

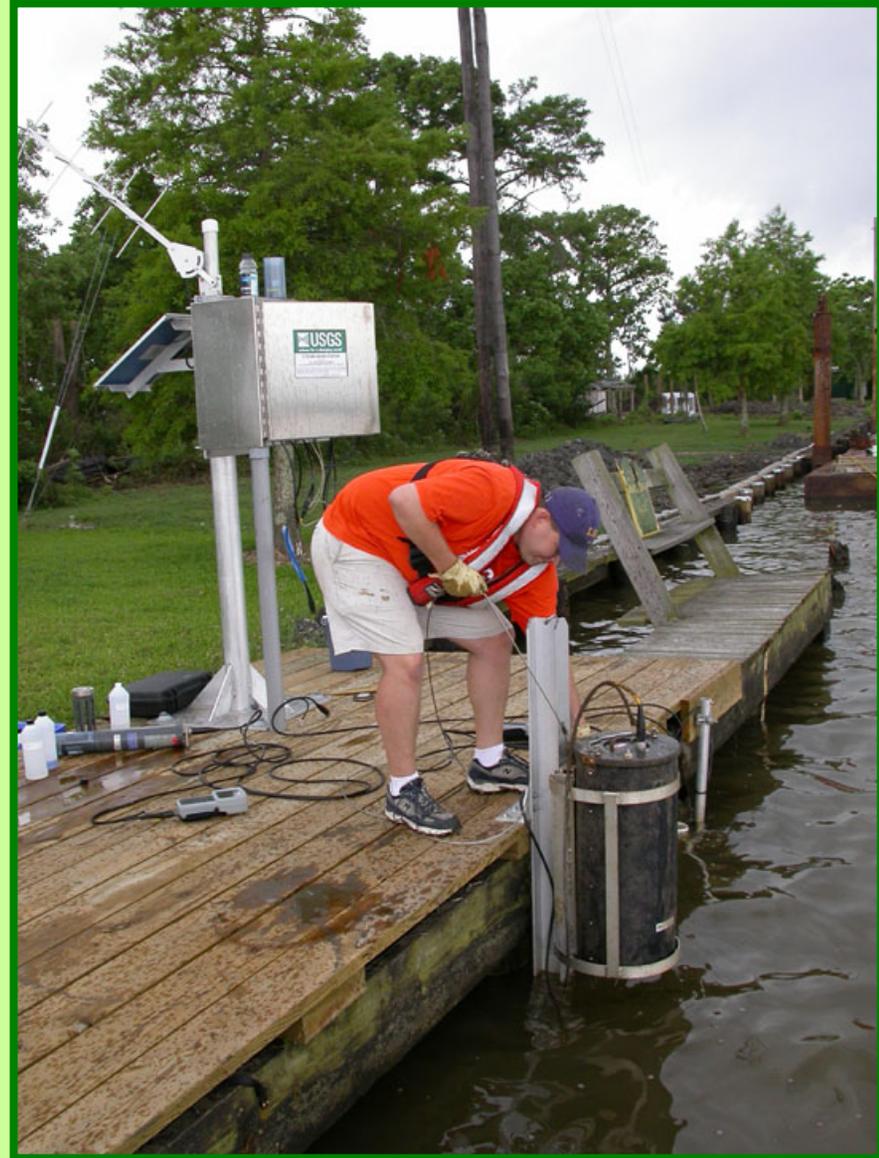
Real-time Nitrate Concentrations and Loads in the Lake Pontchartrain Basin

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Objective

- Determine concentrations & loads of nitrate into Lake Pontchartrain, La.
 - Realtime, accessible to many users
 - On-site Acoustic-Doppler flow instrumentation allows direct calculation of loads in tidally affected systems
 - Site also transmits D.O., water temp, salinity, sp. cond. pH, & turbidity info



Nitrate Analyzer Specifications

- Wet chemistry (cadmium reduction/colorimetry), not ion-selective probe
- Automatic calibration with internal standard every 12 hrs
- Interfaces with USGS hardware & software for real-time data transmission
- Collects cadmium waste



Analyzer with protective housing removed

Monitor preparation



Filling reagent bags



Predeployment test

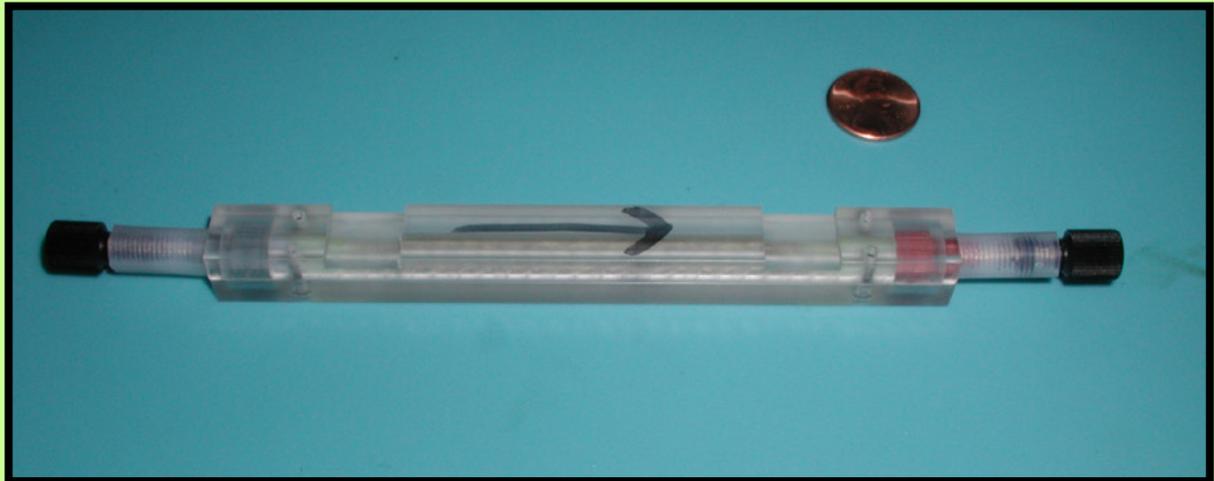
Routine operation

- Site visit scheduled for every 4 weeks
- QC samples collected
- All probes cleaned & calibrated
- Nitrate monitor cleaned, restocked, and given pre-deployment test



Quality Control/Quality Assurance

- Environmental check samples
- Pre-deployment tests against nitrate standard
- Cleaning & maintenance of cadmium column
- Web-accessed data are marked “Provisional”





Tangipahoa River

Teche/Lafourche River

Hammond

Covington

Slidell

Lake Maurepas

Pass Manchac

LAKE PONTCHARTRAIN

NEW ORLEANS

MISSISSIPPI RIVER

Lake Borgne

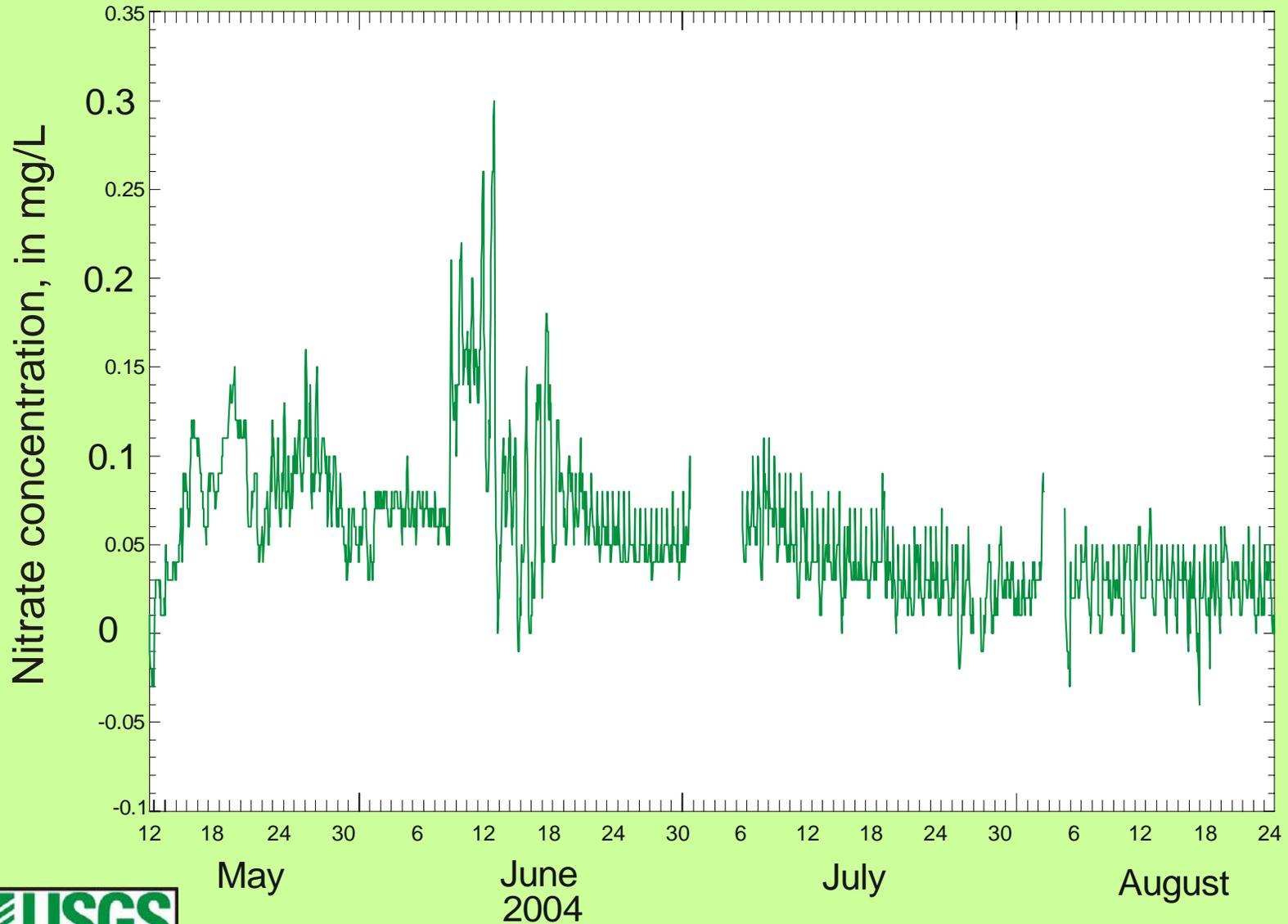
Rig

Pass Manchac

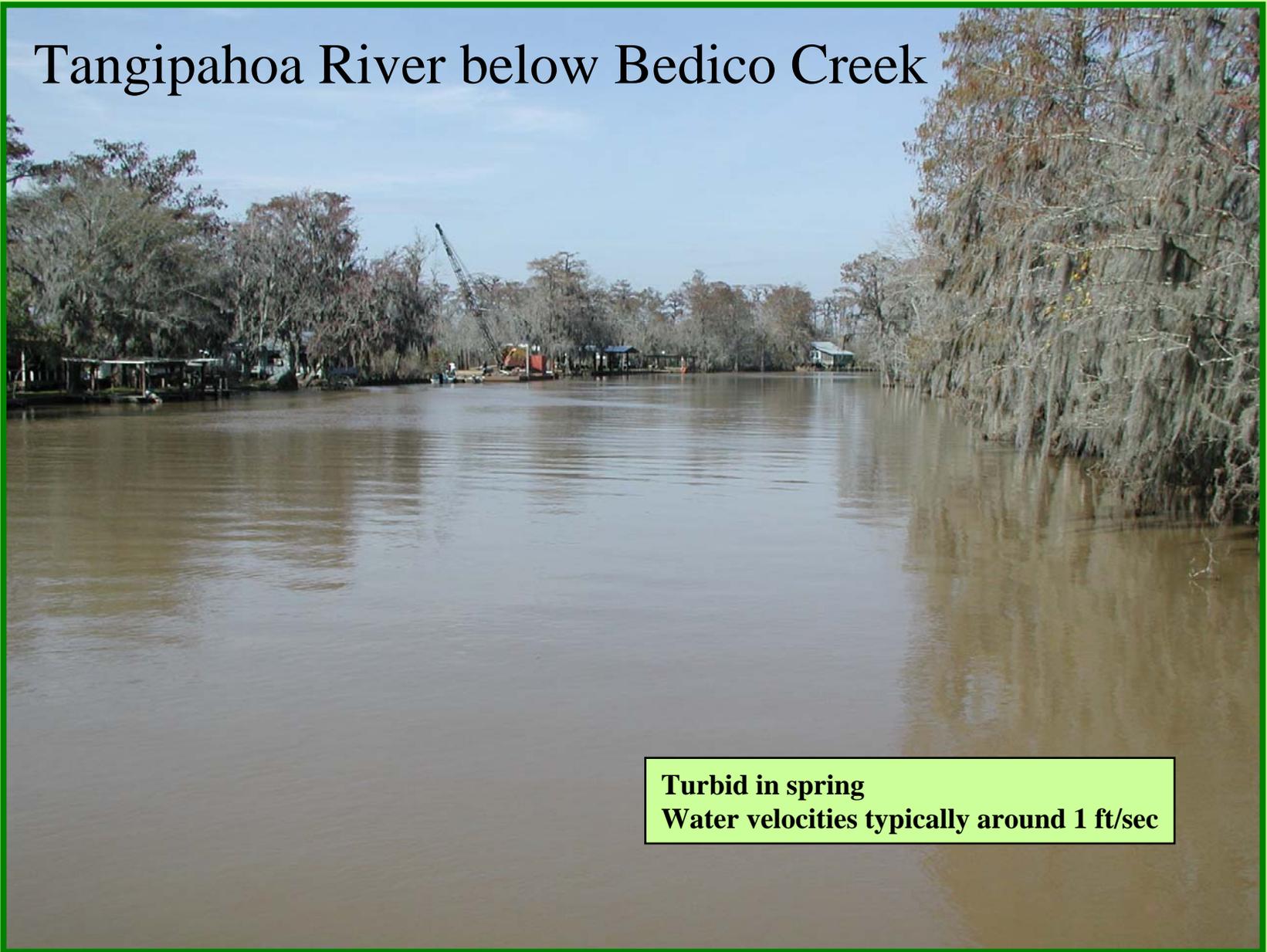


Retrieved monitor
showing partially-used reagents

Pass Manchac at Turtle Cove, May12-August 24, 2004



Tangipahoa River below Bedico Creek

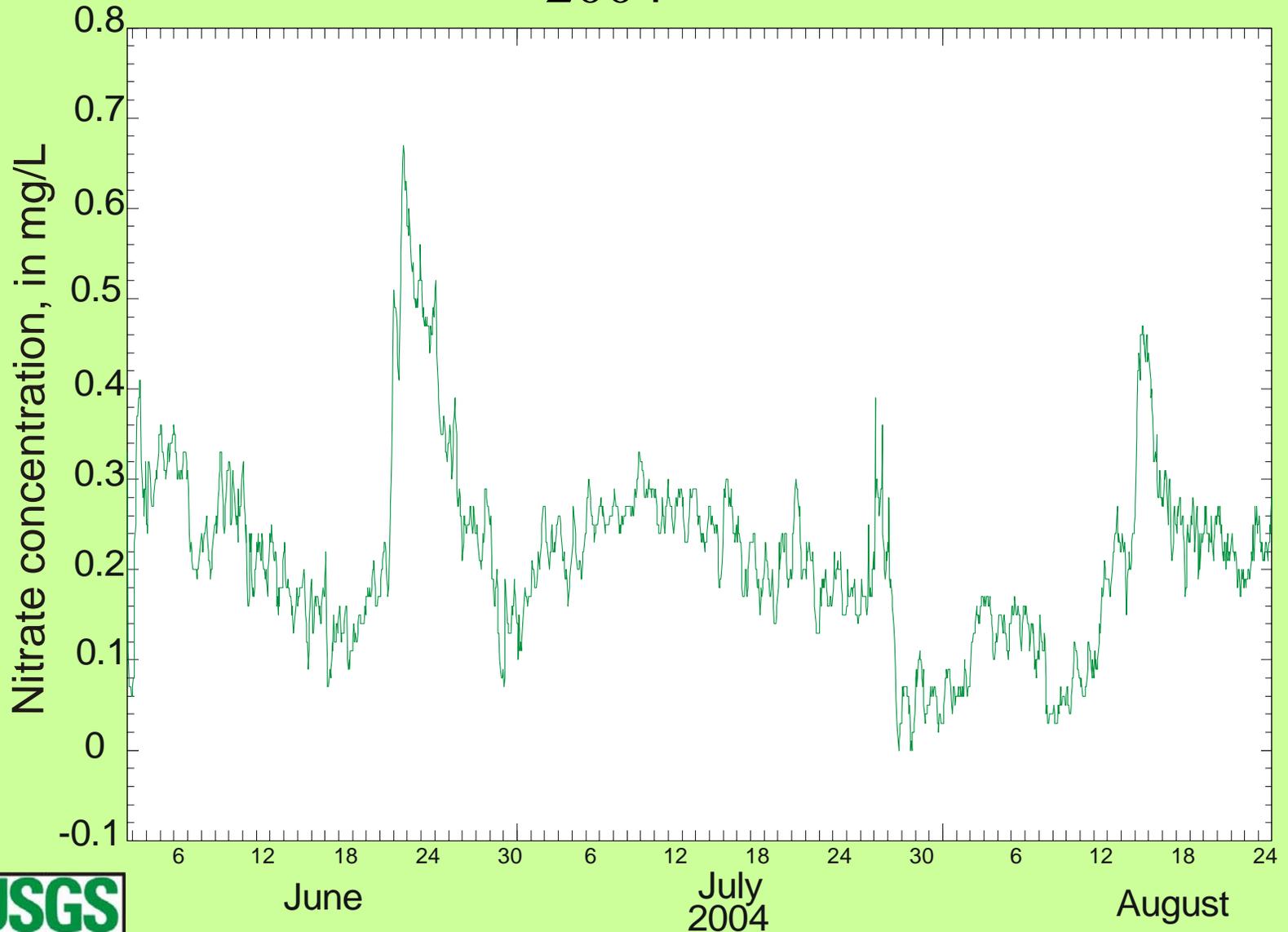


**Turbid in spring
Water velocities typically around 1 ft/sec**

Tangipahoa R. below Bedico Creek



Tangipahoa River below Bedico Creek, June-August 2004



The Rigolets at Hwy 90



**Water velocities: >3 ft/sec
Sp. cond. >35,000 uS/cm**



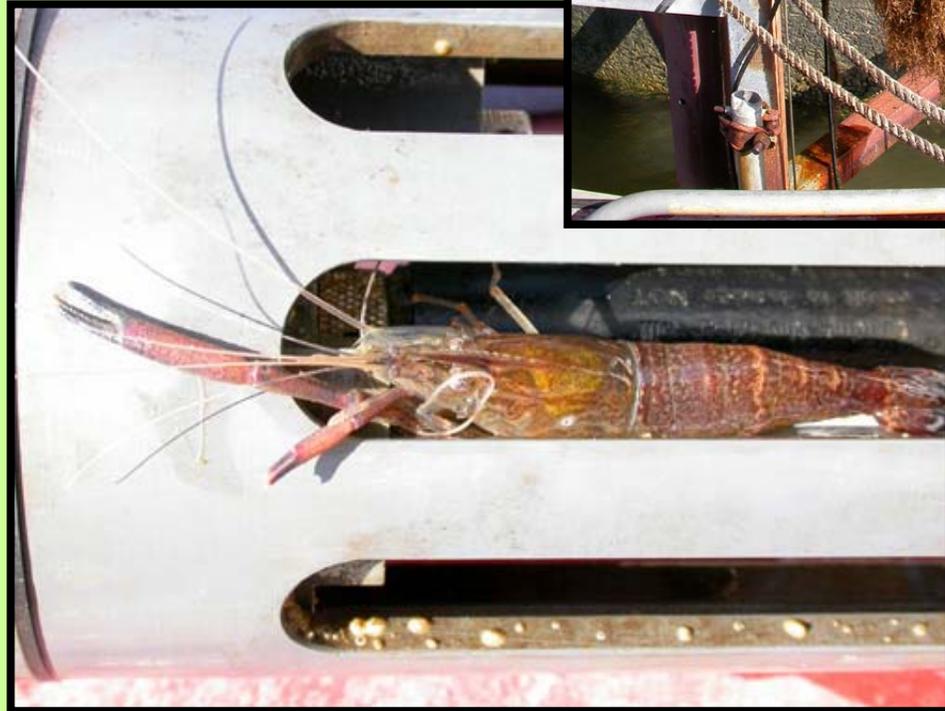
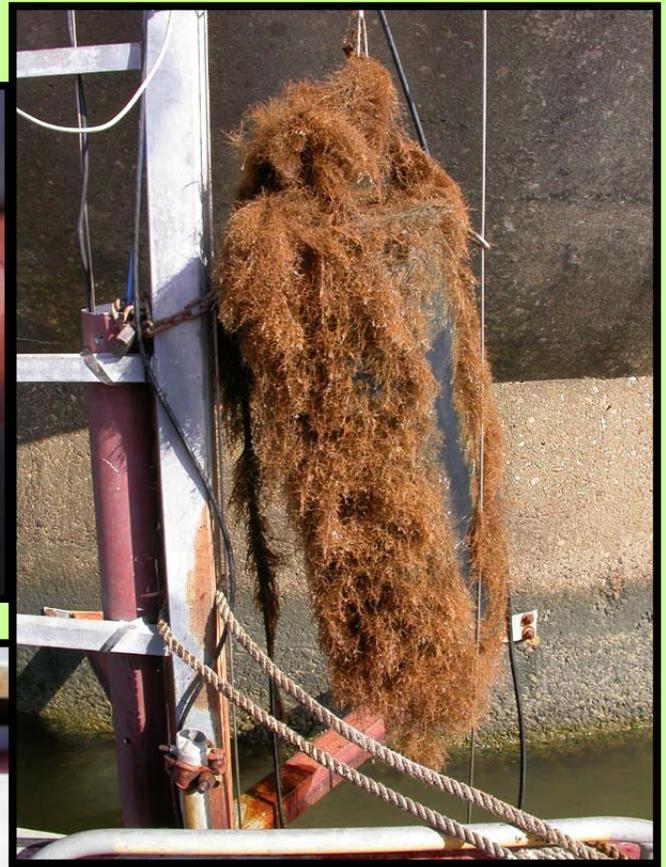
Biofouling at The Rigolets

Fouling is typically worse in estuarine systems

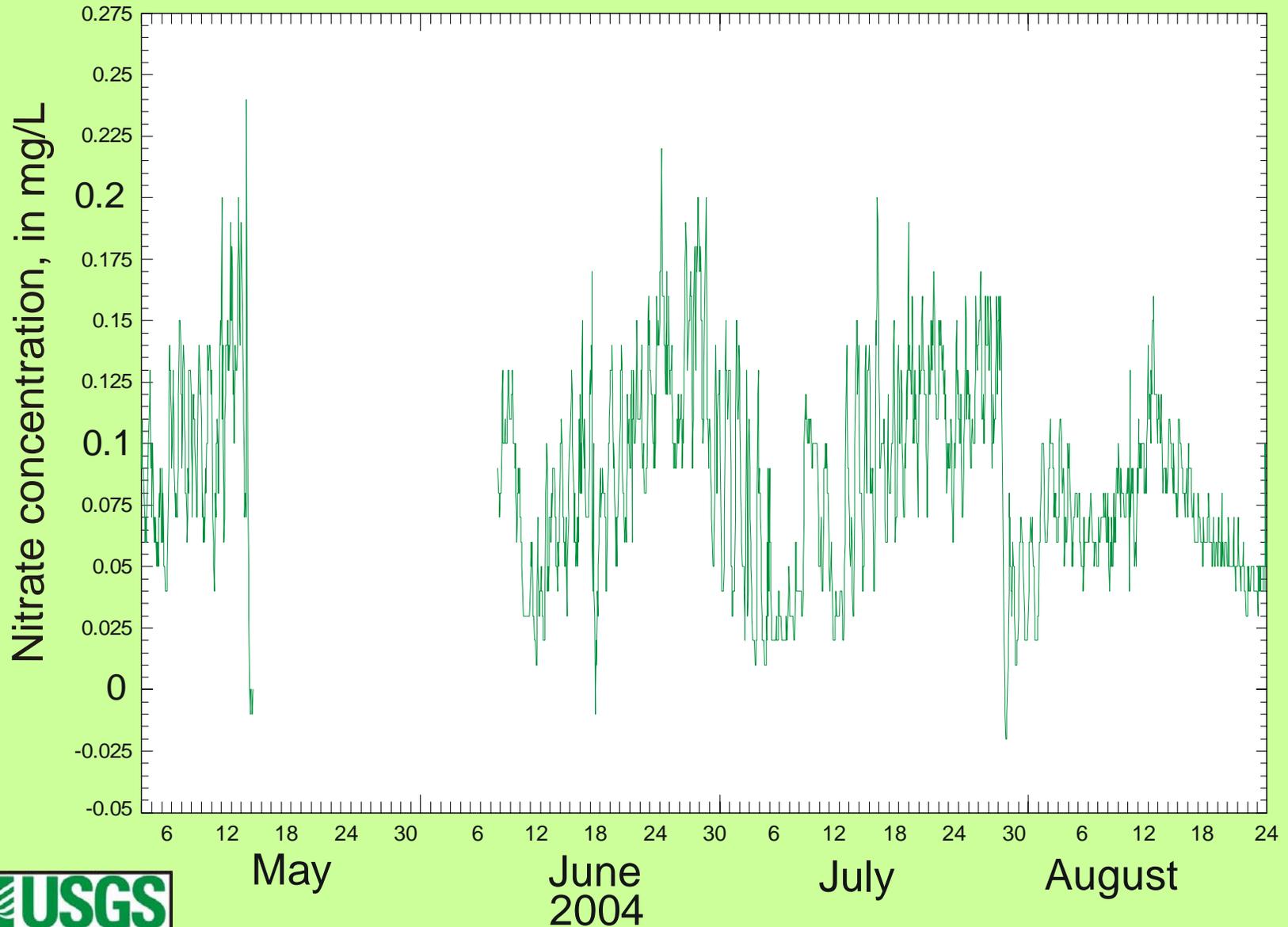


Bryozoans growing on water-quality probes

Serious biofouling



The Rigolets at Hwy 90, May-August 2004



Tchefuncte River at Madisonville

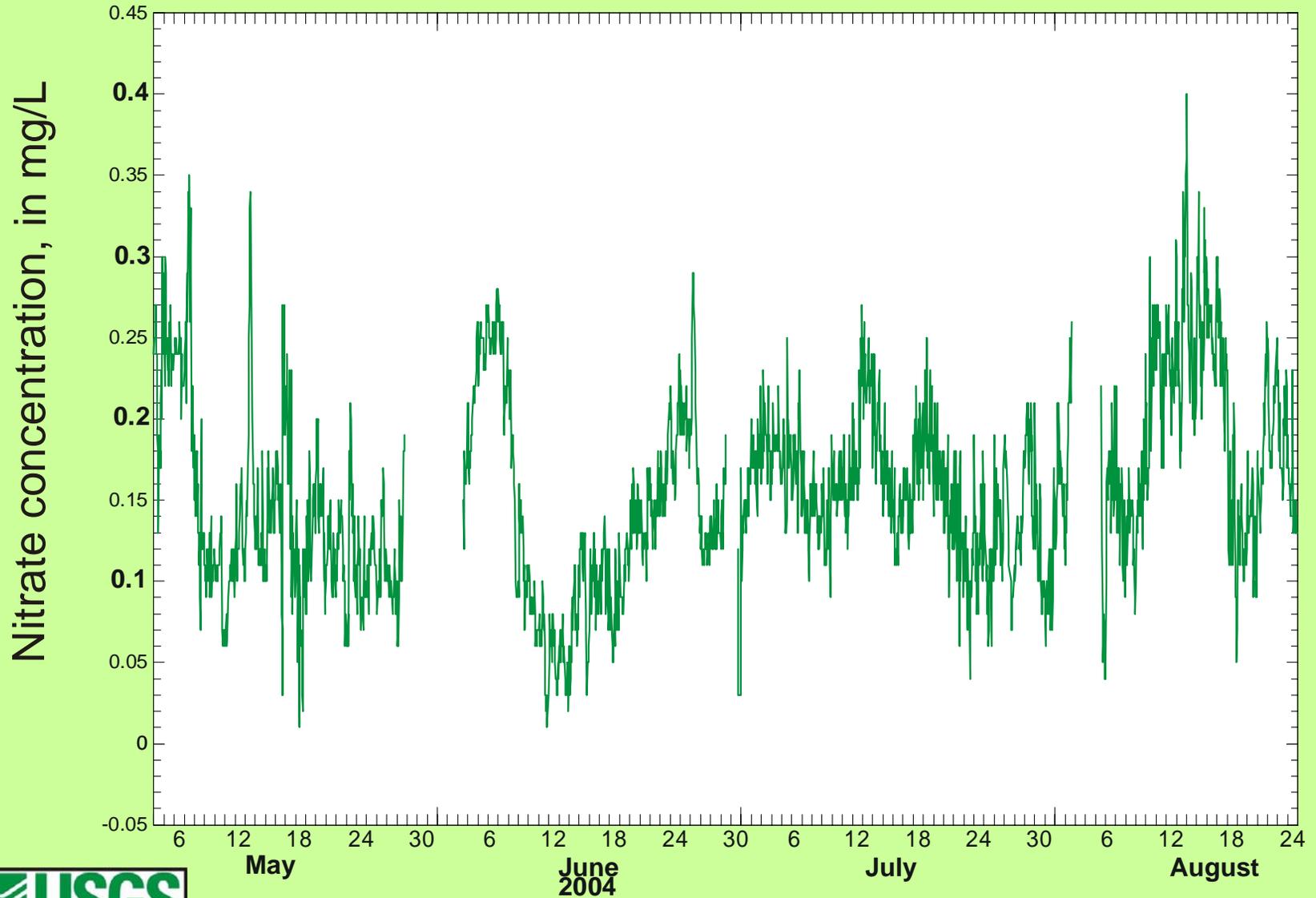


Water velocities typically less than 1 ft/sec

Tchefuncte installation mounted on drawbridge wingwall



Tchefuncte River at Madisonville, May-August 2004



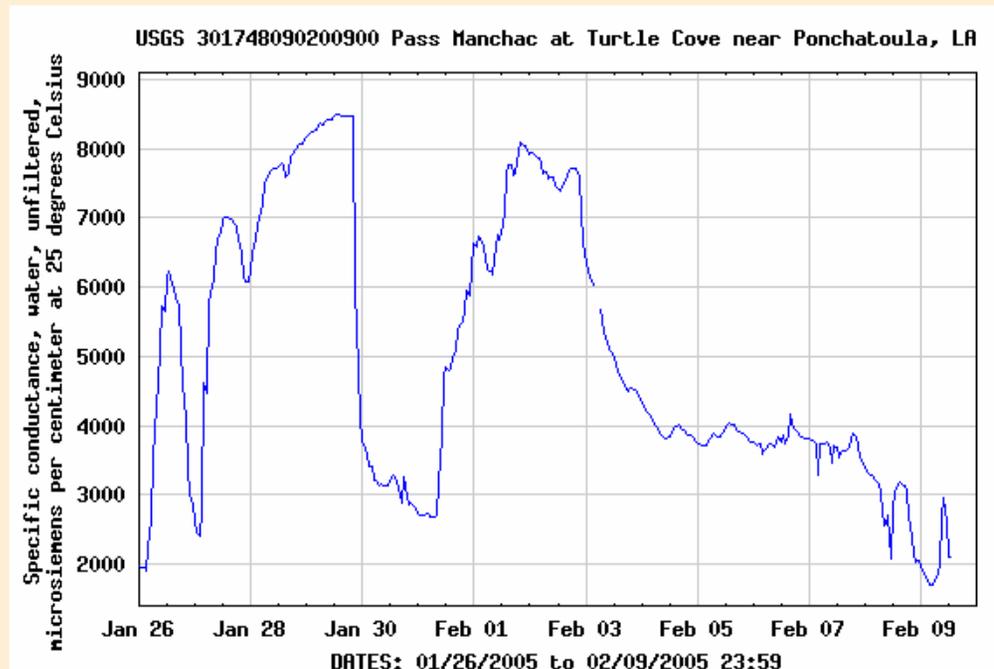
Real time data on the web, as many as 12 parameters. Can display up to the past 31 days-- Graph or table format

Address  http://waterdata.usgs.gov/la/nwis/uv?dd_cd=04&format=gif&period=14&site_no=301748090200900  Go  Links >>

Available Parameters All 12 parameters available at this site 00065 Gage height (DD 01) 00055 Stream velocity (DD 02) 00010 Temperature, water (DD 03)	Output format Graph	Days 14 (1-31)	<input type="button" value="get data"/>
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Specific conductance, water, unfiltered, microsiemens per centimeter at 25 degrees Celsius

Most recent value: 2,100 02-09-2005 13:00



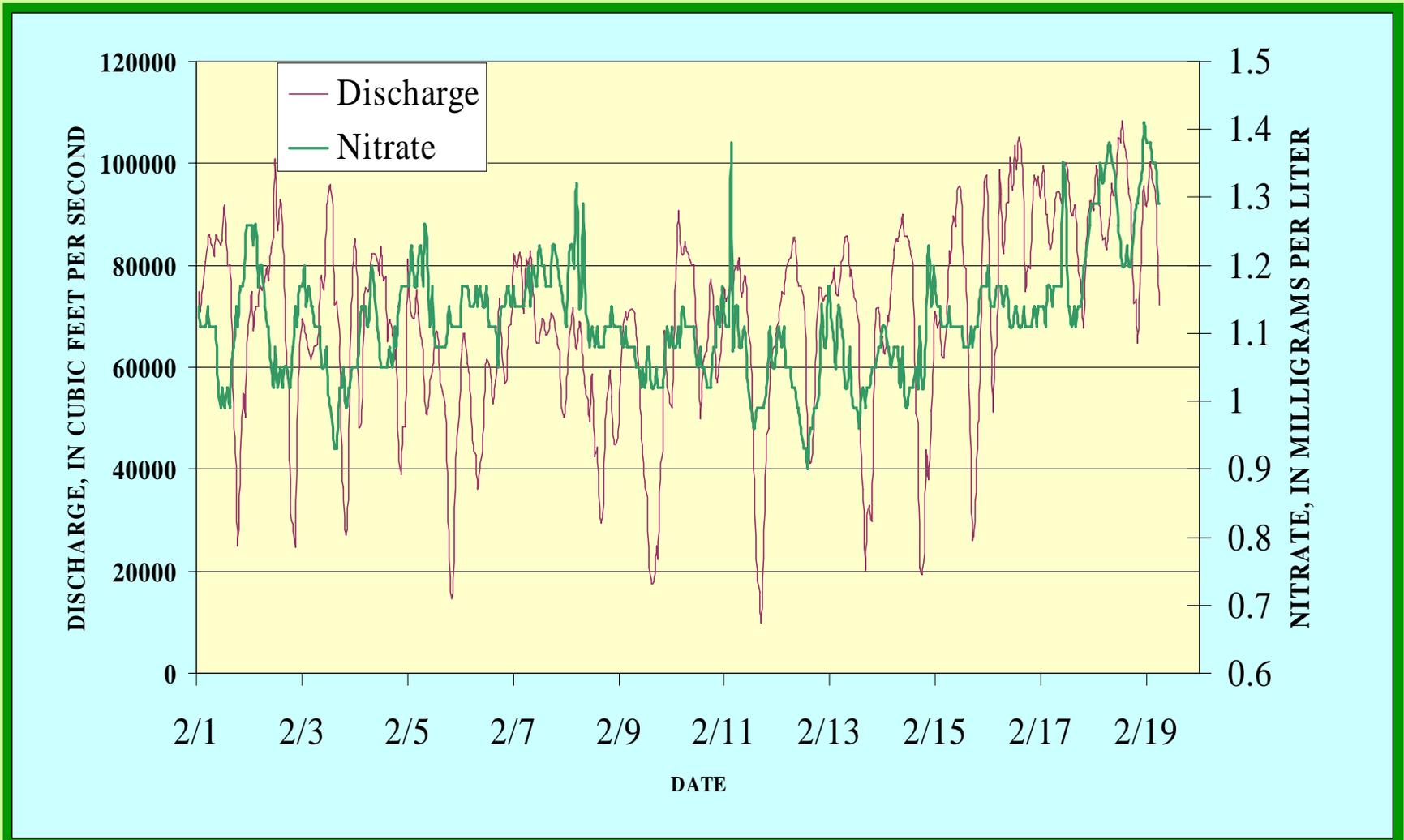
Download a [presentation-quality graph](#)

Parameter Code 00095; DD 04

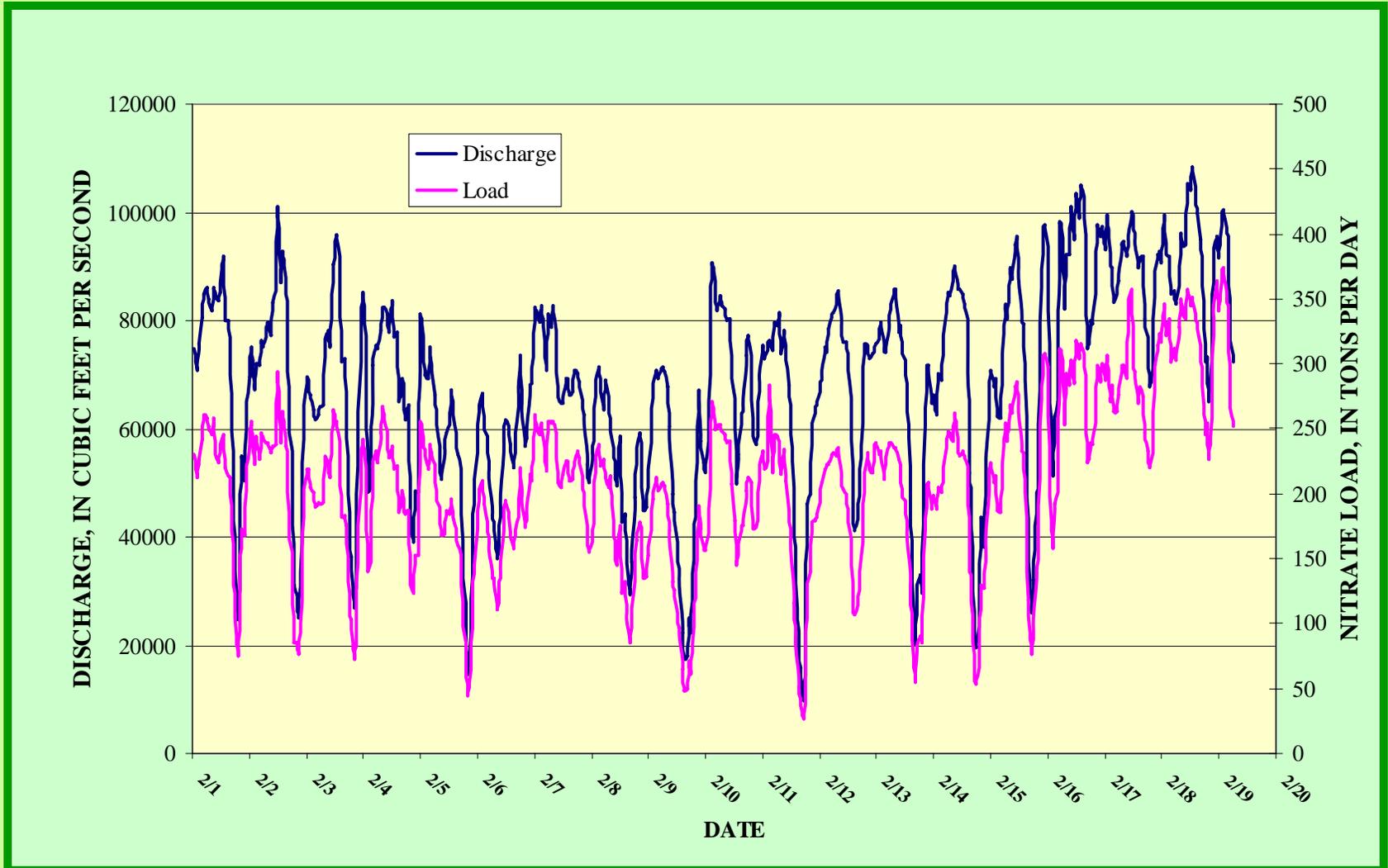
Lower Atchafalaya R. at Morgan City



Atchafalaya River at Morgan City, Feb. 2003: Nitrate & Discharge



Atchafalaya River at Morgan City, Feb. 2003: Nitrate + Discharge = Loads



Goals

- Instrument the Mississippi-Atchafalaya system for real-time nitrate loads
- Assess the success of National efforts to reduce nutrient flux to the Gulf

Possible wetland responses to elevated nitrates

- All Delta Plain marshes have a large organic component to their soil.
 - Organic matter can be over 95% in soil of freshwater floating marshes, and over 50% in salt marsh soil.
 - Nitrate can interfere with the balance of organic matter accretion, and possibly contribute to marsh loss



To view or print data from USGS La. District home page-- graphs or tables:

- <http://la.water.usgs.gov/hydrowatch.htm>
 - Scroll down to Lake Pontchartrain Basin
- Click on:
 - [07375230](#) Tchefuncte River at Madisonville, LA
 - [07375690](#) Tangipahoa R. below Bedico Cr. nr Madisonville, LA
 - [301001089442600](#) Rigolets at Hwy 90 near Slidell, LA
 - [301748090200900](#) Pass Manchac at Turtle Cove near Ponchatoula, LA