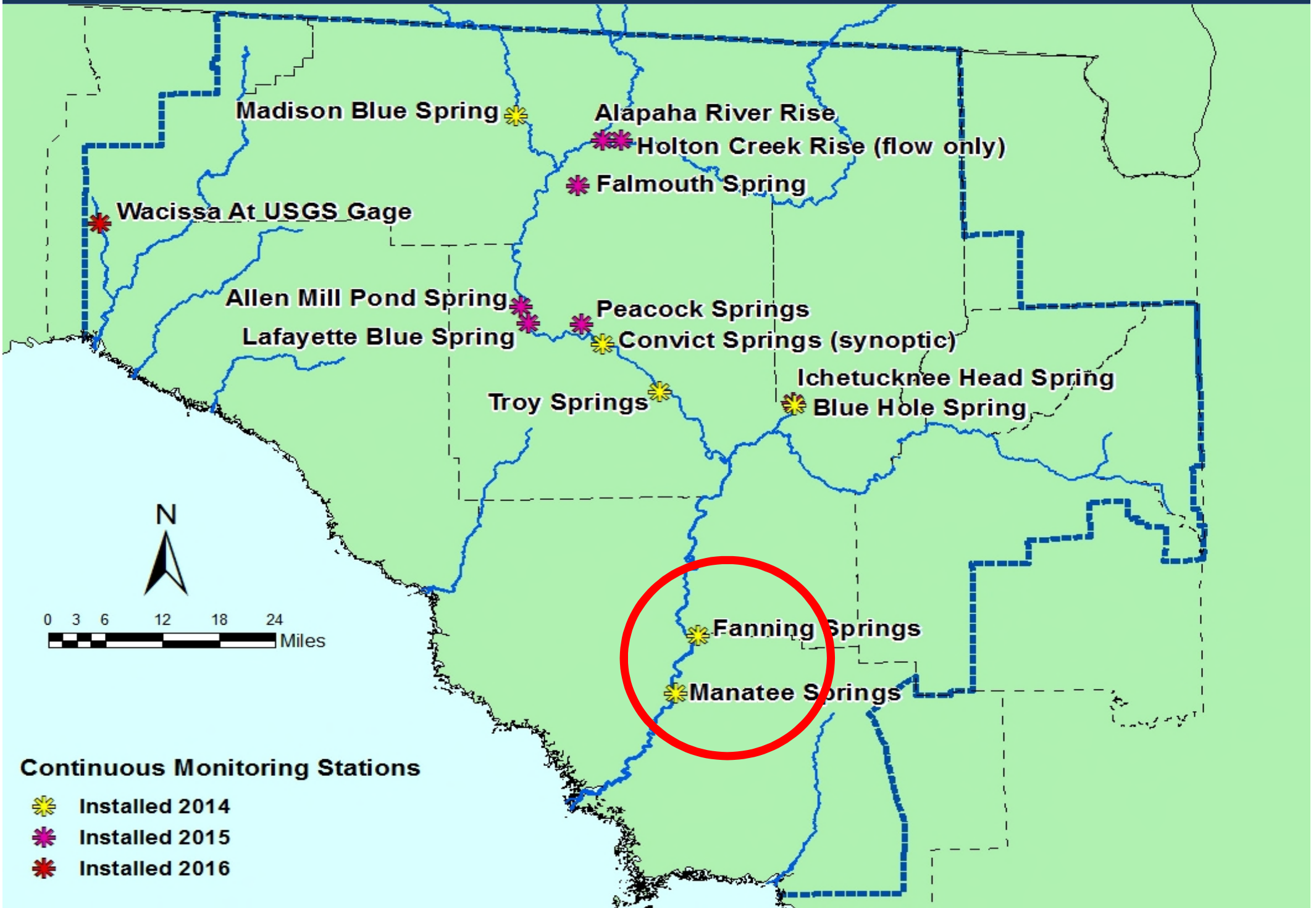


Nitrate-Nitrogen

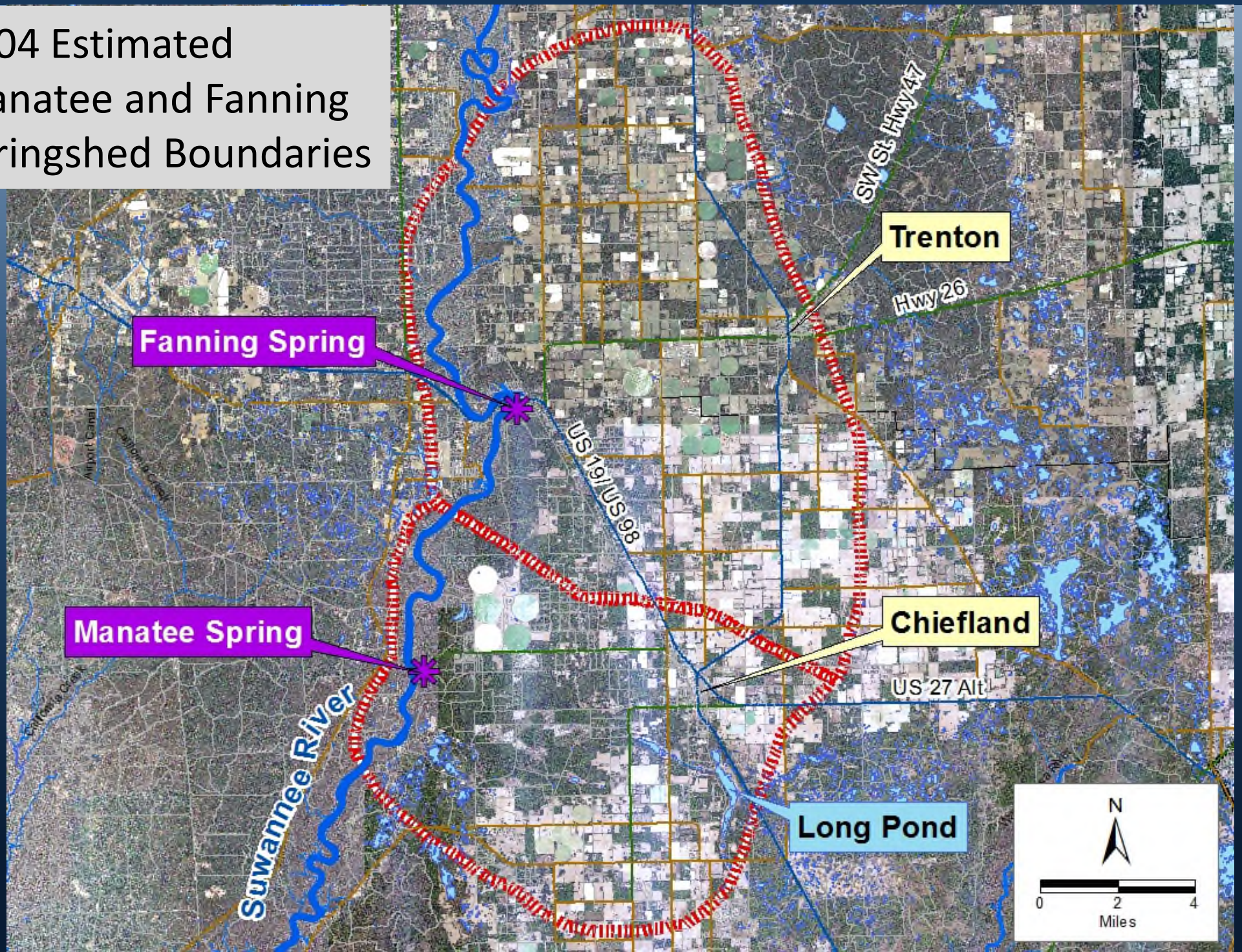
Continuous Velocity and Levels where possible

Suwannee River Water Management District

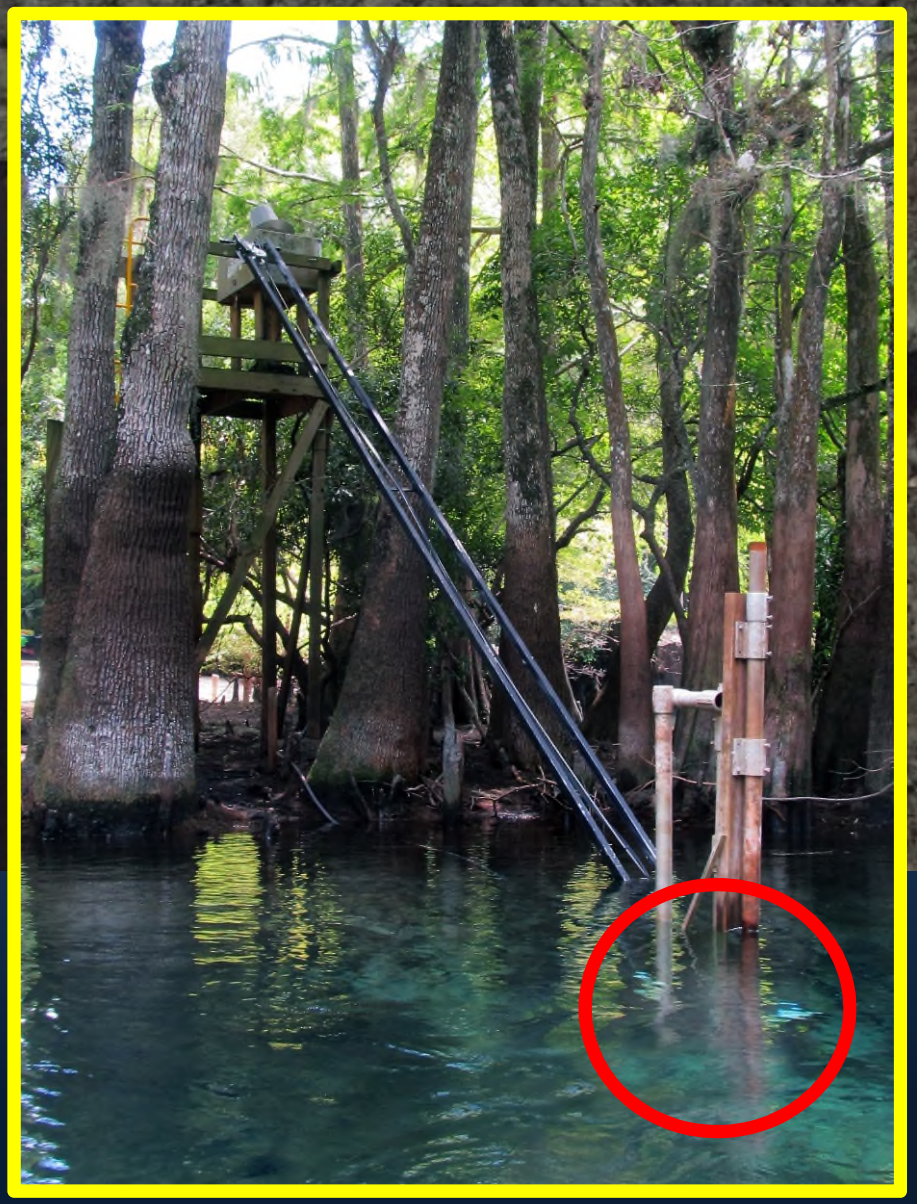
WATER FOR NATURE
WATER FOR PEOPLE



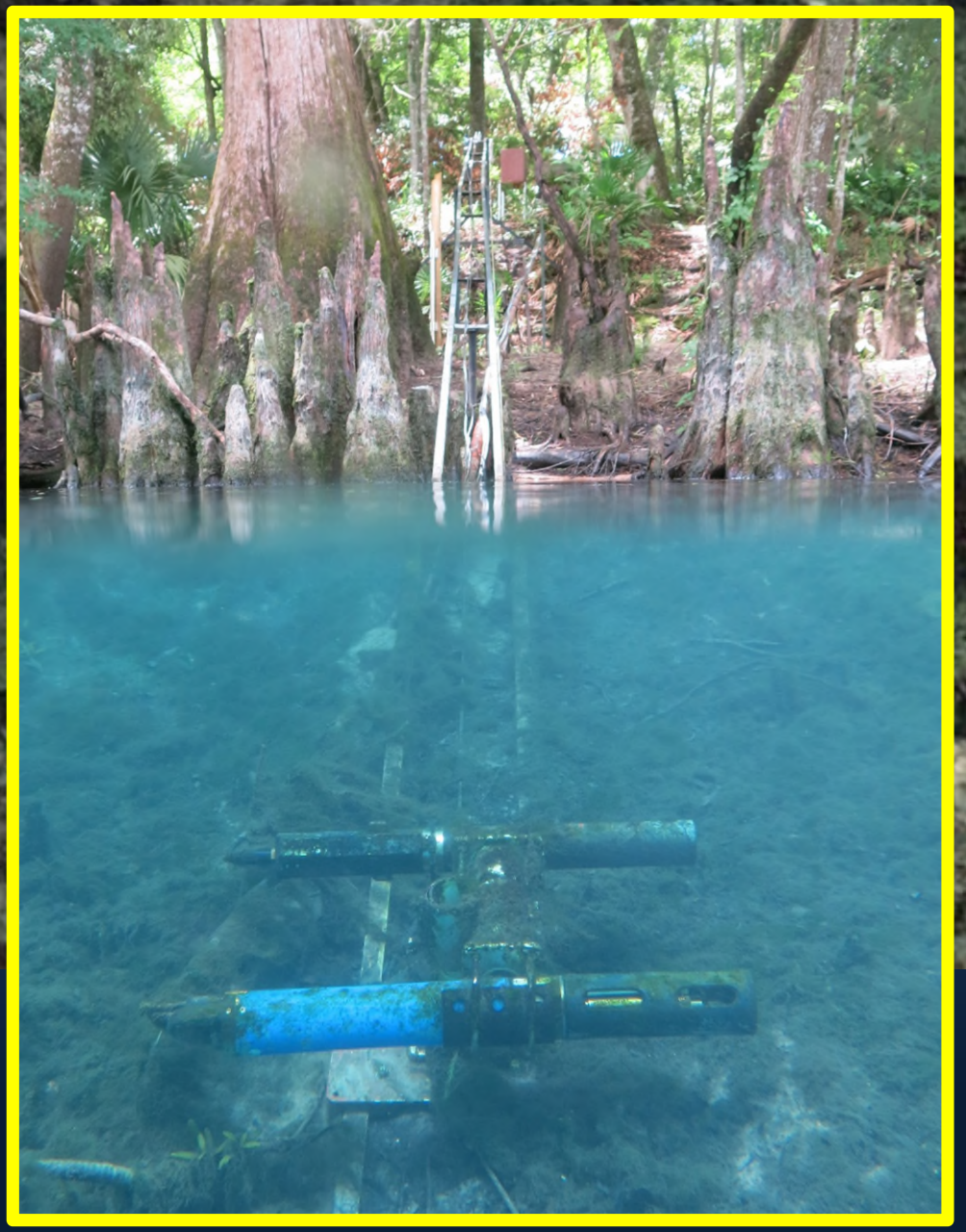
2004 Estimated Manatee and Fanning Springshed Boundaries



Manatee Springs

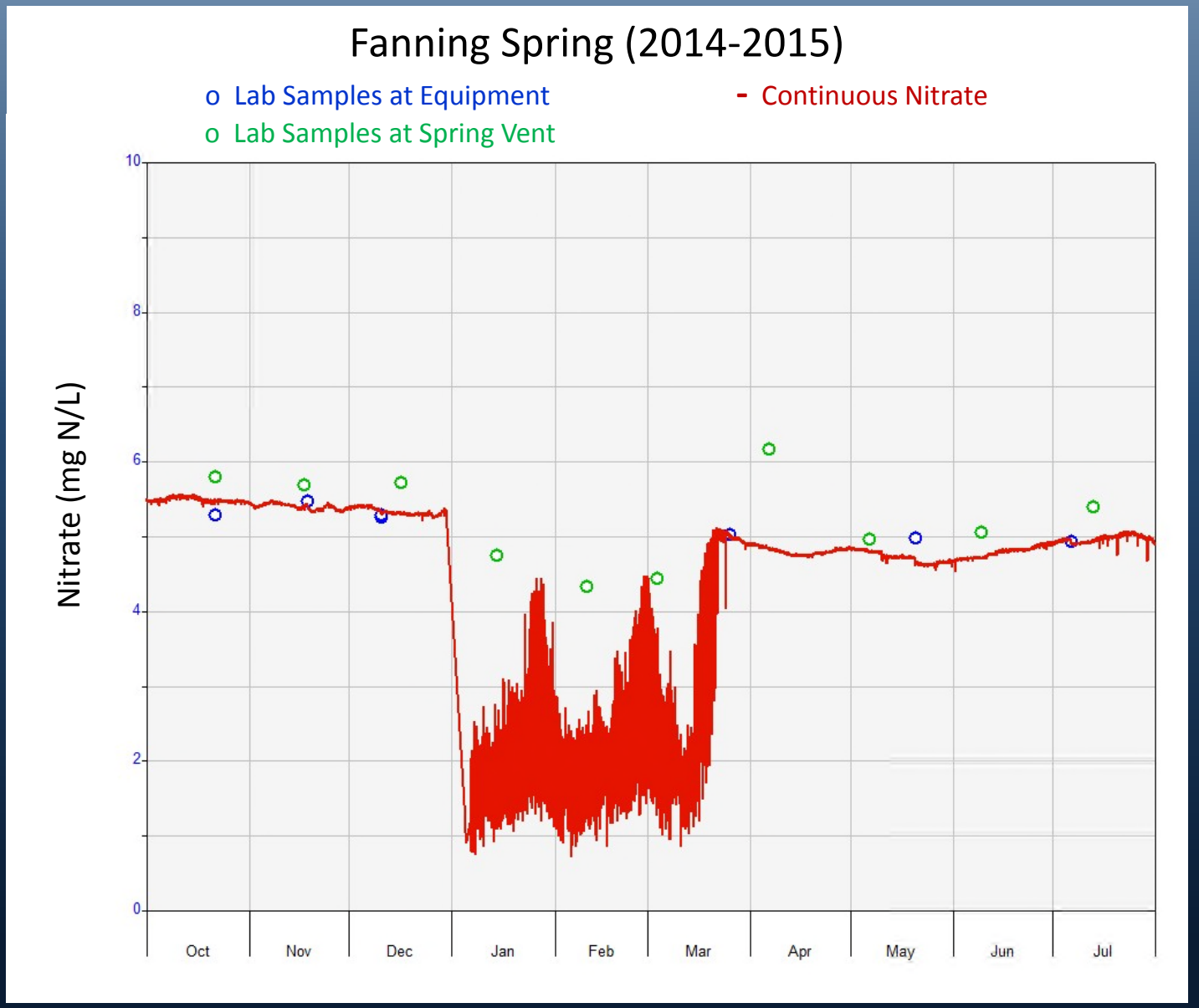


Fanning Springs

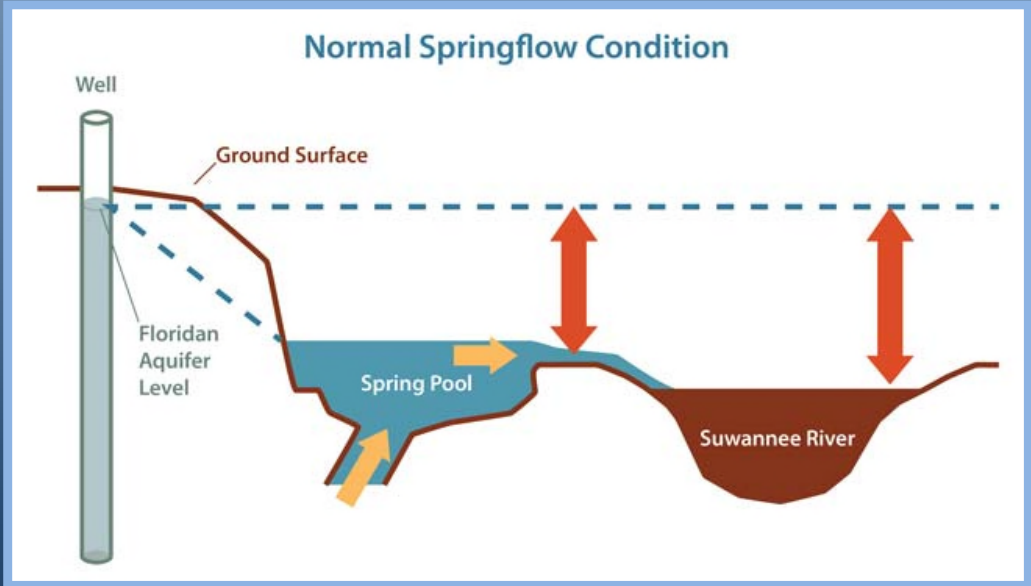


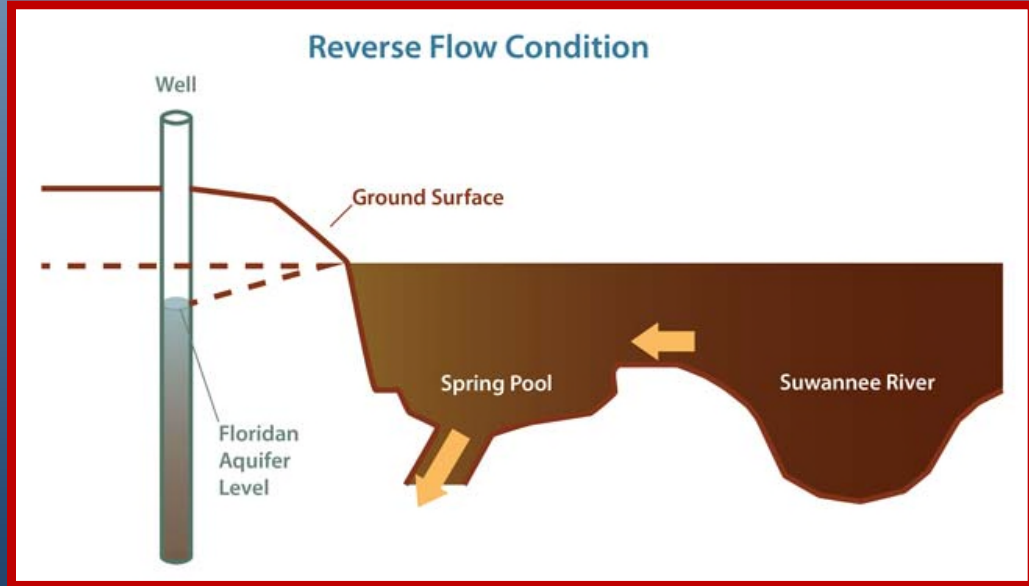
Why Continuous Data?

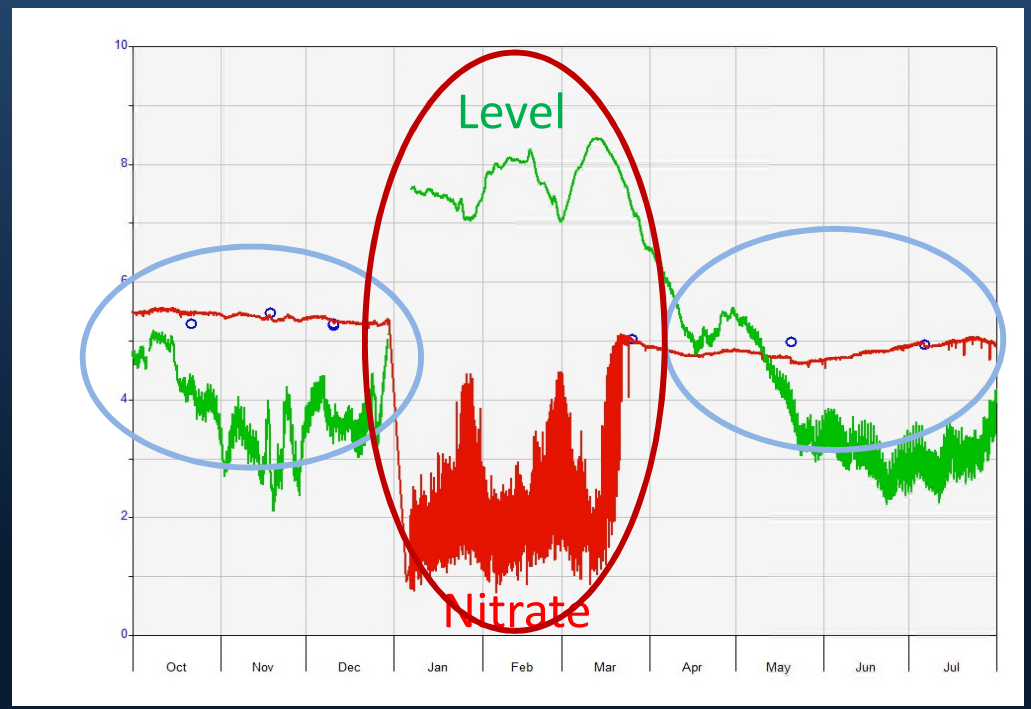
VS.

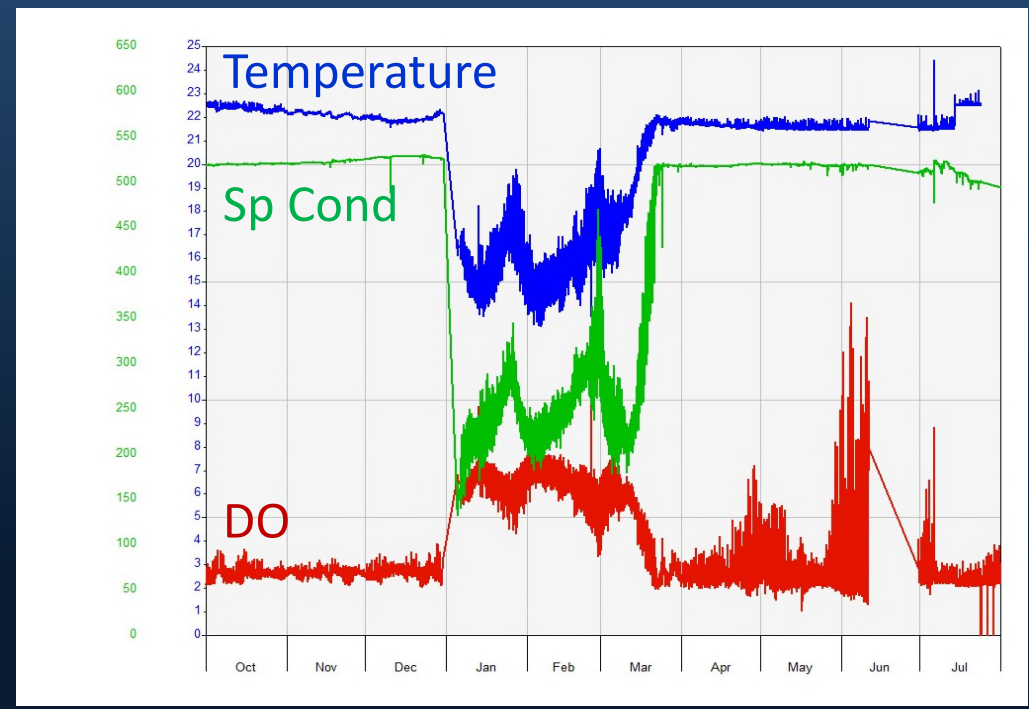


Event Responses – Brown Outs

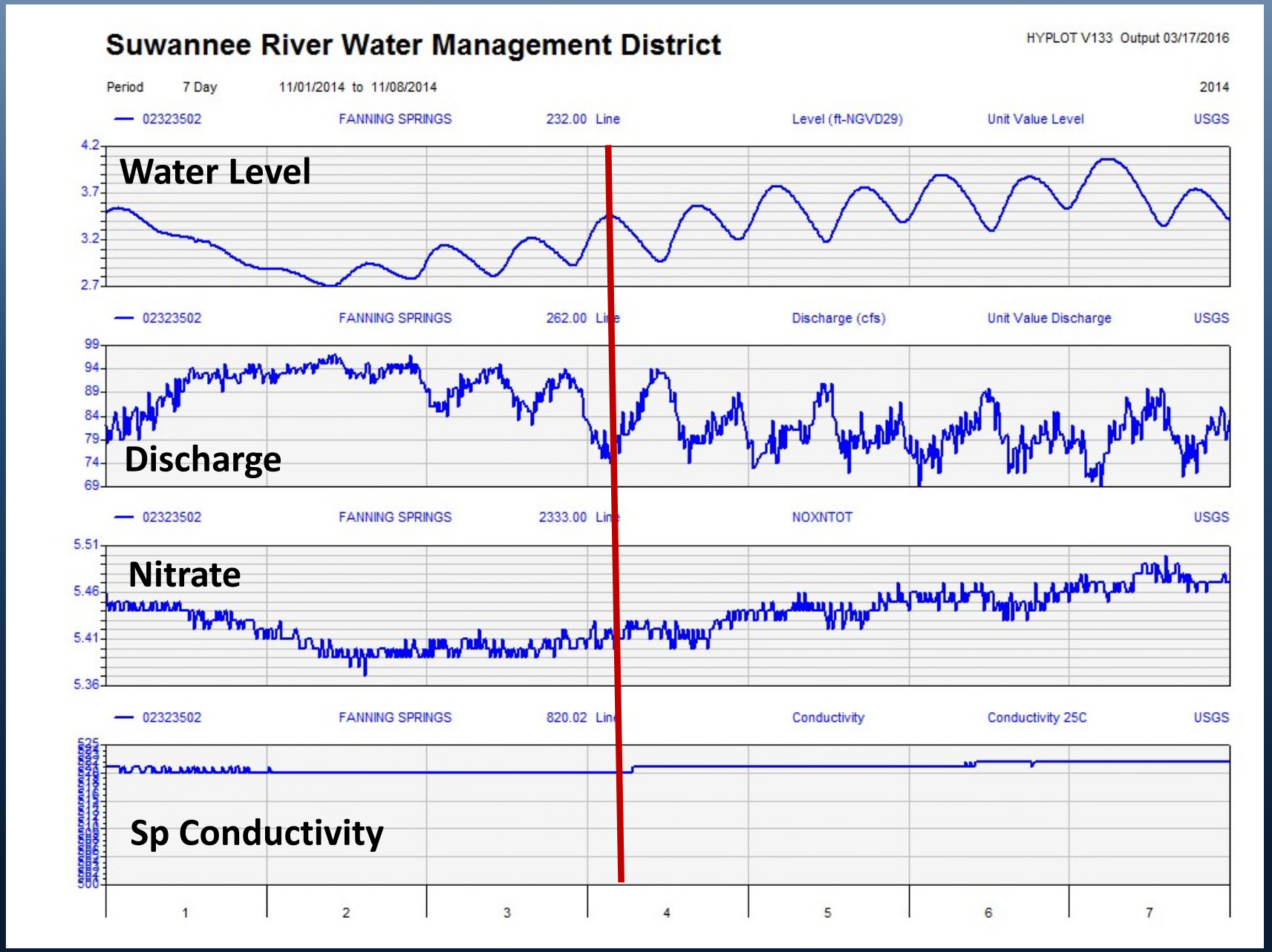




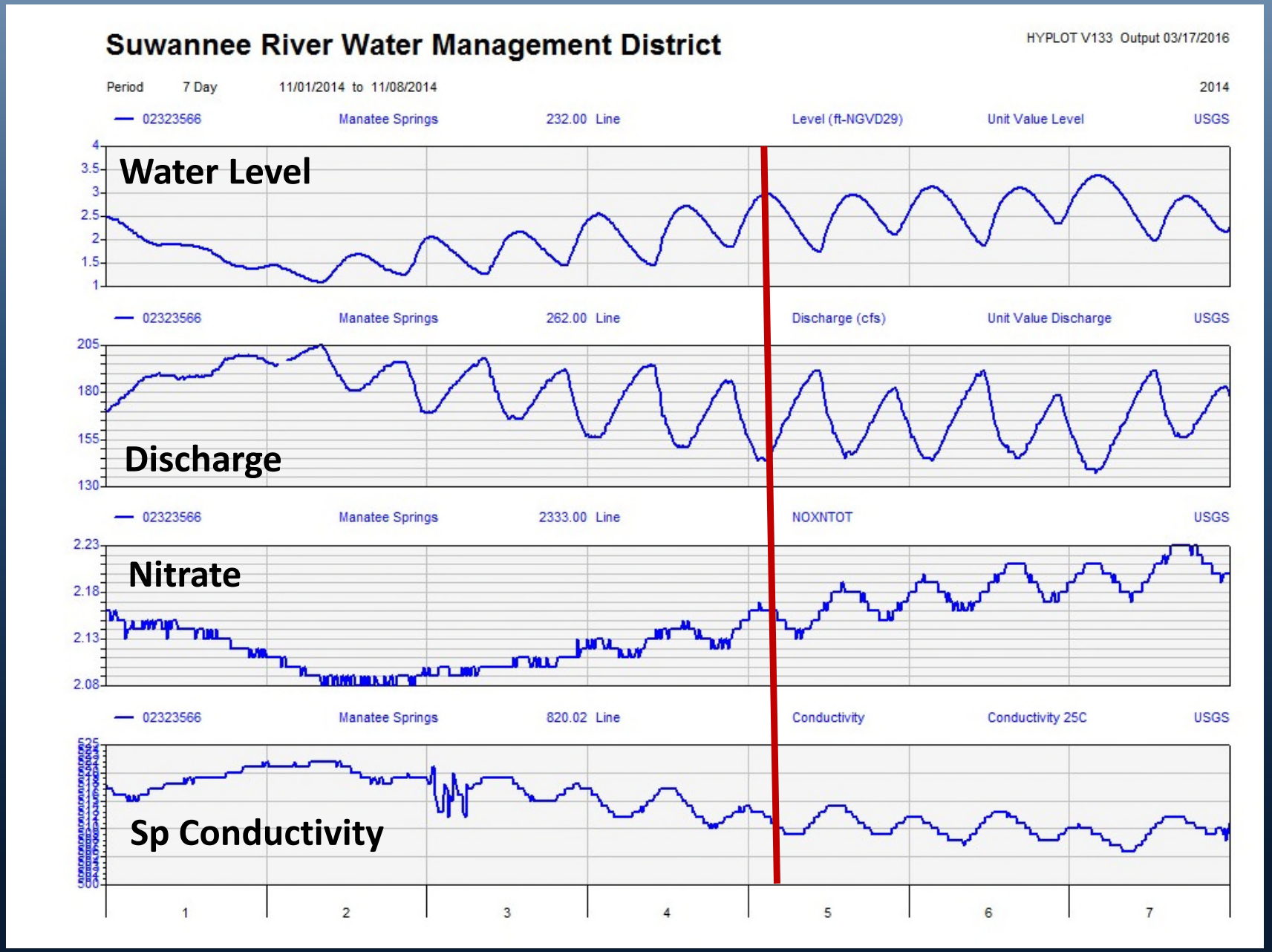




Tidal Influences - Fanning

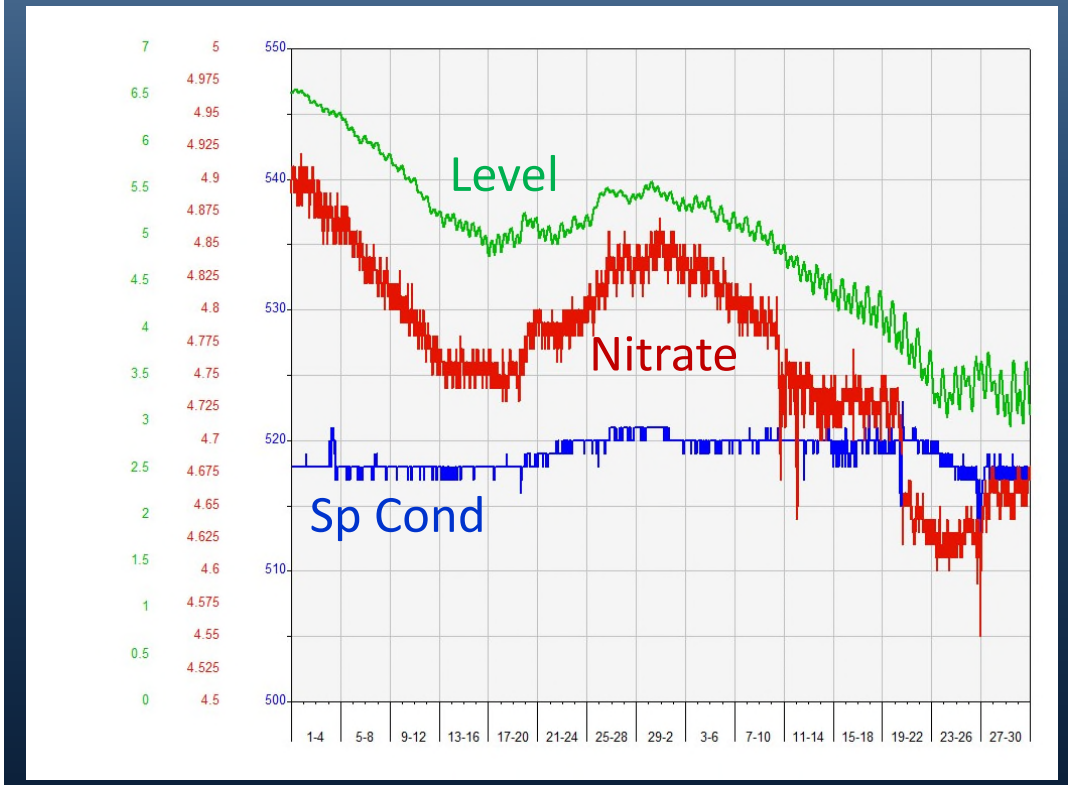


Tidal Influences - Manatee

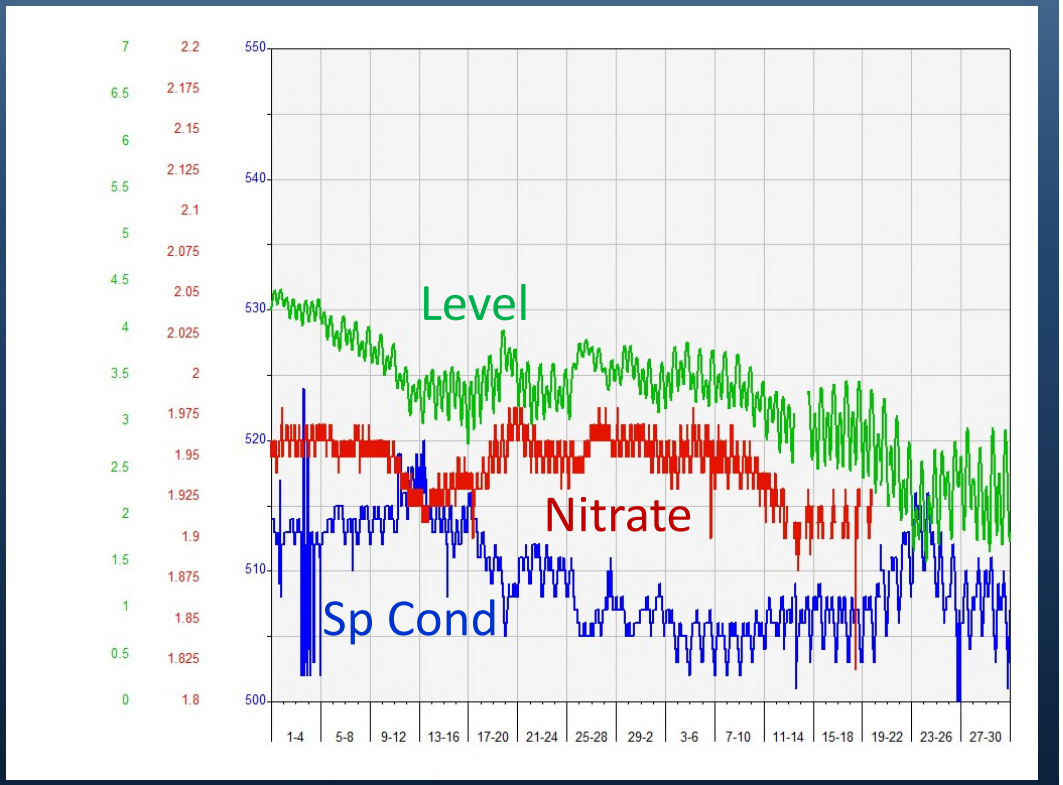


Parameter Linkage

Fanning Spring



Manatee Springs

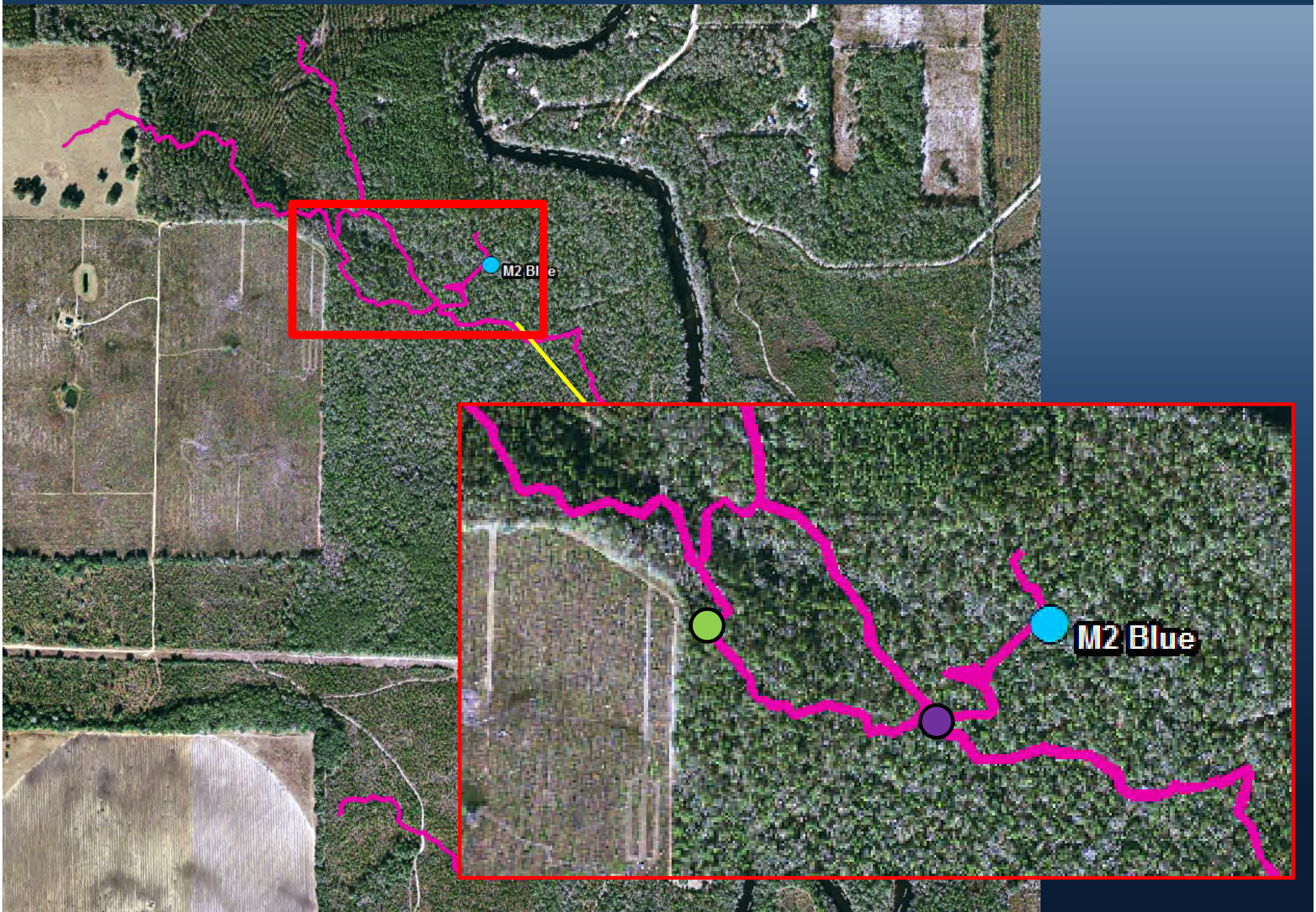


4/1/2015 to 5/31/2015
Under normal spring flow conditions

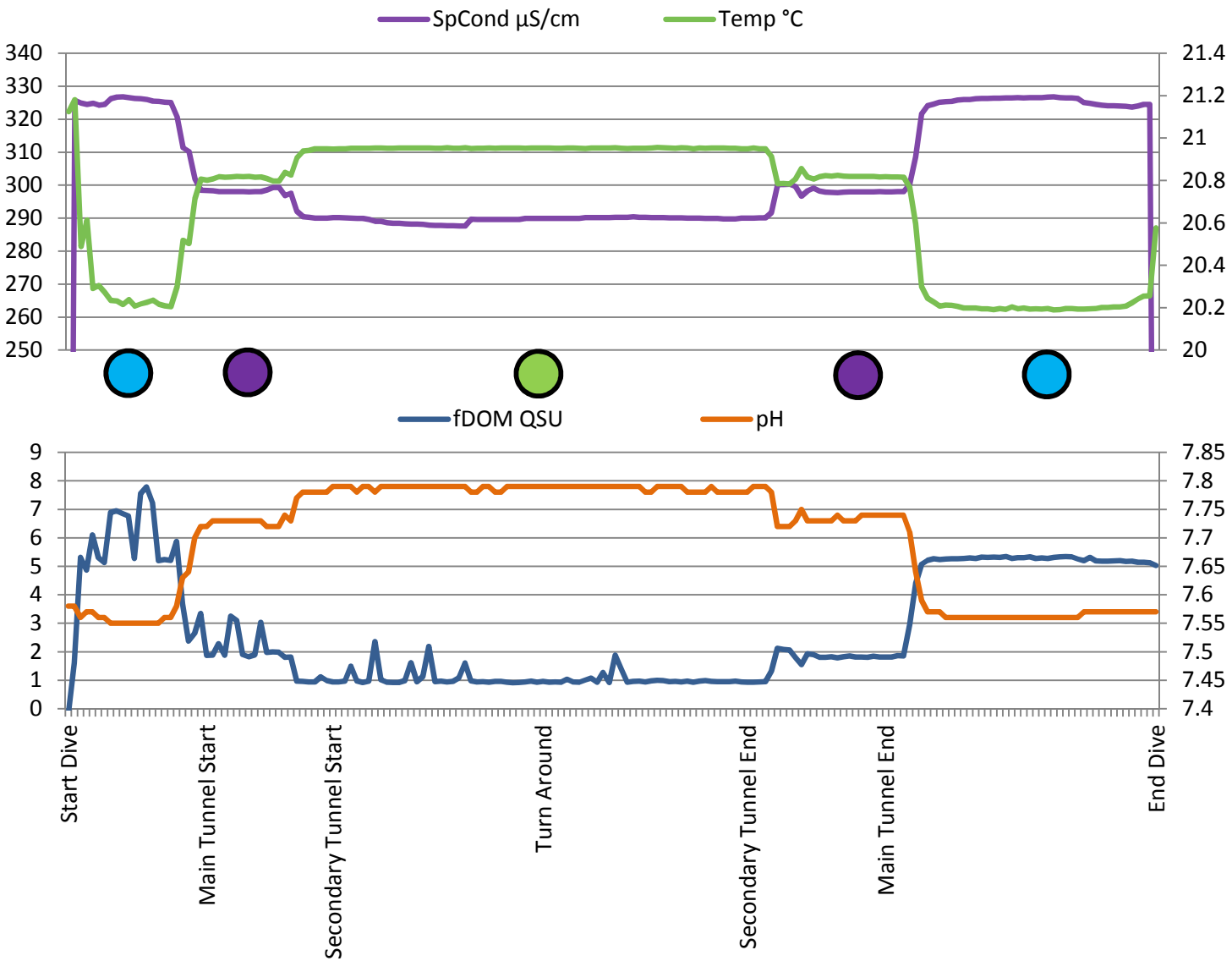
Super Cool Cave Data

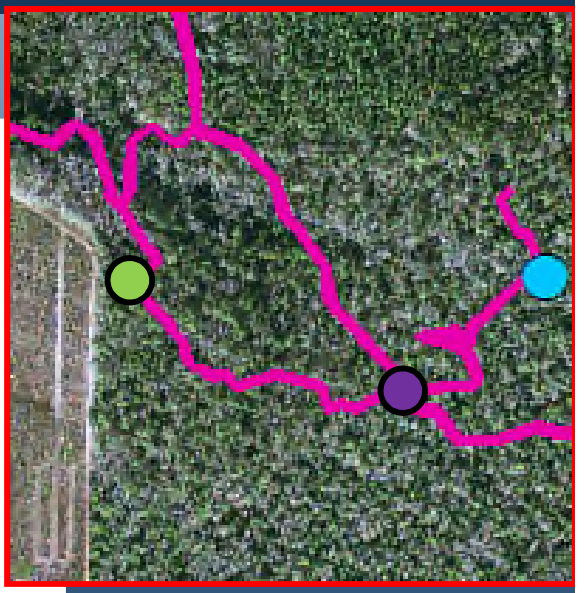
Disclaimer

No scuba dives were performed on company time

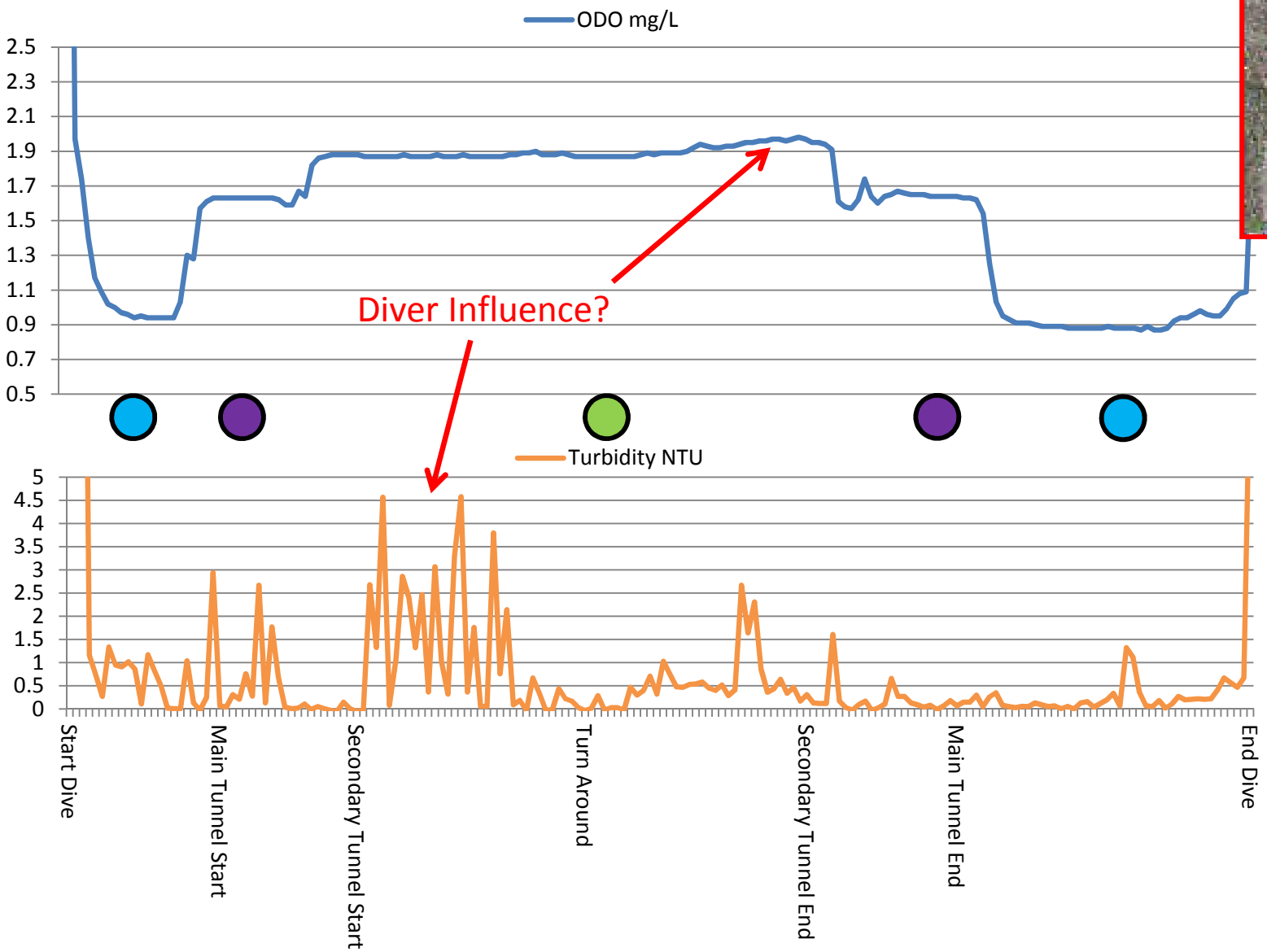

M2 Blue

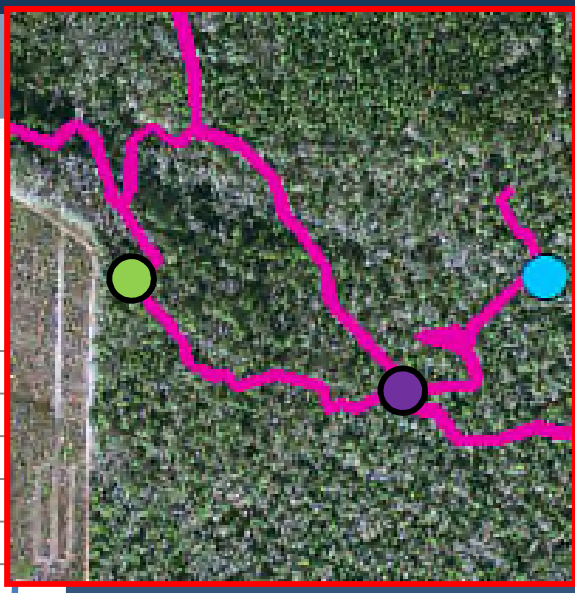
M2 Blue

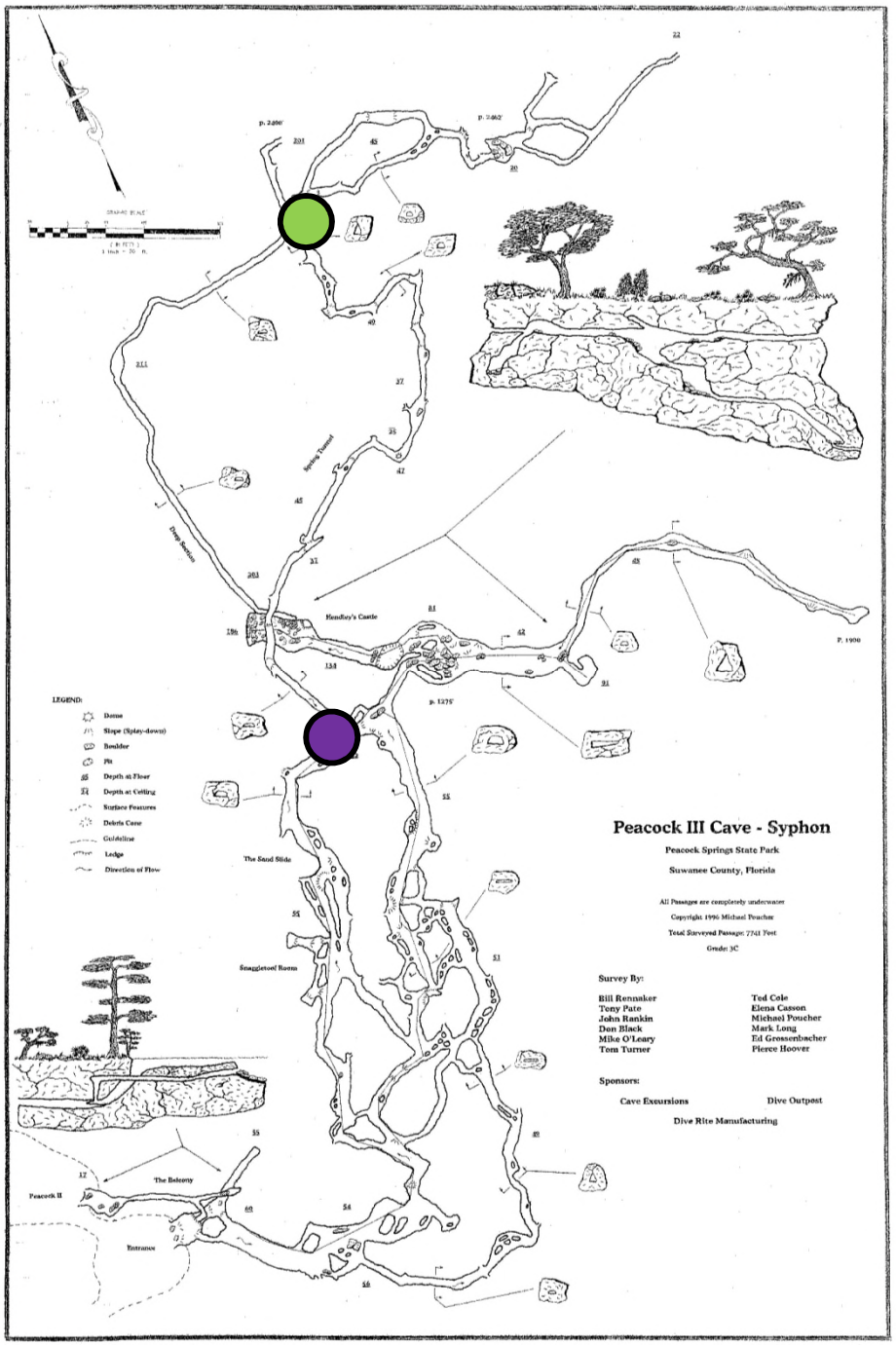

SpCond µS/cm
Temp °C
340
330
320
310
300
290
280
270
260
250
21.4
21.2
21
20.8
20.6
20.4
20.2
20
fDOM QSU
pH
9
8
7
6
5
4
3
2
1
0
7.85
7.8
7.75
7.7
7.65
7.6
7.55
7.5
7.45
7.4
Start Dive
Main Tunnel Start
Secondary Tunnel Start
Turn Around
Secondary Tunnel End
Main Tunnel End
End Dive

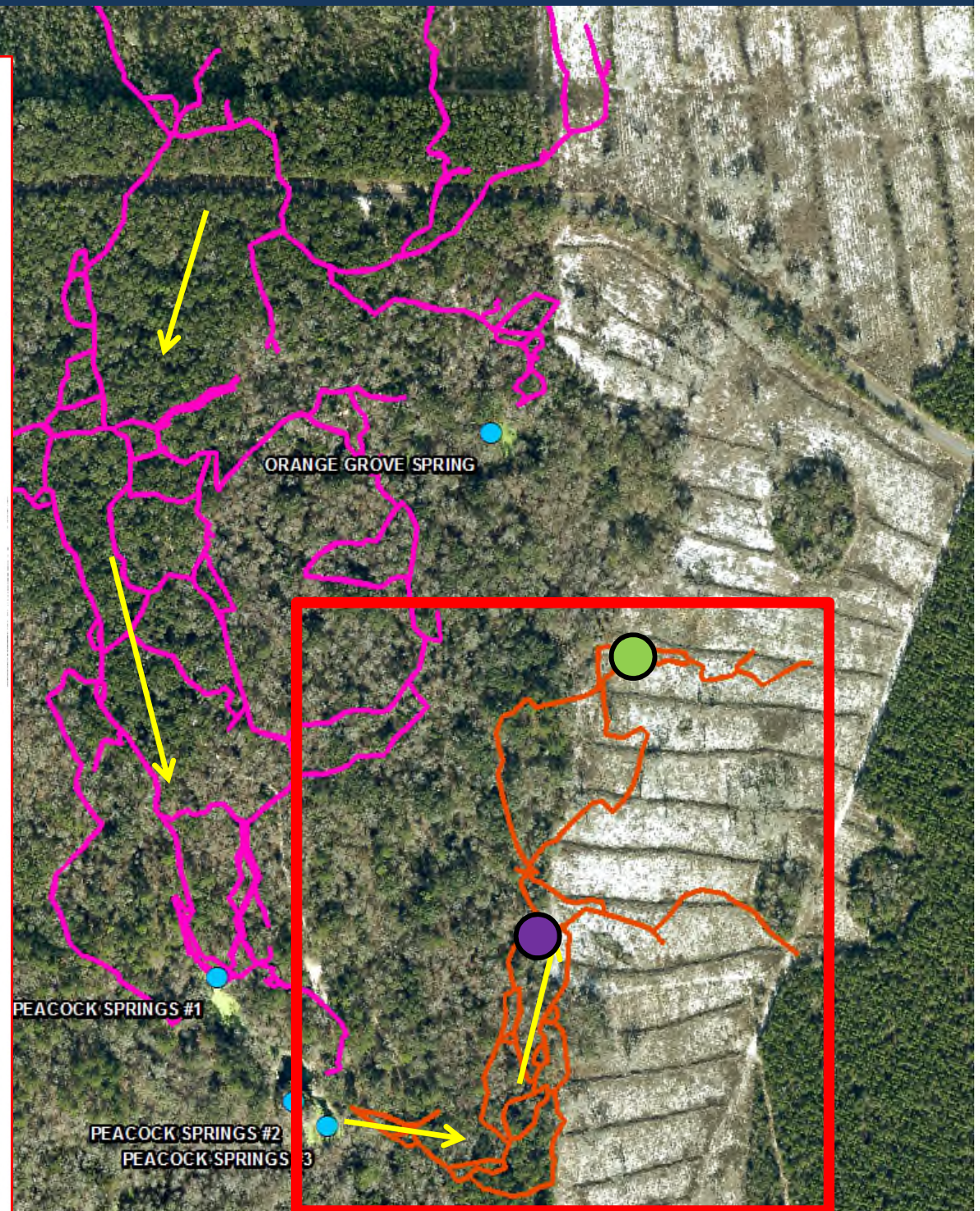


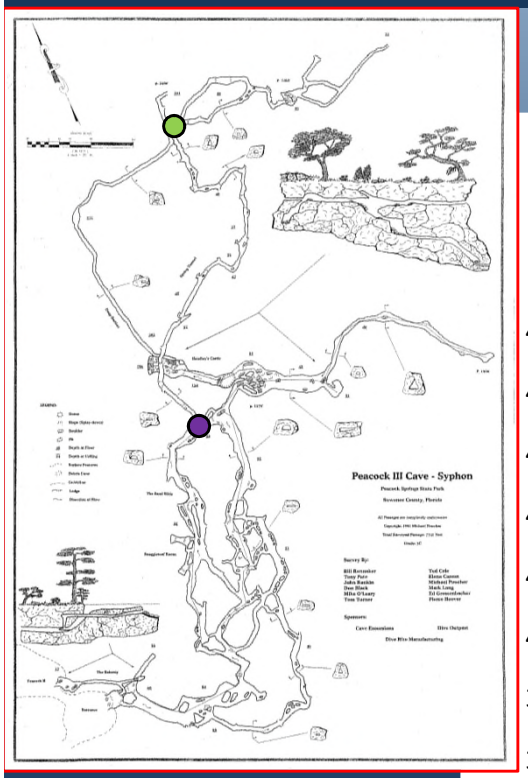
M2 Blue


ODO mg/L
2.5
2.3
2.1
1.9
1.7
1.5
1.3
1.1
0.9
0.7
0.5
Diver Influence?
Turbidity NTU
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Start Dive
Main Tunnel Start
Secondary Tunnel Start
Turn Around
Secondary Tunnel End
Main Tunnel End
End Dive

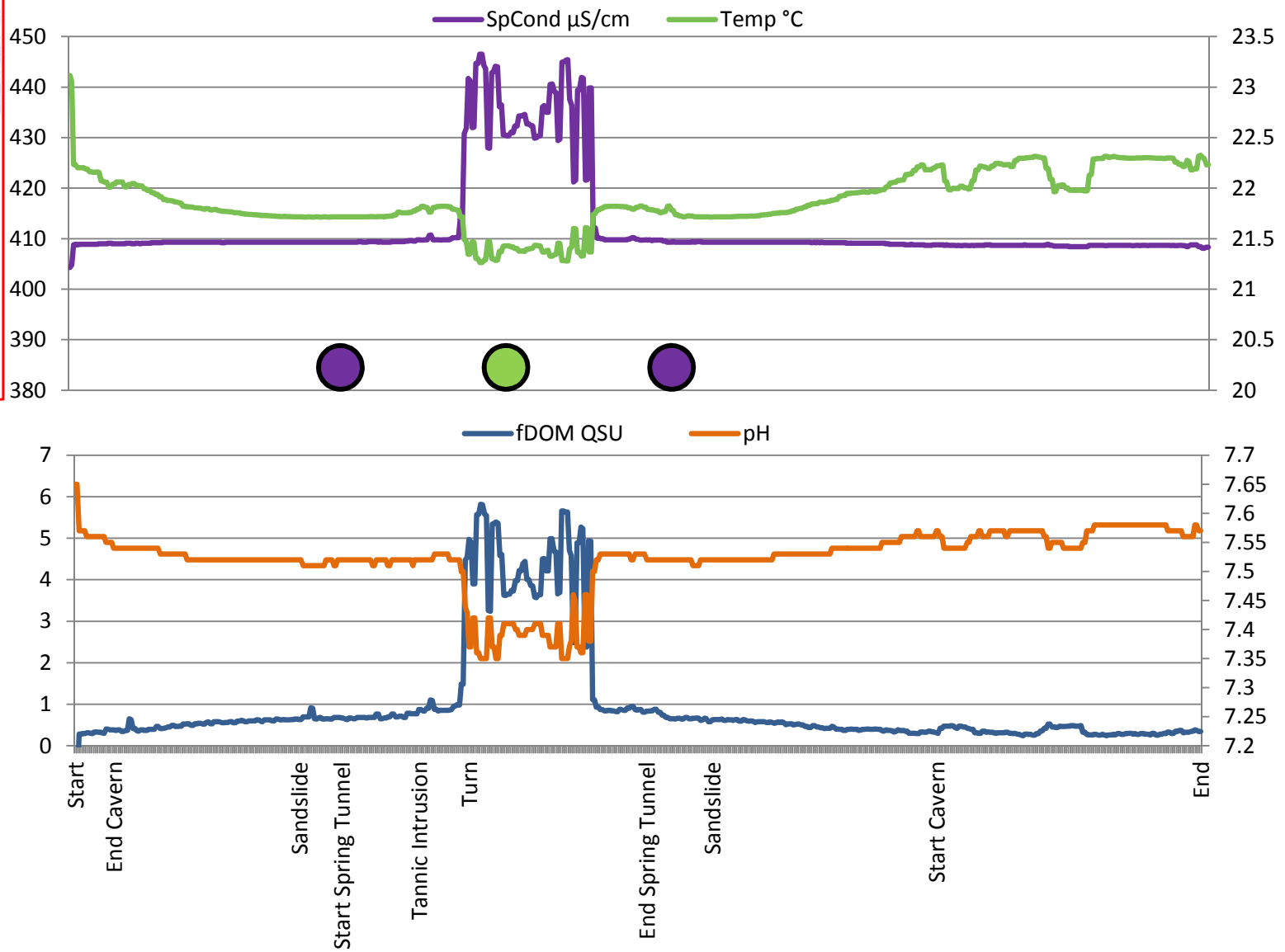



Peacock III Cave - Syphon
Peacock Springs State Park
Suwanee County, Florida
All Passages are completely underwater
Copyright 1996 Michael Poucher
Total Surveyed Passage: 2741 Feet
Grade: 3C
Survey By:
Bill Rennaker
Tony Pate
John Rankin
Don Black
Mike O'Leary
Tom Turner
Ted Cole
Elena Casson
Michael Poucher
Mark Long
Ed Grossenbacher
Pierce Hoover
Sponsors:
Cave Excursions
Dive Outpost
Dive Rite Manufacturing
LEGEND:
Dome
Slope (Splay-down)
Boulder
Pit
Depth at Floor
Depth at Ceiling
Surface Features
Debris Cone
Guideline
Ledge
Direction of Flow
Hendley's Castle
The Sand Slide
Snaggletoot Room
The Balcony
Peacock II
Entrance


ORANGE GROVE SPRING
PEACOCK SPRINGS #1
PEACOCK SPRINGS #2
PEACOCK SPRINGS #3


Peacock III Cave - Syphon

Peacock 3


SpCond µS/cm
Temp °C
450
440
430
420
410
400
390
380
23.5
23
22.5
22
21.5
21
20.5
20
fDOM QSU
pH
7
6
5
4
3
2
1
0
7.7
7.65
7.6
7.55
7.5
7.45
7.4
7.35
7.3
7.25
7.2
Start
End Cavern
Sandslide
Start Spring Tunnel
Tannic Intrusion
Turn
End Spring Tunnel
Sandslide
Start Cavern
End

Summary

- Dynamic systems, each responding to influences in a unique and complicated way
- Things we can now consider:
  - Tidal effects
  - Rainfall (local and regional)
  - Groundwater and River levels
  - Land use/ Groundwater Pumping
  - Geologic Conditions/ Connectivity
  - Parameter linkages/ Contamination Sourcing

Complicated? Yes.
Worth it? Absolutely!

QUESTIONS?... ANSWERS?

We will accept either.

Darlene Saindon Velez DDS@srwmd.org

Tara Rodgers TER@srwmd.org