SCIENCE AND TECHNICAL COMMITTEE

8.21.2025

ST. ANDREW & ST. JOSEPH BAYS
ESTUARY PROGRAM
at FSU PANAMA CITY

AGENDA

- Welcome
- Brief overview of St. Joe Sediment Study
- Guest Presentation: Dr. Jane Caffrey
- Announcements

ST. JOSEPH BAY SEDIMENT STUDY

ST. ANDREW & ST. JOSEPH BAYS ESTUARY PROGRAM at FSU PANAMA CITY

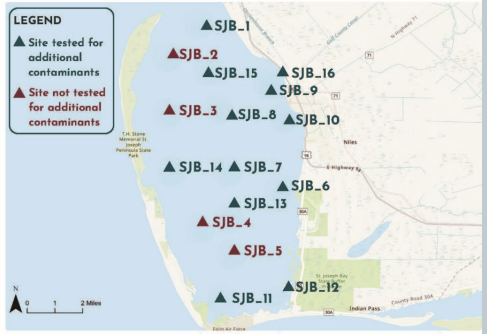
ST. JOSEPH BAY SEDIMENT STUDY

OVERVIEW

Evaluating sediment contamination can provide valuable insights into the quality of the benthic environment, which is crucial for maintaining the health of St. Joseph Bay. This study provides baseline information as a foundation to inform needs for future exploration and potential actions. We sampled at stations throughout St. Joseph Bay as a comprehensive look at benthic condition and to assist in identifying potential hot spots of contamination.

St. Joseph bay, Darryl Boudreau

LOCATIONS



Sediment Sampling Locations in St. Joseph Bay.

Ponar Grab

Ponar grabs are used to sample sediments with larger grain sizes and when a large amount of sediment is needed. This method is limited to surface sediment, which prevents exploring sediment at different depths to measure possible historic contamination. Using a ponar grab method was the most cost-effective for sampling multiple stations throughout St. Joseph Bay.

METHODS

Sediment was sampled from 16 locations in St. Joseph Bay to approximately 10cm depth using a ponar grab sampler in summer 2024. Sediment was analyzed at all stations for the following:

- Particle size (% sand, silt, clay, texture)
- Total organic carbon (TOC)
- Metals
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Organochlorine Pesticides
- Polychlorinated biphenyls (PCBs, full scan EPA 1668)
- Methylated Naphthalenes

A subset of the 16 stations (teal symbols) were also tested for:

- Dioxin and Furans
- Organotin
- Semi-volatile organics (SVOCs)
- Pharmaceutical & Personal Care Products (PPCPs)

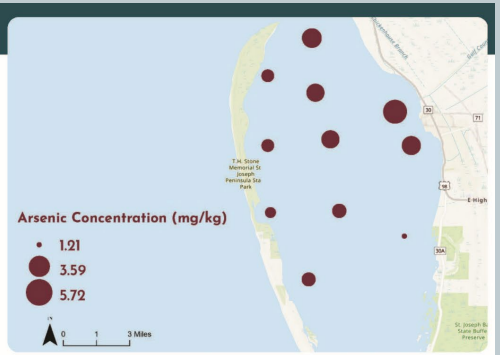
[Find the summary on our website here!]

ST. JOSEPH BAY SEDIMENT STUDY

KEY RESULTS

NOT DETECTED

- Mercury
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Organochloride pesticides
- Semi-volatile organics (SVOCs)
- Organotins



Arsenic concentration levels in St. Joseph Bay.

DETECTED

- **Metals: Arsenic** and **Chromium** were detected in varying concentrations across sites. Stations near the Port were elevated for Arsenic and suggest local contamination that exceeded the FDEP residential but not industrial criteria while no stations exceeded regulatory thresholds for Chromium.
  - **Arsenic** makes its way into the sediment naturally from weathering rocks and from industrial activities and is considered acutely toxic to aquatic organisms with a number of sublethal effects well (map above).
- **Polychlorinated biphenyls (PCBs)**, **dioxins** and **furans** were found at many sites but varied in concentration with only a handful of stations having higher concentrations (Stations 7, 8).
  - Effluent, industrial activities, and atmospheric deposition are the major sources of PCBs, dioxins and furans and all are known to impact aquatic organisms in a variety of ways.
- **Pharmaceutical & Personal Care Products (PPCPs)** were detected at several stations, with very high concentrations around Eagle Harbor.
  - **PPCPs** generally enter the environment via wastewater effluent including septic systems and have been documented in aquatic organisms with varying effects. **Acetaminophen-d4** (pain and fever reliever), **Diazepam-d5** (psychotropic drug), **Caffeine-13C3**, **Hydrocodone-d3** (opiate), and **Triclosan-d3** (antimicrobial compound) were among the most frequently detected in samples from St. Jospeh Bay.

SUMMARY

Overall, several contaminants were not detected and the handful that were detected rarely exceeded sediment quality guidelines, with the exception of Arsenic near the Port. This suggests that surface sediments throughout St. Joseph Bay do not have levels of contaminants that are of immediate concern. The finding of high concentrations of PPCPs near Eagle Harbor was surprising, however, the predominant source of PPCPs is from wastewater including septic systems, which are predominantly located along the Cape. These results may indicate the need for servicing existing septic systems and upgrading infrastructure as possible.

https://www.sasjbep.org
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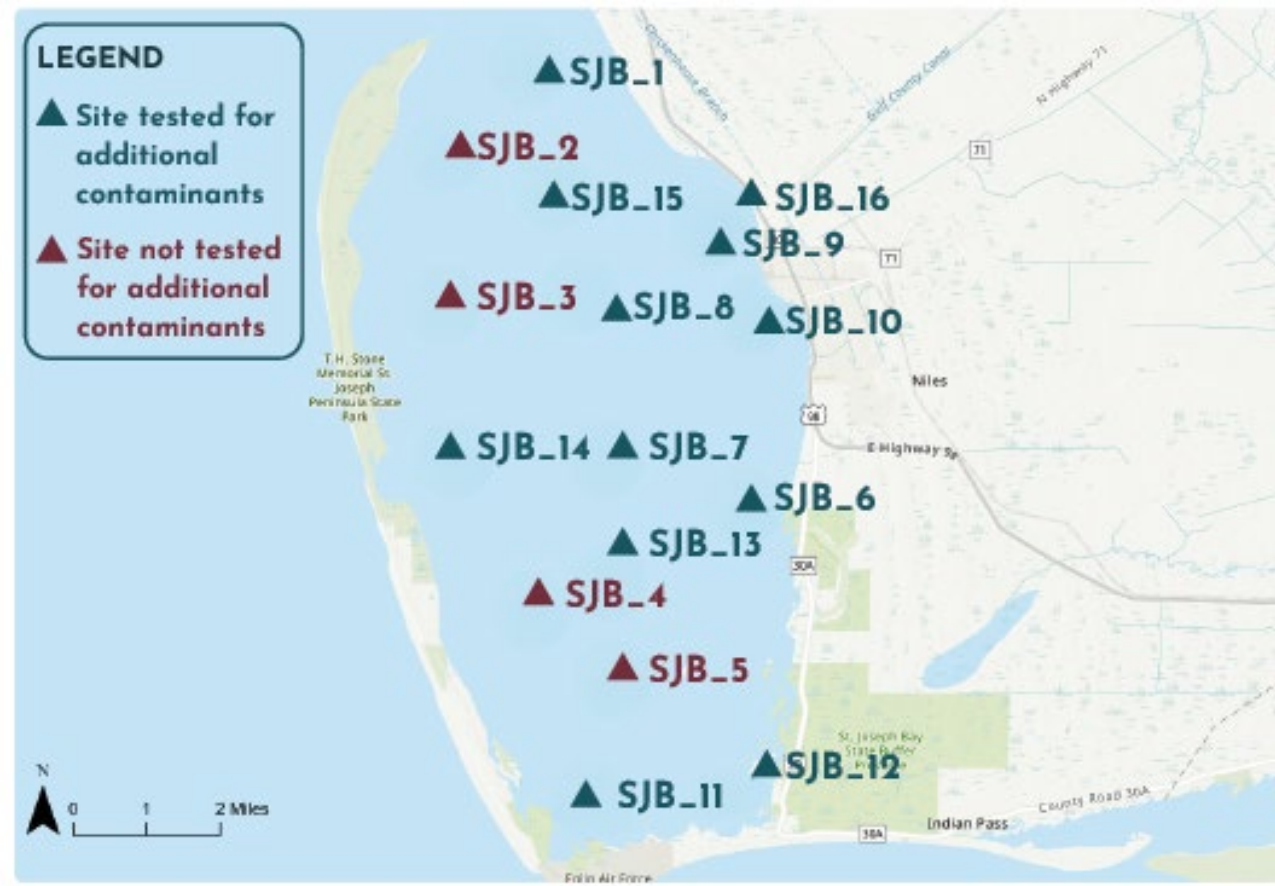
METHODS



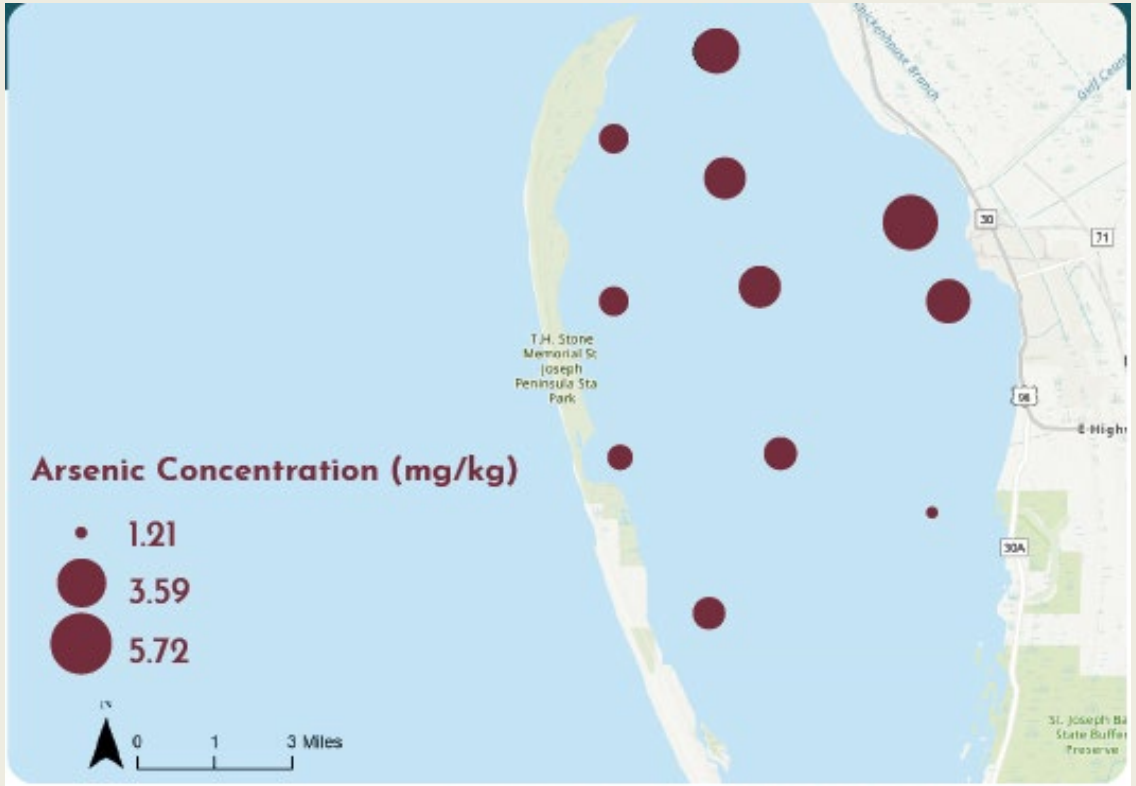
Sediment Sampling Locations in St. Joseph Bay.

- Sampled in summer 2024 using ponar grabs to ~ 10cm depth

METHODS

Analyte	Description, Why	Which stations
Particle size ((% sand, silt, clay, texture)	Characterize sediment, provide context	All
Total organic carbon (TOC)	Characterize sediment, nutrient cycling, contaminant interactions	All
Metals	Common contaminant with known issues (e.g., Arsenic, Chromium)	All
PAHs (Polycyclic aromatic hydrocarbons)	Some known to be carcinogens	All
Organochlorine Pesticides	Can cause acute and chronic health problems (e.g., DDT)	All
PCBs (Polychlorinated Biphenyls)	Cause a variety of adverse health effects	All
Methylated Naphthalenes	Adverse health effects	All
Dioxin and Furans	Adverse health effects	Subset (teal stations)
Organotin	Adverse health effects	Subset (teal stations)
SVOCs (Semi-Volatile Organic Compounds)	Adverse health effects	Subset (teal stations)
Personal Care Products	Unknown effects, wanted more data on what was present	Subset (teal stations)

RESULTS

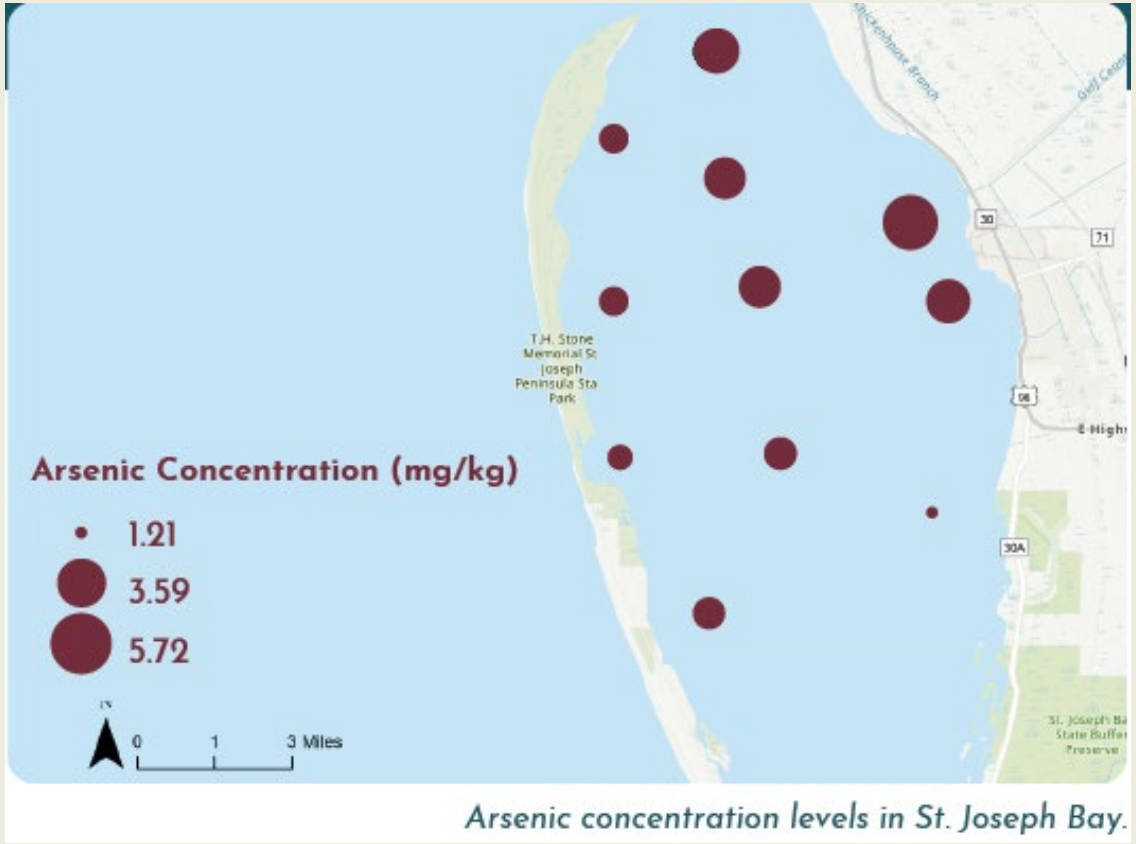


Arsenic concentration levels in St. Joseph Bay.

Not detected in any sample:

- Mercury
- PAHs
- Organochloride pesticides
- SVOCs
- Organotins

RESULTS



Arsenic concentration levels in St. Joseph Bay.

Other findings:

- Metals: Arsenic and Chromium present- higher near the Port
- PCBs, Dioxins and Furans: present at low concentration below human sediment quality guidelines
- Personal Care Products: many detected
  - Examples: Acetaminophen-d4 (pain and fever reliever), Diazepam-d5 (psychotropic drug), Caffeine-13C3

GUEST PRESENTATION

Dr. Jane Caffrey, University of West Florida

PARTNER UPDATES

Mark Your Calendars!

2025 Lake Powell Cleanup / Sept. 20th

Email **LPCA08@gmail.com** for more info on how you can help...

8:00 - 9:00 am: Sign-In
Lake Powell Park (Boat Ramp) or Camp Helen State Park
9:00 - 11:30 am: Cleanup
11:30 - 12:00 pm: Pizza / Photos / Chance Drawing

Please consider bringing your boat, kayak, etc. We NEED teams on the water!!

https://www.facebook.com/LakePowellCommunityAlliance

ST. ANDREW AND ST. JOSEPH BAYS ESTUARY PROGRAM PRESENTS

ST. ANDREW & ST. JOSEPH BAYS ESTUARY PROGRAM at FSU PANAMA CITY

Tides & Talks

WHERE CONVERSATION STARTS AND STEWARDSHIP FLOWS

Join us monthly for **Tides & Talks**, a community gathering featuring guest speakers on hot topics in our watershed. Engage in discussions, share your insights, and learn how to support our estuarine ecosystems.

8.14	CRAYFISH & CONSERVATION: PANAMA CITY CRAYFISH
9.11	TIDES & TURTLES: SEA TURTLE CONSERVATION
10.9	PINES & PRESERVATION: LONGLEAF PINES
11.14	LAKE & LEGACY: LAKE POWELL COMMUNITY ALLIANCE

2nd Thursday Each Month
3:00-4:00pm CDT

Destination Panama City
101 West Beach Drive

FOR MORE INFO GO TO:
WWW.SASJBEP.ORG/EVENTS/TIDESANDTALKS

@ SASJBEP
WWW.SASJBEP.ORG
ESTUARYPROGRAM@PC.FSU.EDU

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SEPTEMBER 27TH 2025

Race FOR THE Bays

10K, 5K, AND 1K

This trail run will take you over the marsh and through the woods of **Panama City Beach Conservation Park.**

All proceeds will go to benefit the **St. Andrew and St. Joseph Bays Estuary Program.**

1st, 2nd, and 3rd place prizes for age groups and overall!

SIGN UP

START TIME

10K and 5K - 7:30am
1K- 8am

LOCATION

100 Conservation Park
Panama City Beach FL

SIGN UP

Register to run or learn how you can support the event at:

WWW.SASJBEP.ORG/RACEFORTHEBAYS

Not interested in running? We need lots of volunteers!

2025 STC MEETING SCHEDULE REMINDER

January 16	Guest Presentation: "Monitoring Waterbodies through Spatially Balanced Surveys: National, State, and Local Perspectives"
February 20	Grant Update(s) (1 hour meeting)- virtual only
April 17	Guest Presentation: Oysters
August 21	Guest Presentation: Water quality and microbial source tracking in St. Joseph Bay
October 16	Grant Update(s) (1 hour meeting)- virtual only
December 18	Guest Presentation: Mini Partner Project Updates; Year in Review

Note: Look out for emails from Jessica for these meetings!

THANK YOU!

ST. ANDREW &
ST. JOSEPH BAYS
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Darryl Boudreau