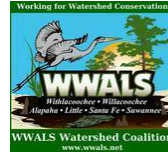


Fix Waterway Contamination



VSU & WWALS

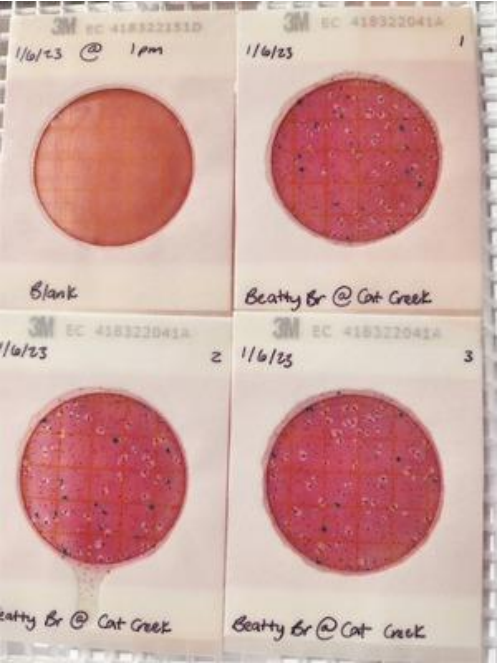


SFY2024 Regional Water Plan Seed Grants



Project Goal

Determine what is contaminating the Withlacoochee River upstream from Valdosta, so we can get it fixed. (W3,333, W1,266, W1,200, 2023-01-06)



Meaning of the numbers

Preferred: less than 126

Bad single test: 410

Alert level: 1,000

Note shift to *E. coli*
from Fecal coliform.

Also, we have no non-recreation
season in south Georgia.

Adapted from: GA-EPD
Bacteria Criteria for Drinking Water
and Fishing Designated Uses
Technical Support Document
for the Proposed Criteria
to Protect Secondary Recreators
Elizabeth A. Booth, Ph.D., P.E.
and Victoria A. Adams 8/30/2018
Page 11, Table 3-1.
Proposed Bacteria Criteria

Designated Use	Season	Indicator	Geometric Mean	STV	Non-Human
Drinking Water	Recreation (May – October)	E. coli	126 counts per 100 mL	410 counts per 100 mL	189 counts per 100 mL (lakes and reservoirs) 315 counts per 100 mL (free flowing freshwater streams)
	Non-recreation (November – April)	E. coli	630 counts per 100 mL	2050 counts per 100 mL	
Fishing	Recreation (May – October)	E. coli	126 counts per 100 mL	410 counts per 100 mL	189 counts per 100 mL (lakes and reservoirs) 315 counts per 100 mL (free flowing freshwater streams)
	Non-recreation (November – April)	E. coli	630 counts per 100 mL	2050 counts per 100 mL	

Nobody wants to fish, swim, or boat in water with fecal contamination.

Valdosta, Lowndes, Berrien, Lanier Counties, others, promoting Eco-Tourism
Mayor and Chairman's Paddle in affected stretch of the Withlacoochee River



Nobody wants their well contaminated by river water leaching through the soil.

Shadrick Sink west of the Withlacoochee River
leaks river water east under the river for miles.

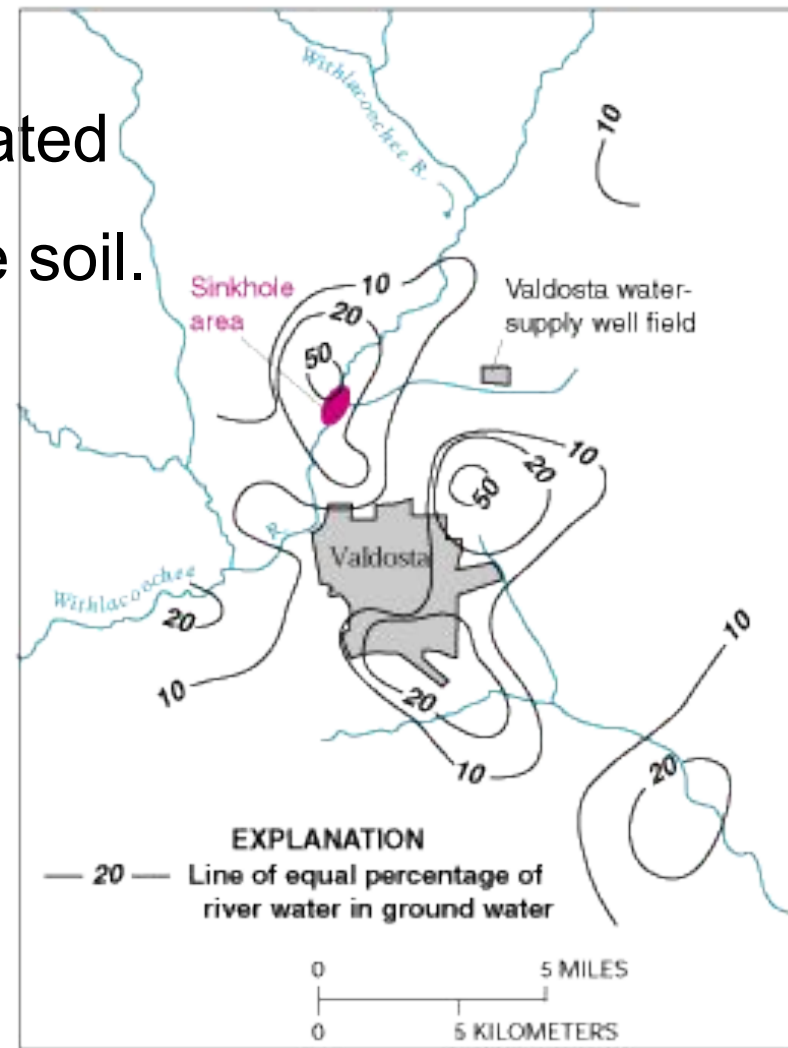
Valdosta sunk its wells deeper to get under the
river water, avoiding expensive treatment.

In Sustainability of Ground-water Resources,
by William M. Alley Thomas E. Reilly O. Lehn Franke, 1 January 1999,
U.S. Department of the Interior, U.S. Geological Survey – Publisher,
<http://pubs.usgs.gov/circ/circ1186/> in [Box E on Page 63](#),

*The Connection Between Surface-Water Quality
and Ground-Water Quality in a Karst Aquifer*

Figure E-1. **Estimated percentage of Withlacoochee River water
in ground water in the Upper Floridan aquifer, June 1991.**

(Modified from Plummer and others, 1998.)



Cherry Creek Sink

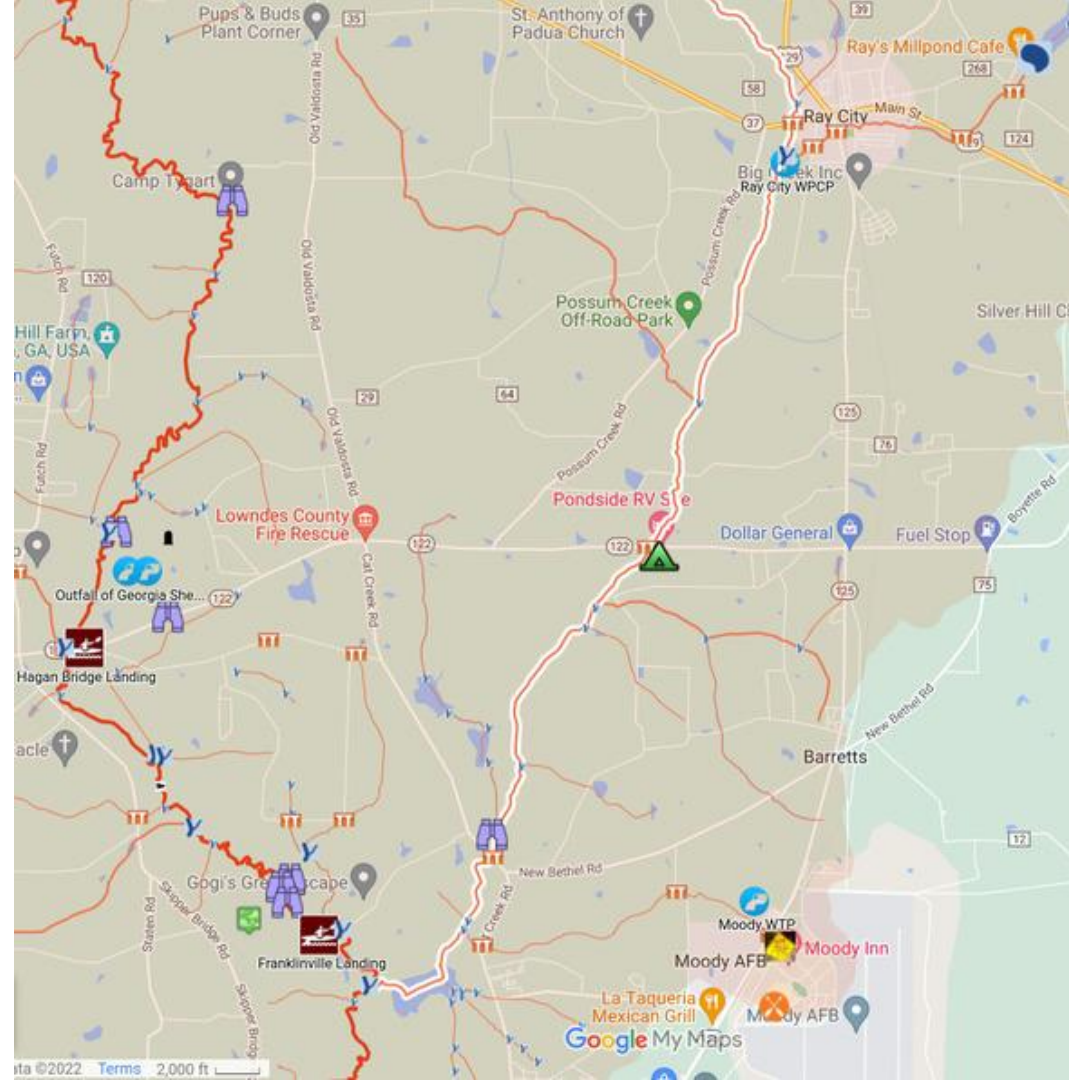
Opened up in a few months in 2013 in the Withlacoochee River, just below Cherry Creek, near Shadrick Sink.

Pictured: Prof. Can Denizman standing in Cherry Creek Sink in a presentation by VSU Prof. Don Thieme for WWALS.



Fixing the problem(s)
will be a better solution.

To fix problems, we have to test
more to find the sources of
contamination so we can
address them.



Suwannee-Satilla Regional Water Planning Council

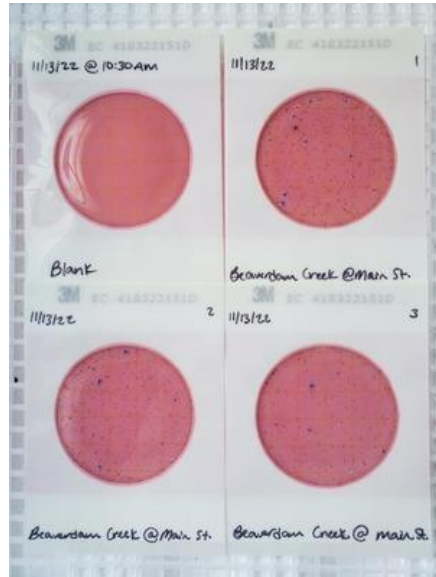
Vision

“support the state’s and region’s economy,
to protect public health and natural resources,
and to enhance the quality of life for all citizens;
while preserving the private property rights of Georgia’s landowners,
and in consideration of the need to enhance resource augmentation
and efficiency opportunities.”

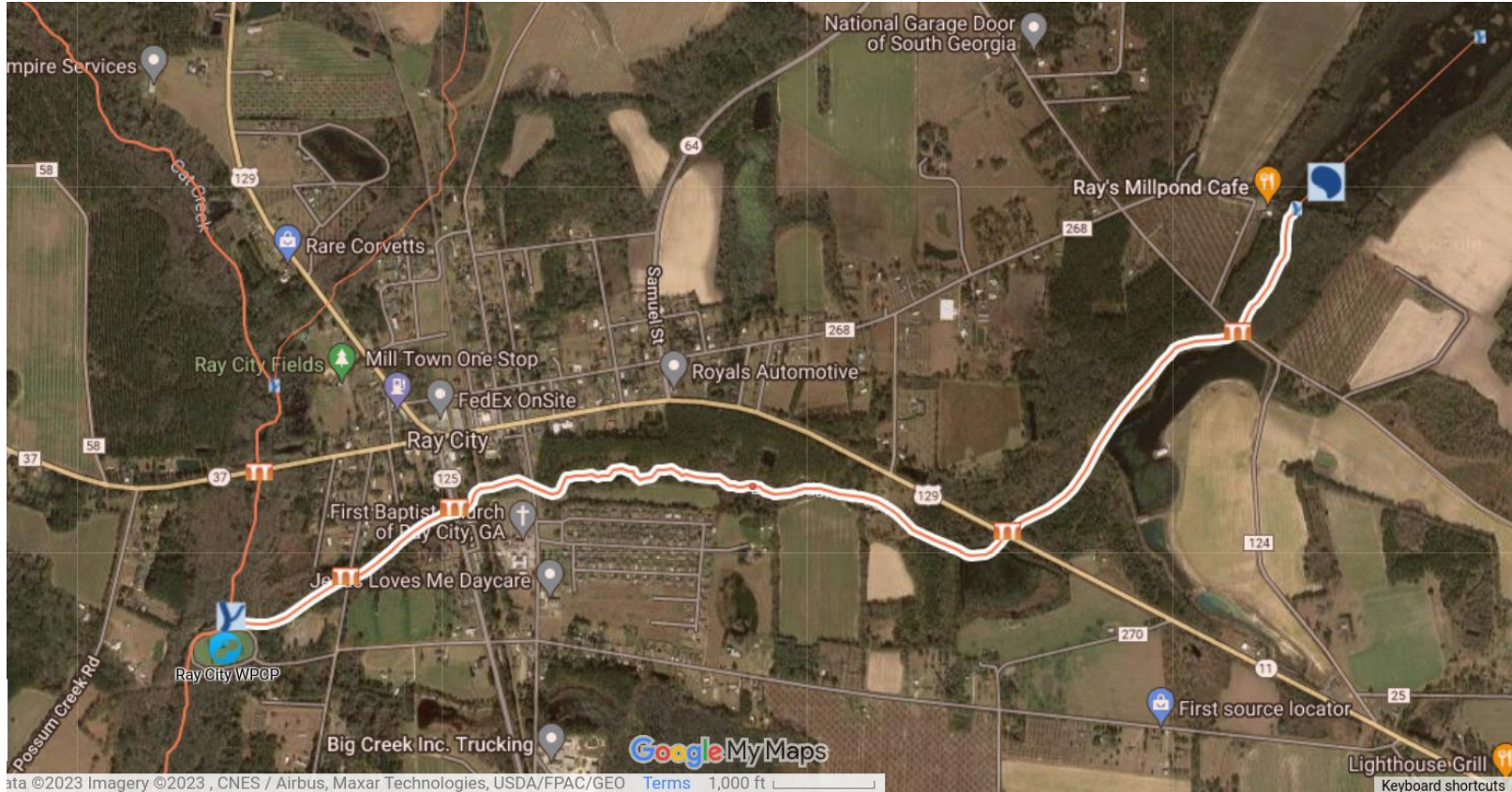
Beaverdam Creek

Thus far the problem probably isn't Ray City WTP: contamination upstream.

533



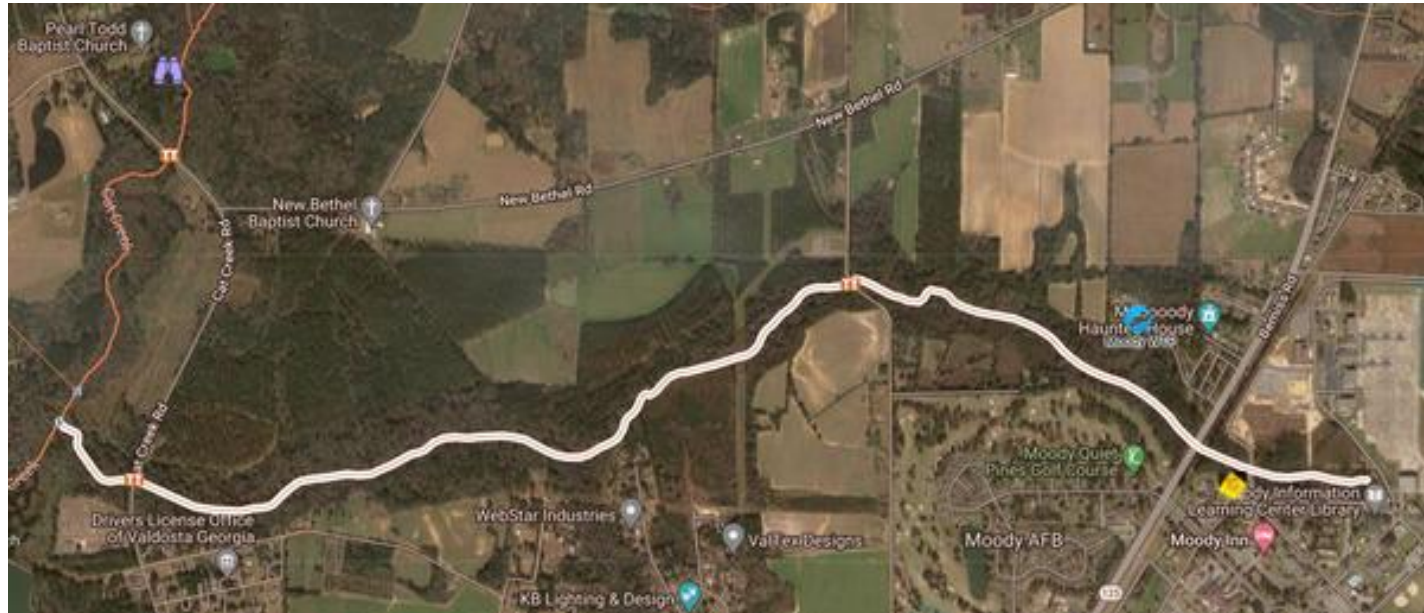
Where and What on Beaverdam Creek?



Beatty Branch

We see contamination in Beatty Branch below the WWTP.

But why also upstream at Bemiss Road? Moody AFB also wants to know.

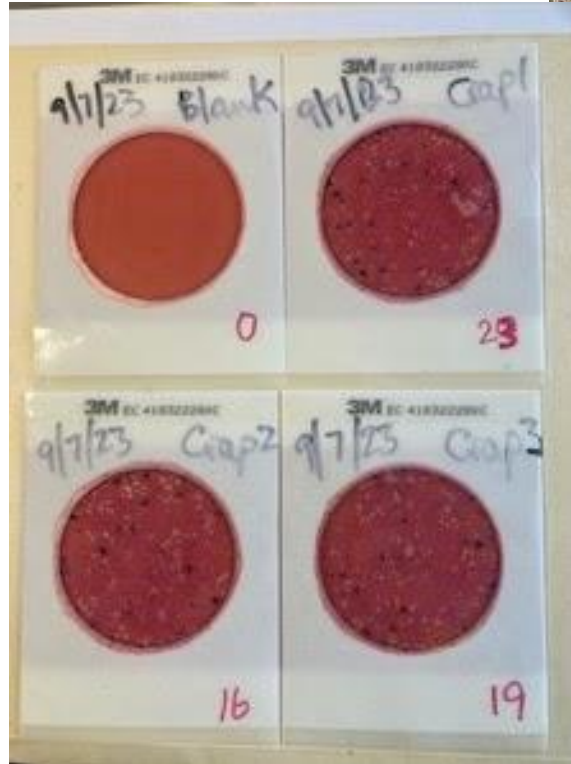


Also the Alapaha River near US 82

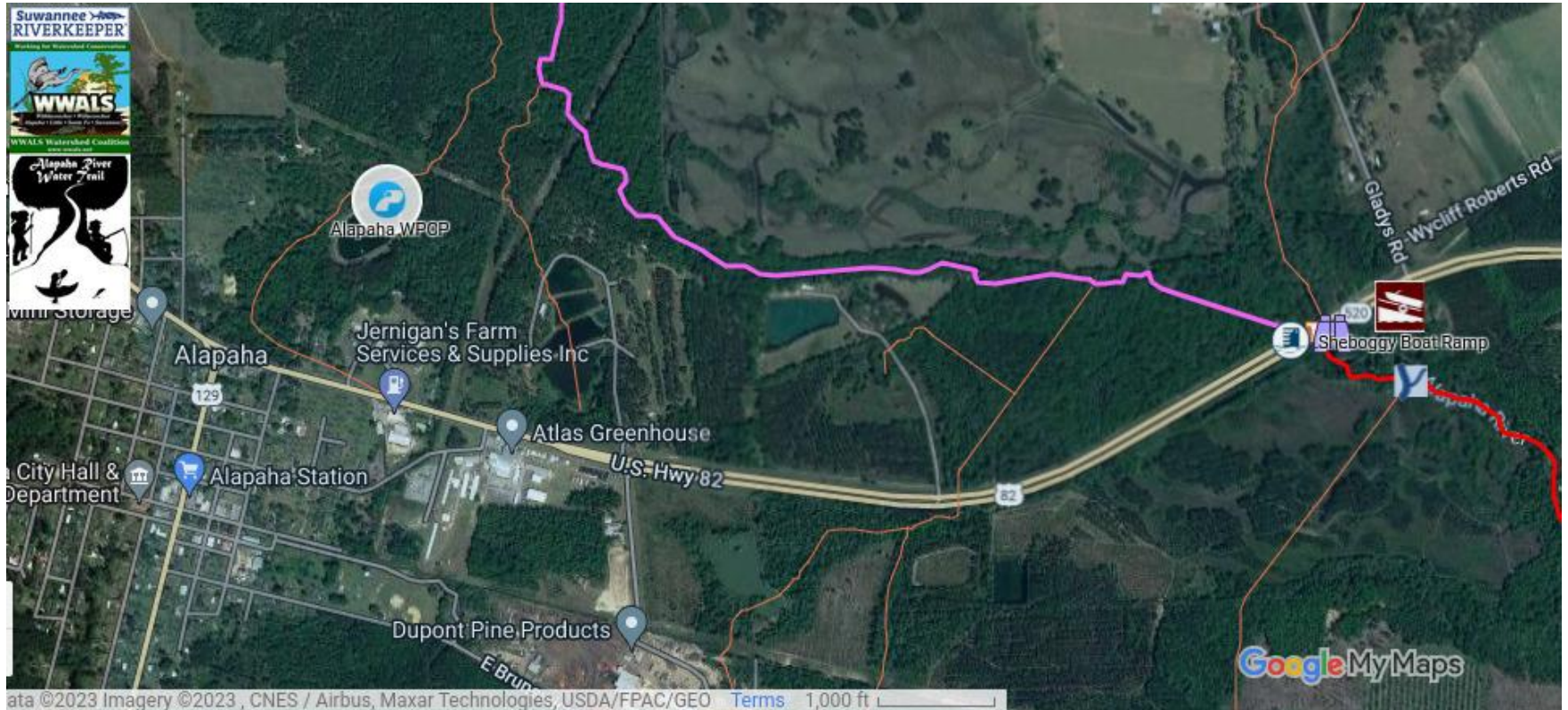
At the outflow creek from
the Alapaha, GA,
WWTP,

Heather Brasell got
too-high 1,900 *E. coli*.

2023-09-07



Alapaha WPCP, Alapaha River, Sheboggy Boat Ramp



Possible Sources

Only further testing can determine:

- Wastewater treatment plants, leaky sewer lines
- Septic tanks
- Wildlife (deer, wild hogs, geese, etc.)
- Domestic pets (cats, dogs, chickens)
- Agricultural
 - Cattle
 - Sheep
 - Chicken manure used as fertilizer
 - Other

Trend testing does not source this contamination

- GA-EPD has trend water quality results, several times a year, plus:
 - SGRC Regional Water Quality Assessment SEED Grant
 - Frequency too low to catch contamination after big rains
 - Lowndes County tests quarterly, GA-EPD Stormwater Permit
 - Lowndes County 2021 Annual Report:

“Fecal Coliform

“Lowndes County has not identified any point sources within the drainage areas that can be attributed to the widespread exceedances. Based on the limited data collected to date, it is the opinion of Lowndes County that the cause of the exceedances is from natural conditions.”

What we will test

- Standard Georgia Adopt-A-Stream:
 - *E. coli*
 - Dissolved oxygen (DO)
 - pH, conductivity, temperature
- DNA marker testing to determine the species causing the contamination
- PFAS (Per- and polyfluoroalkyl substances), aka forever chemicals
 - Follow up Moody AFB 2016 report of PFAS in Beatty Branch and underground
- Lead (2017 GA-EPD Lead TMDL)



Why PFAS?

Friday, January 18, 2019

Valdosta Daily Times

Your News. Your Voice. Your Times.

valdostadailytimes.com

Est. 1867

\$1 Daily | \$1.50 Sunday

Moody neighbor wants water tested



Debra Tann and John Quarterman look at the site where water runs off from Moody Air Force Base.

BY THOMAS LYNN
tom.lynn@gafnews.com

VALDOSTA — When Debra Tann learned Moody Air Force Base had been washing dangerous chemicals down the drain for more than 40 years, she was understandably concerned.

The Lowndes County resident has lived less than two miles from the base for 24 years and wants to know if her water is safe.

In May 2018, Moody released a report stating the base's water was deemed safe by the Environmental Protection Agency, but Tann wanted to know if residents living near the base shared the same diagnosis.

"I want residents near the base to be equally confident their water is not hazardous," Tann said. "Residents need to know if their water is contaminated or not."

Fears of water contamination,

'Residents need to know if their water is contaminated or not.'

Debra Tann

both inside and outside of Moody began after the release of a study conducted by the U.S. Army Corps of Engineers in 2016.

The report states military bases across the country used compounds known as per- and polyfluorinated alkyl substances (PFASs) in fire extinguishing foam since the 1970s.

Kevin Chambers, communications director for the Environmental Protection Division, said these compounds are emerging contaminants, which are chem-

See Moody Water on 7A



Prepared For: Suwannee Riverkeeper at US 41 Bridge and Knights Ferry Boat Ramp

Date: September 16, 2022

Thanks for participating in the Waterkeeper PFAS Survey! This report is for **WKA_2022_0256** (Upstream) & **WKA_2022_0257** (Downstream) sampled by John Quarterman. You can view results in raw data format below. **PFAS Detections** are highlighted in yellow.

Withlacoochee River

Order Number	wtk-22-00134	wtk-22-00134
Upstream Downstream	Upstream	Downstream
Waterkeeper Organization Name	Waterkeepers Florida	Waterkeepers Florida
Waterkeeper Name	John Quarterman	John Quarterman
Barcode	WKA_2022_0256	WKA_2022_0257
10:2 FTS	< 1 ng/L	< 1 ng/L
11CL-PF3OUdS	< 1 ng/L	< 1 ng/L
3:3 FTCA	< 2 ng/L	< 2 ng/L
4:2 FTS	< 1 ng/L	< 1 ng/L
5:3 FTCA	< 1 ng/L	< 1 ng/L
6:2 FTS	< 1 ng/L	< 1 ng/L
6:6PFPI	< 1 ng/L	< 1 ng/L
6:8PFPI	< 10 ng/L	< 10 ng/L
7:3 FTCA	< 1 ng/L	< 1 ng/L
8:2 FTS	< 1 ng/L	< 1 ng/L
8CI-PFOS	< 1 ng/L	< 1 ng/L
9CI-PF3ONS	< 1 ng/L	< 1 ng/L
ADONA	< 1 ng/L	< 1 ng/L
FBSA	< 1 ng/L	2
FDSA-I	< 1 ng/L	< 1 ng/L
FDUEA	< 1 ng/L	< 1 ng/L
FHxSA	< 1 ng/L	1.5
FOSAA	< 1 ng/L	< 1 ng/L
FOUEA	< 1 ng/L	< 1 ng/L
HFPO-DA (GenX)	< 2 ng/L	< 2 ng/L
MeFBSA	< 1 ng/L	< 1 ng/L
N-AP-FHxSA	< 1 ng/L	< 1 ng/L
N-EtFOSA	< 1 ng/L	< 1 ng/L
N-EtFOSAA	< 1 ng/L	< 1 ng/L
NEtFOSE	< 1 ng/L	< 1 ng/L
NFDHA	< 1 ng/L	< 1 ng/L
N-MeFOSA	< 1 ng/L	< 1 ng/L

Order Number	wtk-22-00134	wtk-22-00134
Upstream Downstream	Upstream	Downstream
Waterkeeper Organization Name	Waterkeepers Florida	Waterkeepers Florida
Waterkeeper Name	John Quarterman	John Quarterman
Barcode	WKA_2022_0256	WKA_2022_0257
N-MeFOSAA	< 1 ng/L	< 1 ng/L
NMeFOSE	< 1 ng/L	< 1 ng/L
PFBA	< 1 ng/L	1.1
PFBS	< 1 ng/L	3.2
PFDA	< 1 ng/L	< 1 ng/L
PFDoA	< 1 ng/L	< 1 ng/L
PFDoS	< 1 ng/L	< 1 ng/L
PFDS	< 1 ng/L	< 1 ng/L
PFECHS	< 1 ng/L	< 1 ng/L
PFEESA	< 1 ng/L	< 1 ng/L
PFHpA	< 1 ng/L	1
PFHpS	< 1 ng/L	< 1 ng/L
PFHxA	1	3
PFHxS	1.1	8
PFMOBA	< 1 ng/L	< 1 ng/L
PFMOPrA	< 1 ng/L	< 1 ng/L
PFNA	< 1 ng/L	< 1 ng/L
PFNS	< 1 ng/L	< 1 ng/L
PFOA	1.2	2.2
PFOS	2.6	9.1
PFOSA	< 1 ng/L	< 1 ng/L
PFPeA	< 1 ng/L	2.4
PFPeS	< 1 ng/L	< 1 ng/L
PFPrS	< 1 ng/L	< 1 ng/L
PFTeA	< 1 ng/L	< 1 ng/L
PFTrDA	< 1 ng/L	< 1 ng/L
PFUnA	< 1 ng/L	< 1 ng/L

PFAS found, Withlacoochee River and Alapaha Fish

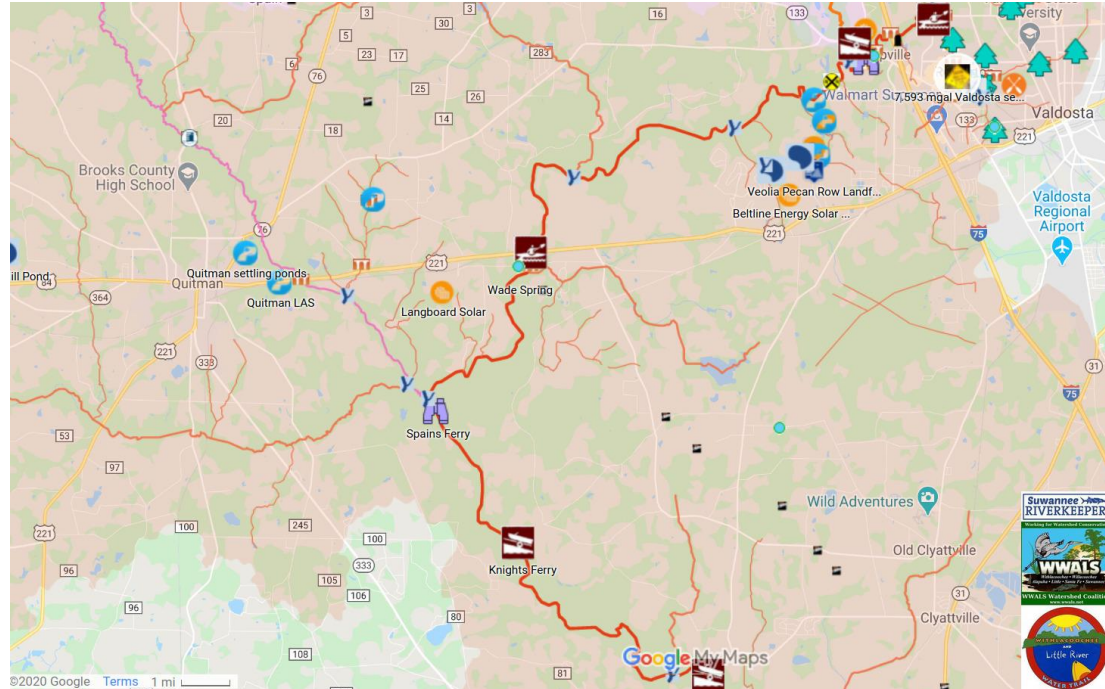


With 250-mL of water sample passing through the Water Test Kit, our limit of quantification (LOQ) is 1.0 ppt (or ng/L) for all PFAS, other than the LOQ for HFPO-DA (GenX) and 3:3 FTCA is 2.0 ppt, and the LOQ for 6:8PFPI is 10 ppt.

Testing to Source to Solution

Once we have determined a source, we will discuss potential solutions with the owner or manager.

We have done this successfully before in Brooks County.



Involve GA-EPD if necessary

See GA-EPD Enforcement Order on Valdosta

- In addition to a fine and many other requirements,
- Requires Valdosta to test the Withlacoochee River
 - 40 Withlacoochee River miles, 6 sites, 3 times/week
 - +1 Okapilco Creek site
- WWALS did not do that alone, but we were in the middle with
 - A dozen downstream Florida counties
 - Local, state, and national elected officials from two states and many irate citizens
 - Florida and U.S. environmental protection agencies
- GA-EPD to Valdosta, July 11, 2023
 - (Valdosta had sent its written report four days after a spill.)
 - “In the future, please let us know once you are aware of the spill, even if it is still ongoing.
 - “This allows us to know about the spill as it is occurring and also helps us inform citizens if we receive complaints/questions.”
- Valdosta spills have become smaller, fewer, and with better reporting.



SSRWPC Management Practices: Find the Sources

PSDO-1 Collect Water Quality Data

Verification of Water Quality Resource Assessment Data and Assumptions to determine dissolved oxygen conditions. Data collection to confirm loading and/or receiving stream chemistry.

TMDL-1 Evaluate Impairment Sources

Data collection and confirmation of sources to support modify stream standards to reflect “natural sources” and/or to reflect naturally low dissolved oxygen streams.

TMDL-2 Analyze Impaired Segments and Sources

Data collection to refine river/stream reach length for impaired waters; focus on longest reaches to refine location and potential sources of impairments.

SSRWPC Management Practices for Human Sources

NPS-1 Study Human Impacts on Water Quality

Data collection/analysis to confirm if dissolved oxygen and/or fecal coliform is human induced.

EDU-3 Septic System Maintenance Education

Support Septic System Maintenance Programs.

OCP-1 Engage Local Governments

Encourage local governments to develop ordinances and standards to implement and/or update stormwater and land development regulations. Possible resource documents include: Georgia Stormwater Management Manual, Coastal Stormwater Supplement, and Metro North Georgia Water Planning District Model Ordinances.

EDU-2 Stormwater Education

Support Stormwater Educational Programs.

SSRWPC Management Practices for Agricultural Sources

NPS-2 Monitor and Address NPS Nutrient Loading

Support efforts to monitor and determine the sources of nutrient loading and other NPS impairments to rivers, lakes, and streams, and upon confirmation of source, develop specific management programs to address water quality needs.

OCP-3 Promote Integrated Planning

Encourage coordinated environmental planning, land use, stormwater, and wastewater.

Depending on the Agricultural Source and Problem

We may recommend:

NPSA-2: “Utilize Buffers, Field buffers, riparian forested buffers, and strip cropping to control runoff and reduce erosion”

NPSA-3: “Livestock Management, Livestock exclusions from direct contact with streams and rivers and vegetation buffers”

NPSA-4: “Manure Control, Responsible manure storage and handling”

NPSA-5: “Wetland and Forest Restoration Incentives, Incentives to restore wetlands and historically drained hardwood and other areas”

NPSF-3: “Conservation Land Use Planning, Seek long-term conservation easements or purchase development rights by willing landowners and conservation groups”

NPSF-4: “Where applicable, support United States Department of Agriculture incentive programs through the Farm Service Agency and NRCS to restore converted wetlands back to forested conditions”

Partner Organization(s): Roles + Responsibilities

Lead: Valdosta State University

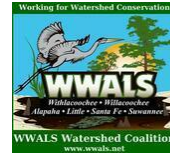


Principal Investigator: Geosciences Prof. Can Denizman

Responsibilities: Provide student testers, GIS integration, predictions

Partner: WWALS Watershed Coalition, Inc. (WWALS), IRS 501(c)(3)

Responsibilities: Coordination, testing, reporting



Partner: Savannah Riverkeeper, IRS 501(c)(3)

Responsibilities: Handle Know Your River and Newfields



Partner: Newfields

Responsibility: Subcontractor for Know Your River



Know Your River (KYR) Geographical Information System (GIS)



Make much more accessible, with much easier reporting of new data:

- Ongoing water quality testing results from multiple organizations
- Rainfall data
- Sewage spill reports, fish kills, TMDL stretches
- Public access points (boat ramps, fishing spots, etc.)

Helps predict contamination sources

- and how far and how fast contamination goes downstream,
- so we can go catch it and test where it is.

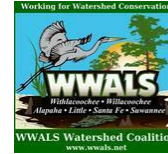
Will cover:

- Valdosta MSA and Berrien County, plus:
- background information for the entire Suwannee River Basin, including
- watershed delineations, public landings, rainfall, wastewater permit locations, etc.

Questions and Contact

Questions?

John S. Quarterman, Suwannee Riverkeeper



850-290-2350, 229-242-0102, 229-560-4317 (mobile)

<https://wwals.net>

WWALS Watershed Coalition, P.O. Box 88, Hahira, GA 31632

Can Denizman, Professor of Geosciences, Valdosta State University

229.249.2744

cdenizma@valdosta.edu

