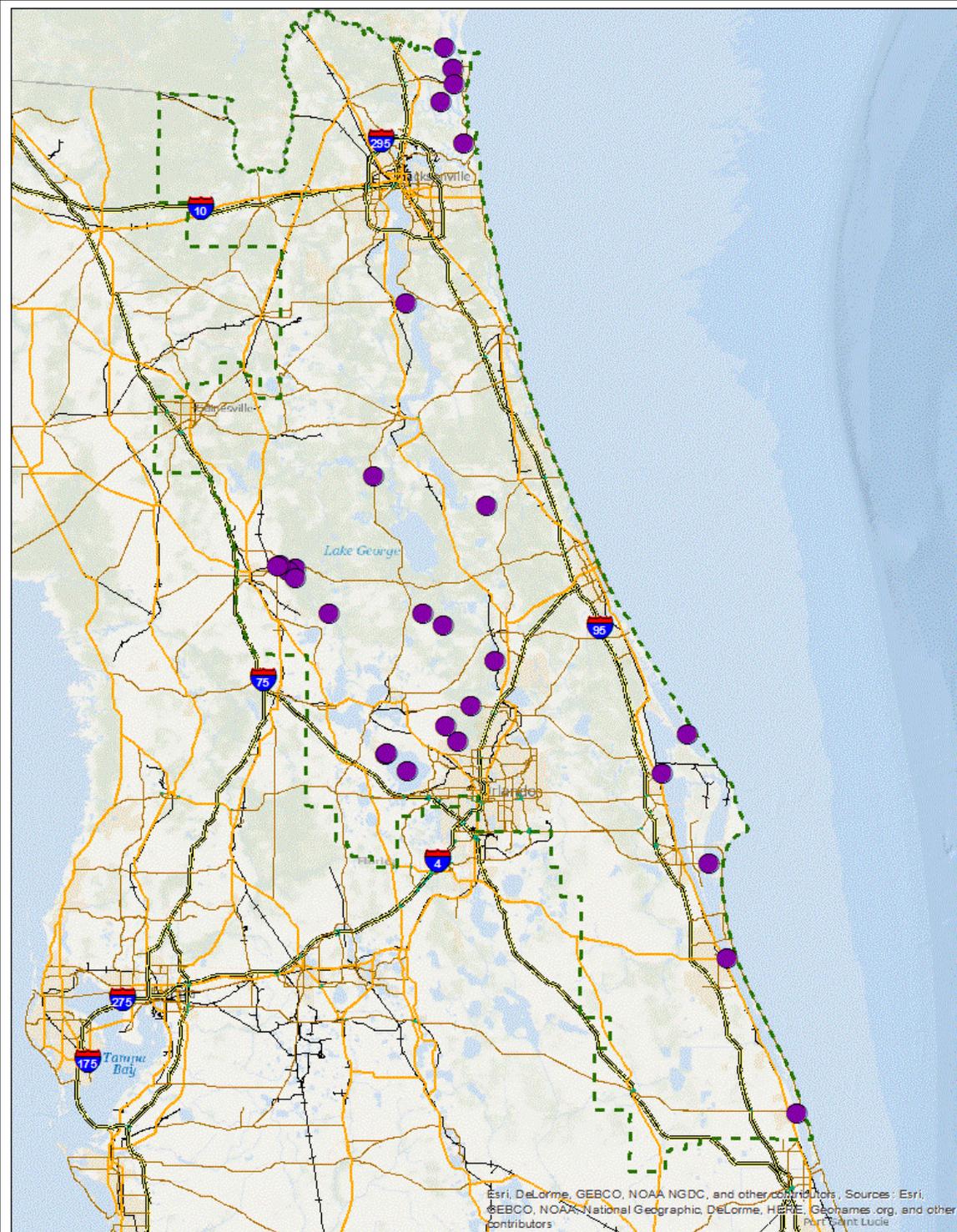


# **Implementation of Continuous Monitors at the SJRWMD**

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**Bureau of Water Resource Information**  
**St. Johns River Water Management District**



## Monitoring Locations



# YSI EX02

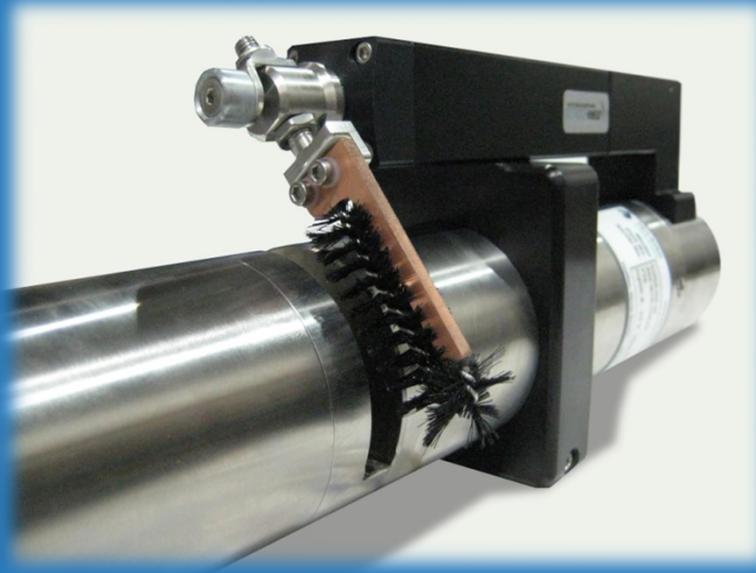


- 6 probes with wiper
- Metal bulkhead
- Wet connect sensors
- Bluetooth
- Probes store calibration information

- Conductivity/Temperature
- Dissolved Oxygen
- pH
- Chl & BGA
- Turbidity
- fDOM

# SUNA V2

## Submersible Ultraviolet Nitrate Analyzer



- Chemical-free
- Based on the ISUS (*In Situ* Ultraviolet Spectroscopy) UV measurement technology developed at MBARI
- 5 or 10 mm path length
- Optional wiper

# CYCLE P04



- Chemical reaction
- US EPA method 365.5
- Blue – phosphate
- Yellow – ascorbic acid
- Red – acidified molybdate antimony (sulfuric acid <10%)
- 10 $\mu$ L reagents, 25  $\mu$ L sample
- Reflective tube
- 880 nm LED
- Silicon photodiode detector
- Spike run every six samples

# Additional Equipment

- Campbell datalogger
- Cell modem
- Solar panel(s)
- Battery(ies)



# Costs

- **YSI EXO 2**
  - Ranges from \$12K to \$18K
- **SUNA V2 – nitrate**
  - ~\$29K
  - Annual O&M contract \$1,500
- **Cycle PO4**
  - ~\$18K
  - Annual O&M contract \$1,450
- **Additional Equipment**
  - Data logger - \$1,100
  - Cell Modem - \$500
  - Solar Panel - \$220 per panel
  - Battery(ies) - \$100 to \$500
  - Shelter, wiring and supplies - ~\$400 to \$1,000



# Types of deployments

- Bridge
- Free Standing
- Shore
- Mobile - Buoy



# Field Installations – Bridge



# Sensor Cage



# Field Installations – Free Standing



# Field Installations – Free Standing



# Field Installations – EXO only



# Field Installations – Shore



# Fixed and Mobile Platforms

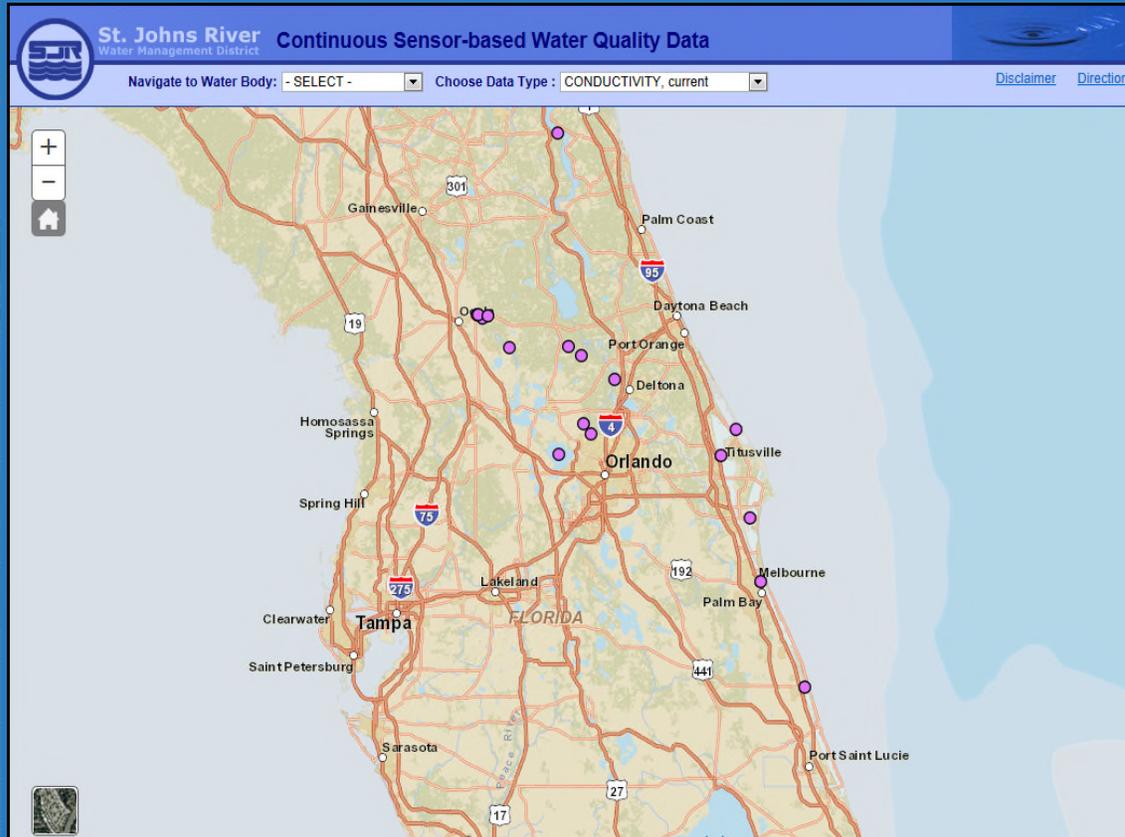


# Where is the data?

- Public website:  
<http://webapub.sjrwmd.com/agws10/hdswq/>
  - Recent 30 day graphs
  - Daily Min/Max/Mean
  - Subset of all parameters
- Hydstra
  - Hourly data
  - All parameters



# Continuous WQ Data Tool



How do we get there?

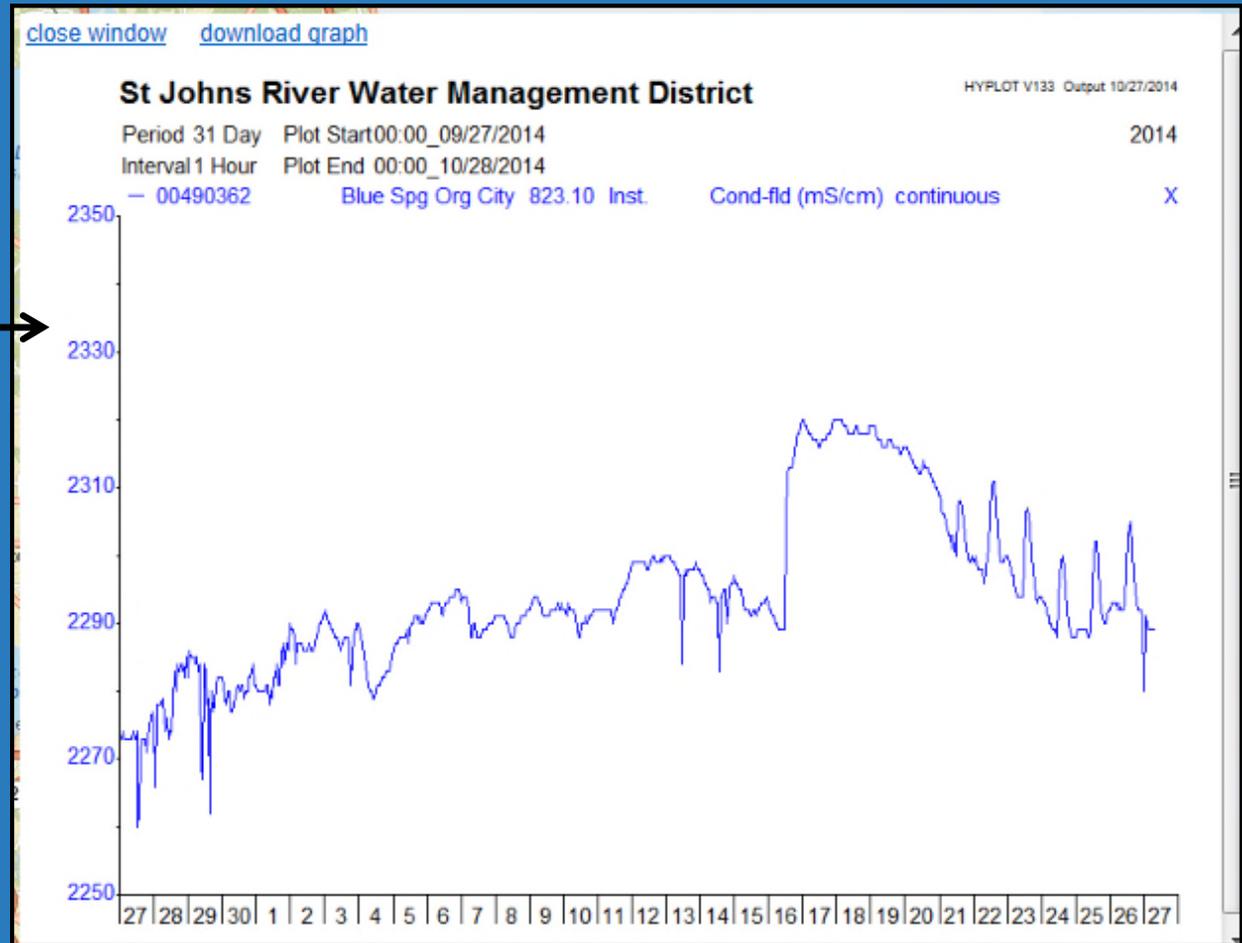
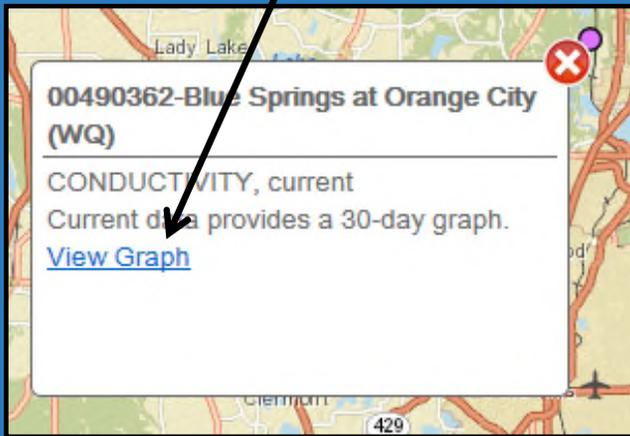
- 1) [www.sjrwmd.com](http://www.sjrwmd.com)
- 2) Online tools, GIS, data
- 3) Data Collection and Reports
- 4) Continuous sensor-based water quality data

<http://webapub.sjrwmd.com/agws10/hdswq/>

# Continuous WQ Data Tool

“Current” selection:

- Click on a dot to get station information
- Click “View Graph” to view the 30 day graph.

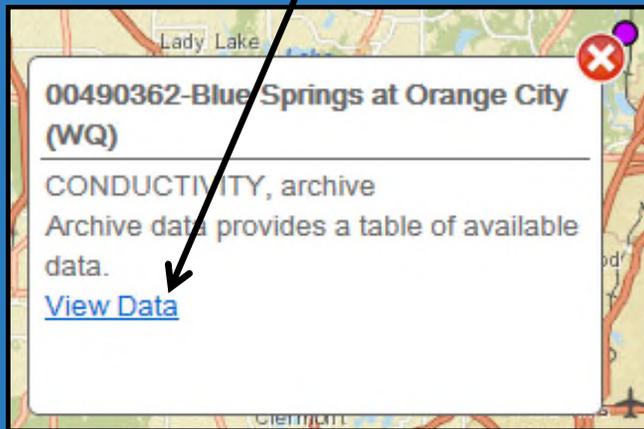


Click “download graph” to download a .JPG file of the graph.

# Continuous WQ Data Tool

“Archive” selection:

- Click on a dot to get station information
- Click “View Data” to view the data table.



Click “download data” to download a .CSV text file of the data table.

close window    download data

Station Number	Variable #	Variable Name	Date	Daily Mean	Daily Min	Daily Max	Quality Code	Source	Quality Code Description
00490362	823.10	Cond- fld (mS/cm)	01/23/2013	2427	2420	2430	141	01AB	Provisional data obtained from USGS
00490362	823.10	Cond- fld (mS/cm)	01/24/2013	2420	2410	2430	141	01AB	Provisional data obtained from USGS
00490362	823.10	Cond- fld (mS/cm)	01/25/2013	2415	2410	2420	141	01AB	Provisional data obtained from USGS
00490362	823.10	Cond- fld (mS/cm)	01/26/2013	2407	2400	2410	141	01AB	Provisional data obtained from USGS
00490362	823.10	Cond- fld (mS/cm)	01/27/2013	2422	2410	2430	141	01AB	Provisional data obtained from USGS
00490362	823.10	Cond- fld (mS/cm)	01/28/2013	2424	2420	2430	141	01AB	Provisional data obtained from USGS

# Protecting Silver Springs



Scientists are gathering streaming data from sensors positioned at five locations in this waterway to better understand how nutrients enter, move and accumulate in Silver Springs and the Silver River.

These state-of-the-art sensors measure pH, dissolved oxygen, temperature, conductivity, salinity, chlorophyll, nitrate and phosphorus in the springs and river. The sensors link to the St. Johns River Water Management District's telemetry system and provide real-time data to improve scientific knowledge of the complex Silver Springs ecosystem.

For more information on projects to protect Silver Springs, visit [floridaswater.com/springs](http://floridaswater.com/springs).

This project is a partnership among the District, Florida Department of Environmental Protection and the Florida Park Service.



# Public Outreach

## Protecting the lagoon



Nitrogen and phosphorus from stormwater runoff and other sources impact the health of the Indian River Lagoon.

To monitor how these nutrients enter, move and accumulate in the lagoon, scientists are gathering real-time data from sensors at five locations in the lagoon. The state-of-the-art sensors measure pH, dissolved oxygen, temperature, conductivity, salinity, chlorophyll, nitrogen and phosphorus.

This project is a partnership between the Florida Department of Environmental Protection and the St. Johns River Water Management District. The city of Titusville and Brevard County Parks and Recreation provided this site for a monitoring station.



For more information about the monitoring project and other projects to protect the lagoon, visit [itsyourlagoon.com](http://itsyourlagoon.com).

# Issues

- Location/installation
- Damage
- Equipment Fouling/Failure
- Staff time
- Data QA/QC



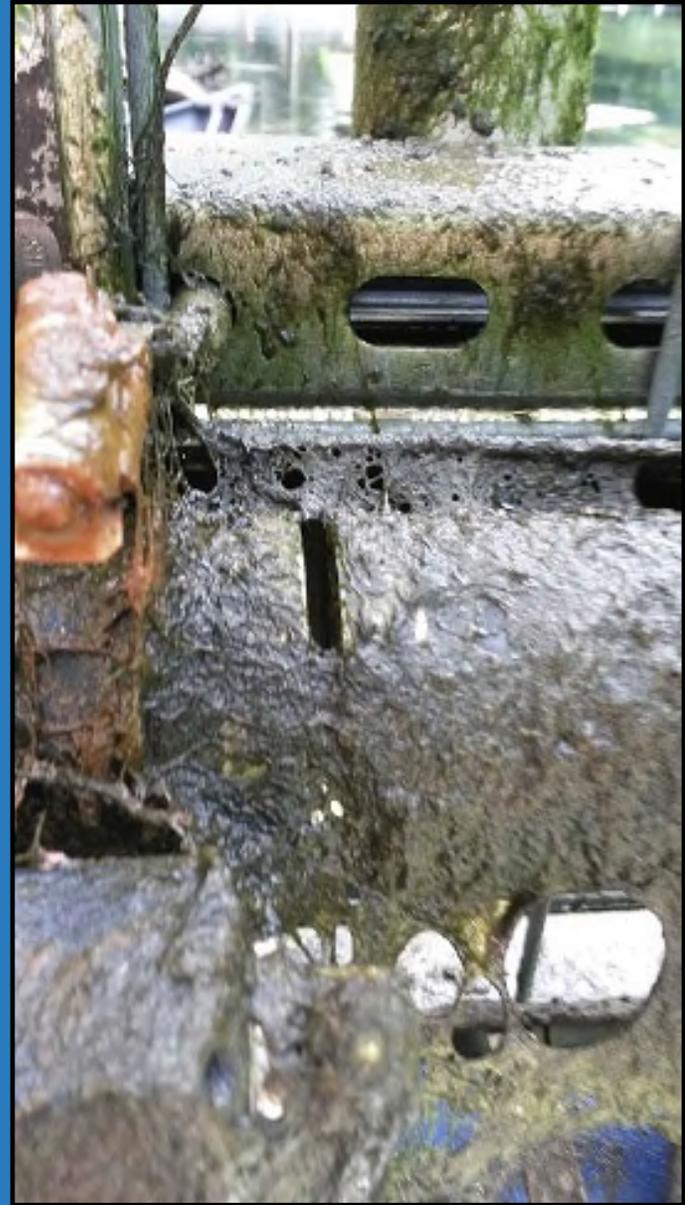
# Damage



# Fouling – 28-day Deployment



# Fouling



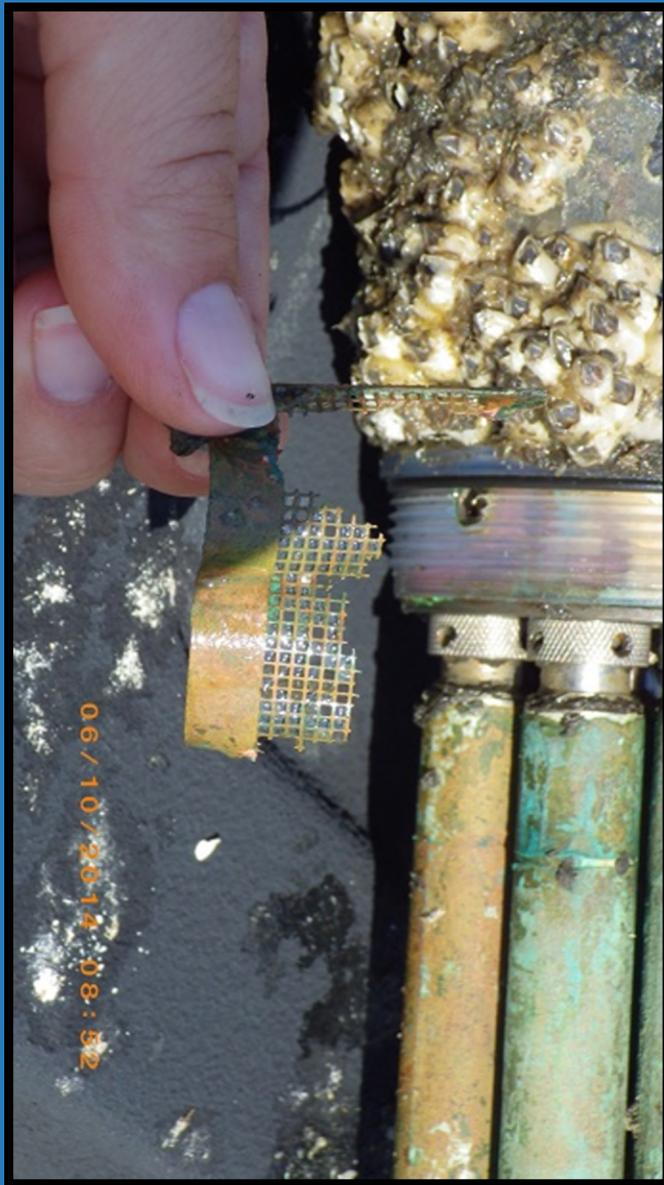
# Fouling



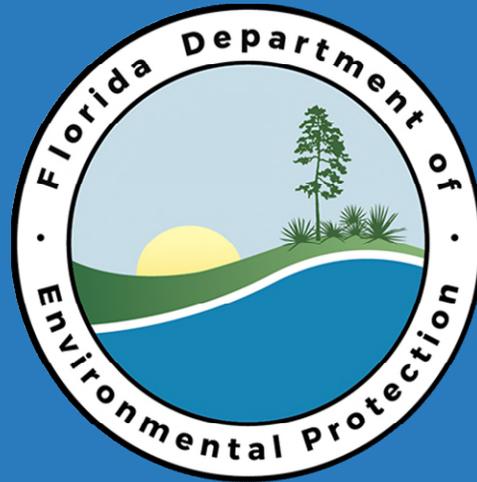
# Bent Wiper Brush



# Corrosion



# Acknowledgments



# Questions



# St. Johns River Water Management District

