

# Source Tracking microbial contamination at Bruce Beach



Jane Caffrey & Barbara  
Albrecht\*

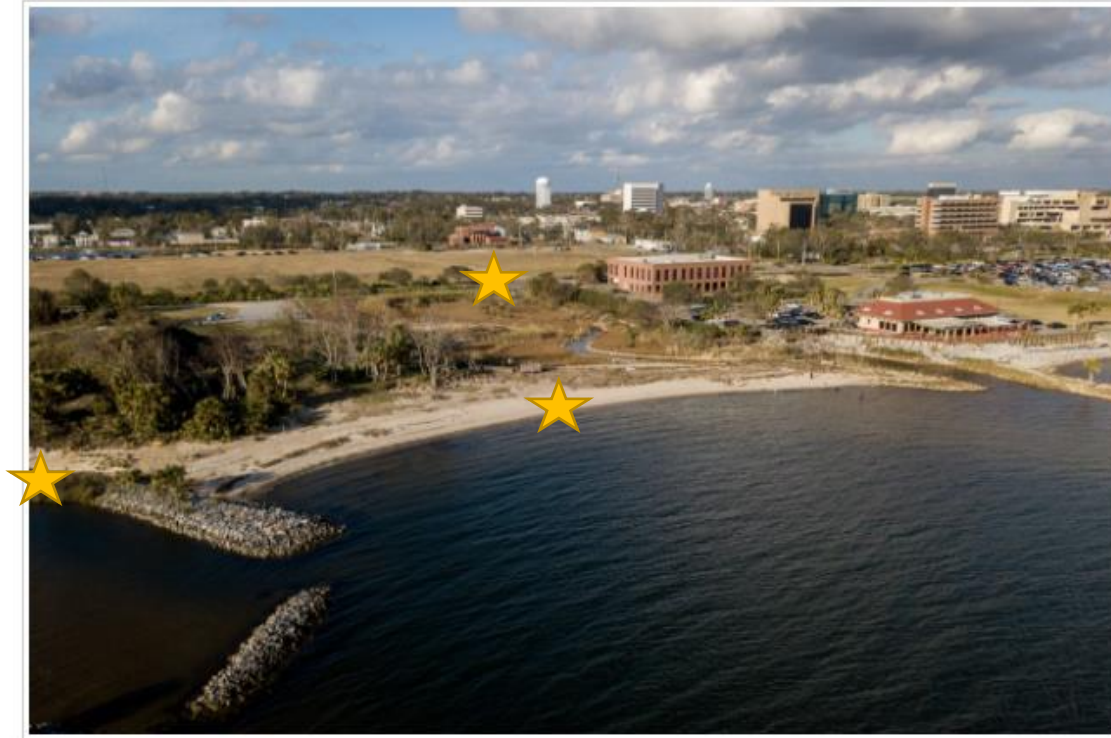
Center for Environmental  
Diagnostics and Bioremediation

University of West Florida

\*Bream Fishermen Association

Image downloaded from <https://thepulsepensacola.com/2018/01/african-american-leaders-support-hatchery-redevelopment-of-bruce-beach/>

# Bruce Beach Park Improvements



## PROJECT OVERVIEW

The **Bruce Beach Park Improvement** is one of several locations along the the Continuous Waterfront Trail envisioned in the the Urban Core Community Redevelopment Plan, as further conceptualized in the Pensacola Waterfront Framework Plan. The vision for this project includes a prominent scenic overview mount, trails, early learning and play features, a grand entry plaza, and cultural exhibits, kayaking facilities and other exciting features.

## PROJECT UPDATES

To sign up for updates on this and other CRA projects, **register for email or text alerts at [City of Pensacola.com/Notify Me](https://www.cityofpensacola.com/NotifyMe) and select "CRA Projects"**.

## REDEVELOPMENT PLAN

[2010 Urban Core Redevelopment Plan](#)

## PROJECT PLANS

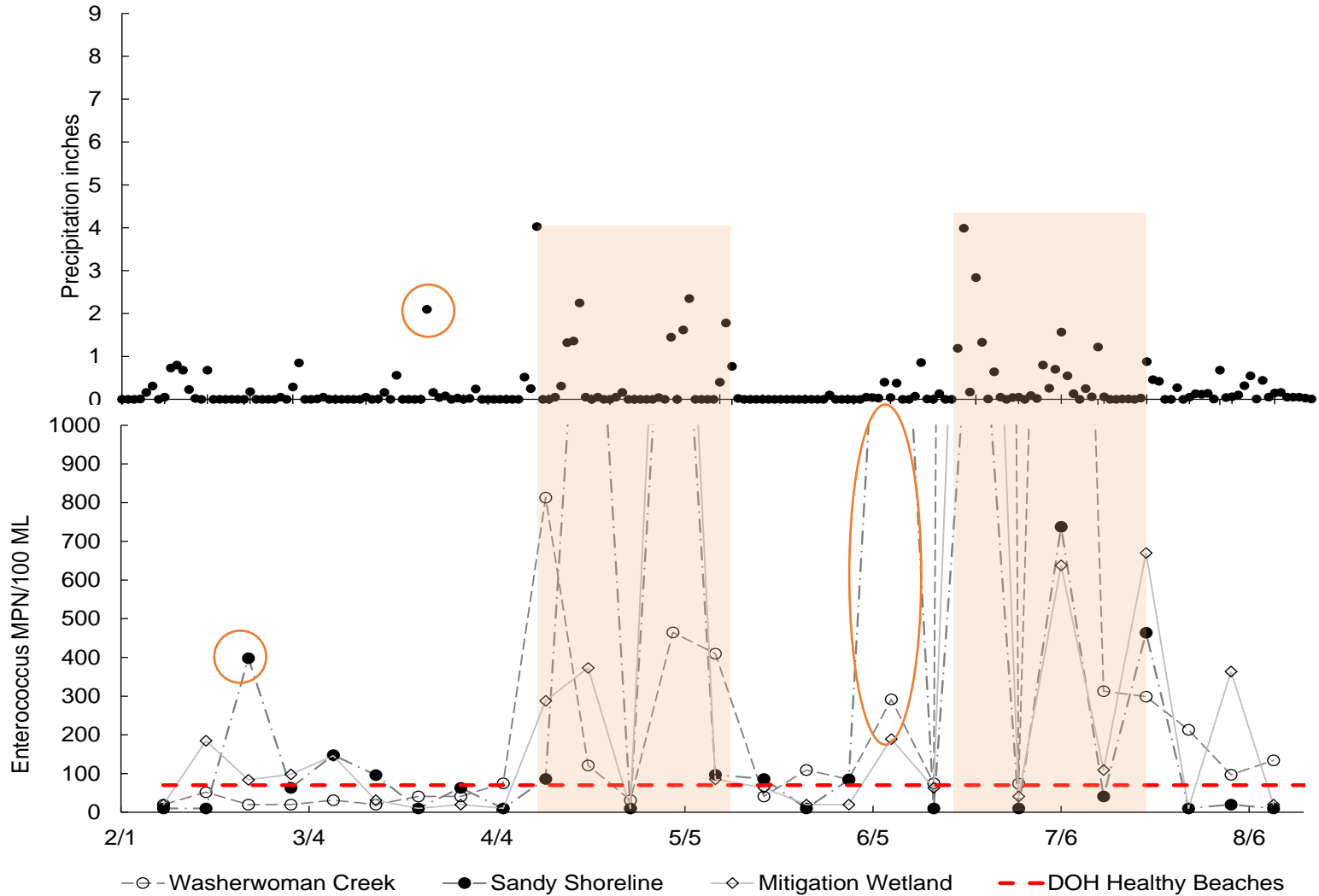
1. [Waterfront Framework Plan Report](#) -

# Enterococcus – indicator bacteria

- Enterococci are indicators of the presence of fecal material in water
- Possible presence of disease-causing bacteria, viruses, and protozoa. These pathogens can sicken swimmers and others who use rivers and streams for recreation or eat raw shellfish or fish.
- Other potential health effects can include diseases of the skin, eyes, ears and respiratory tract. Eating fish or shellfish harvested from waters with fecal contamination can also result in human illness.
- DOH standard 70 MPN/100 mL
- <https://www.epa.gov/national-aquatic-resource-surveys/indicators-enterococci#:~:text=Enterococci%20are%20indicators%20of%20the,eat%20raw%20shellfish%20or%20fish.>

# Bruce Beach study results

## Feb 2021-August 2021



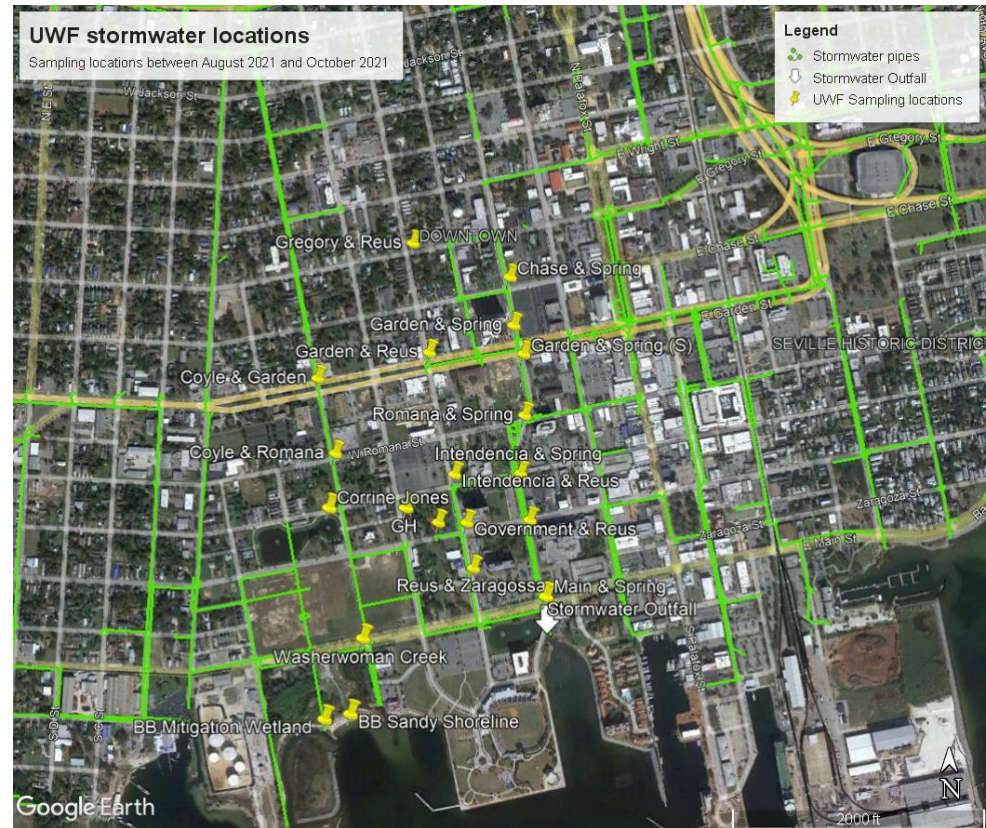
# City of Pensacola study

August 31, 2021 –  
February 2, 2022

1. Can we track down where high numbers are coming from at Bruce Beach?
2. How do storm events/rainfall affect bacterial loading?

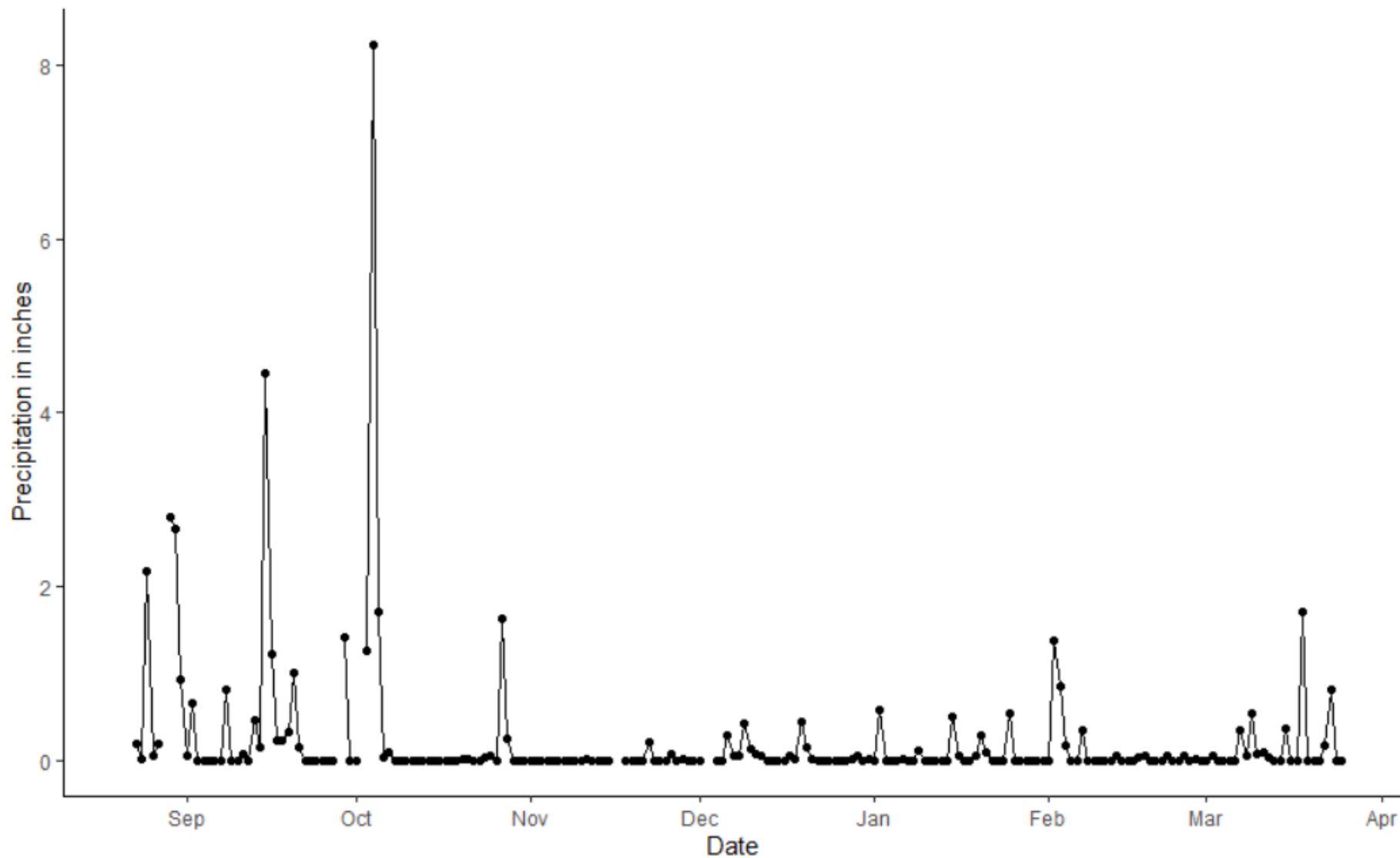
29 unique locations (not including 3 Bruce Beach locations)

14 sampling dates between August 31, 2021 and February 3, 2022

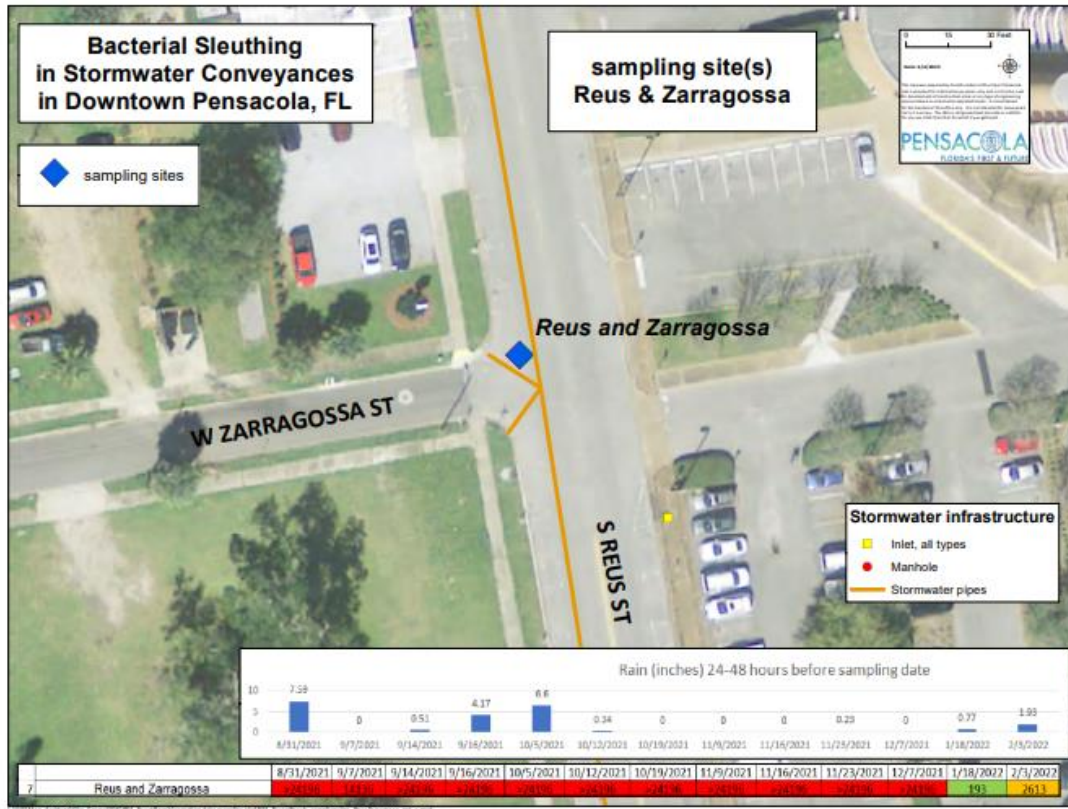




# Rainfall

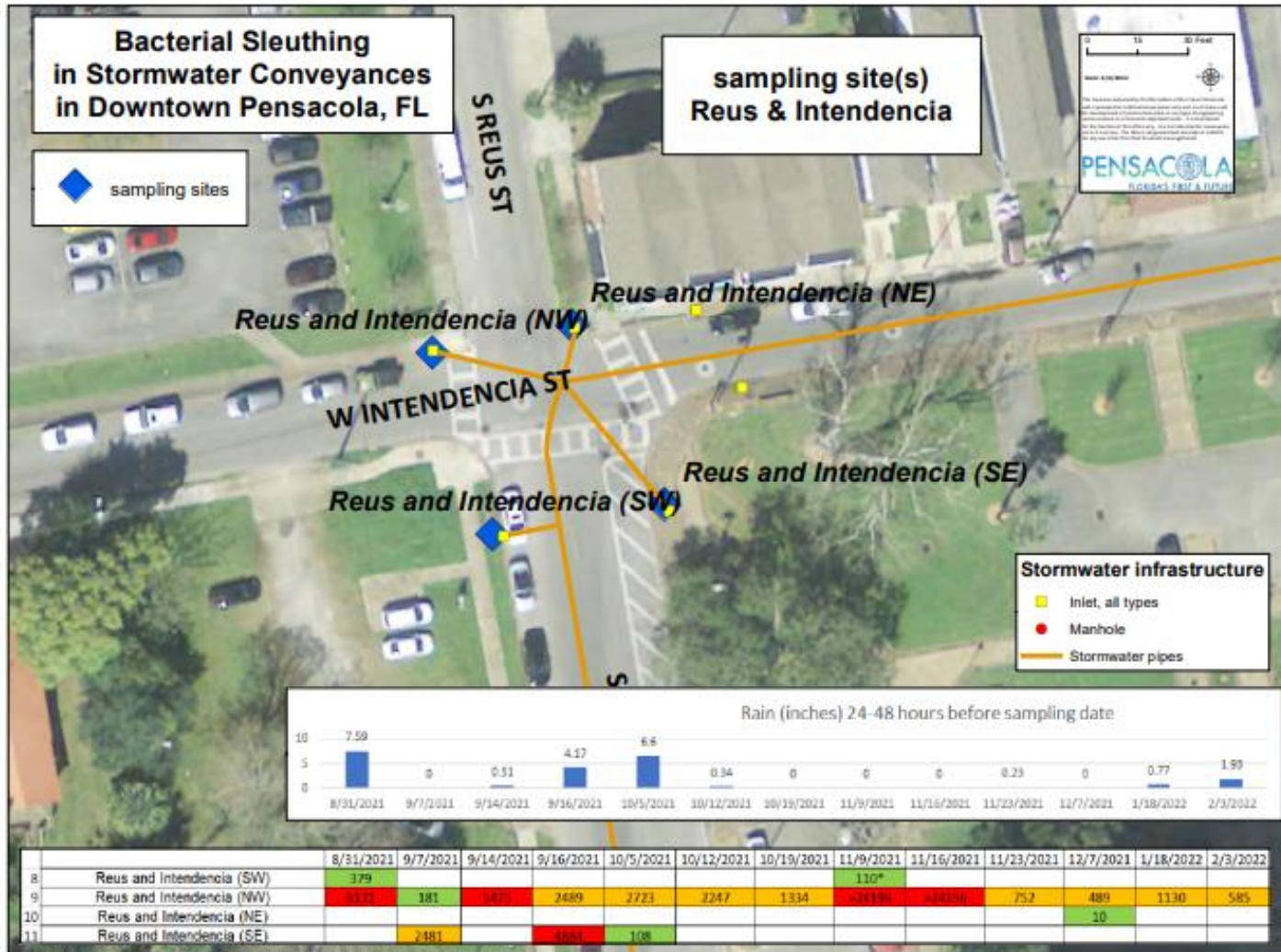


# Reus & Zarragossa Streets



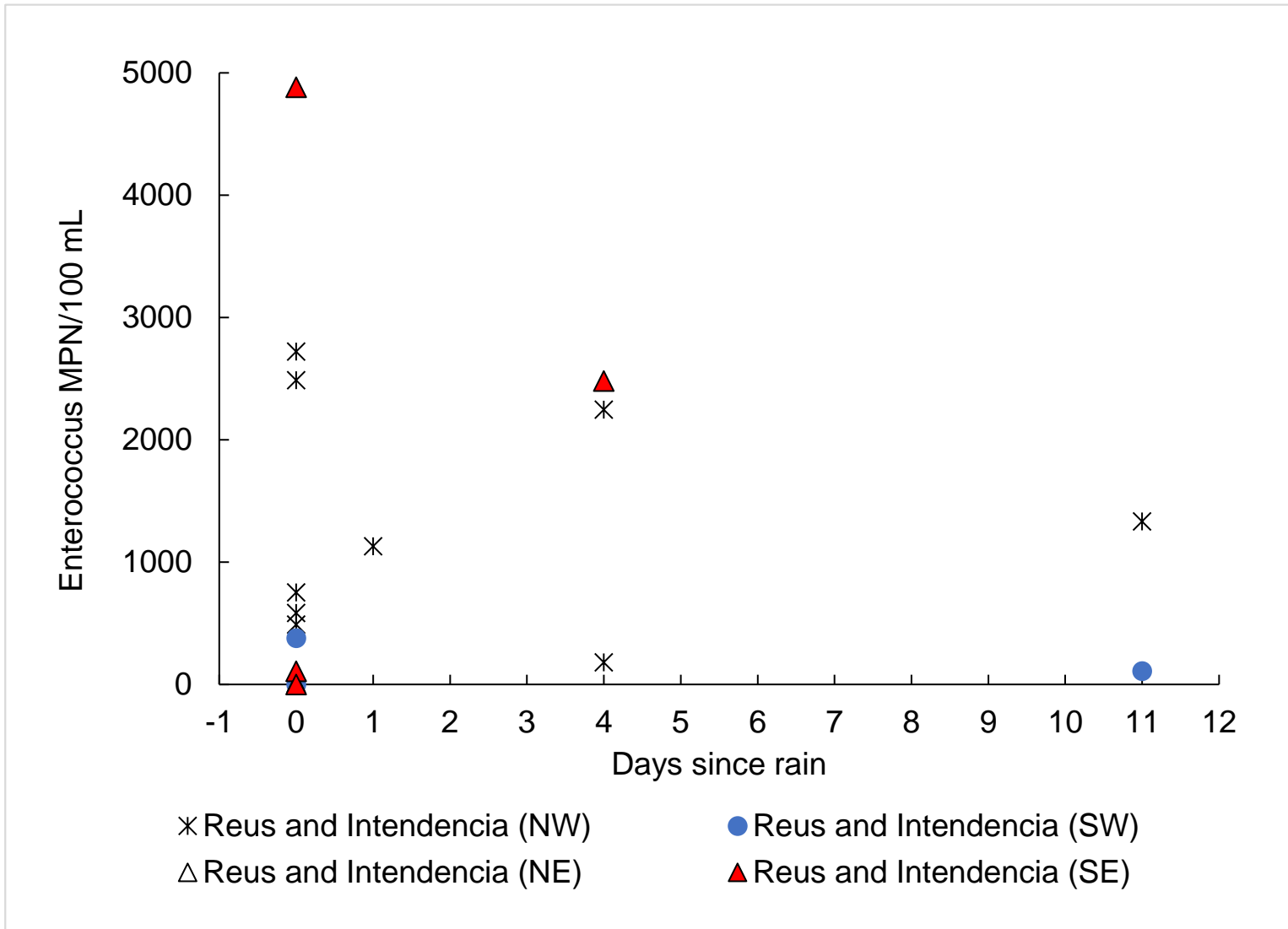


# Reus & Intendencia Streets

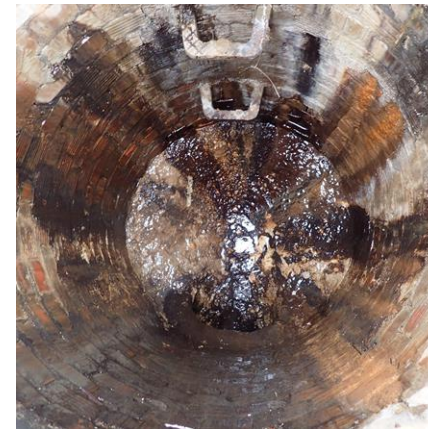
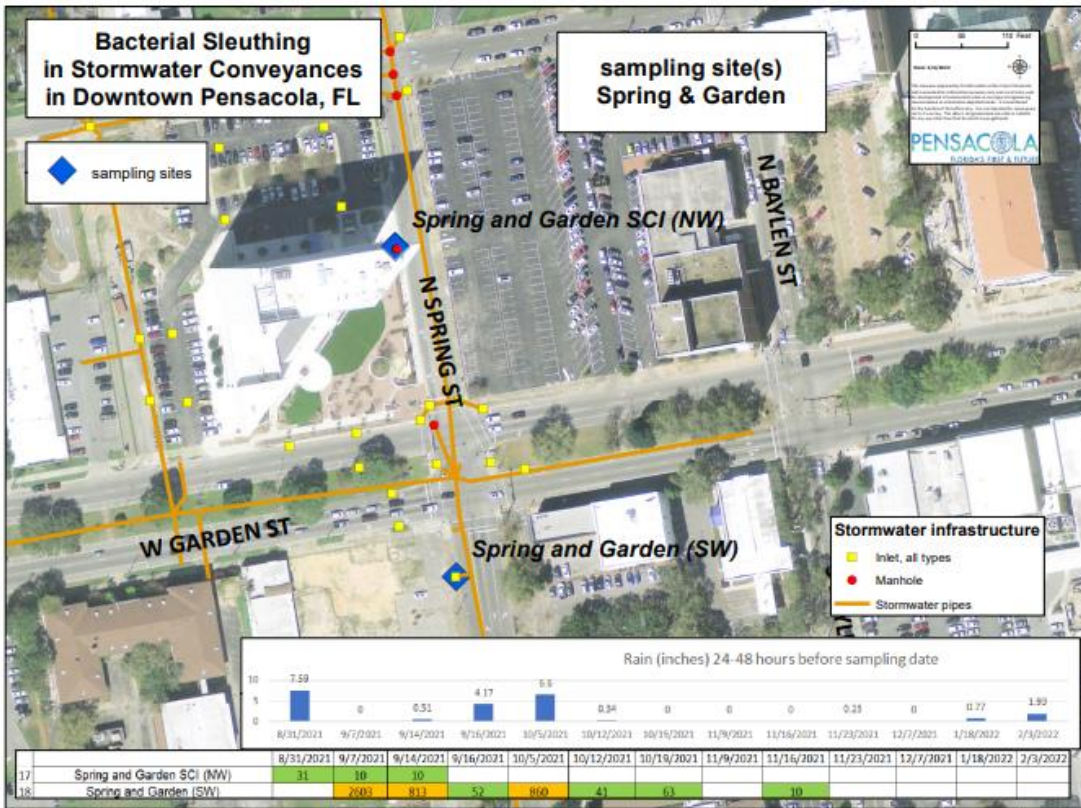


# Differences in different storm drains

## High values even following dry periods

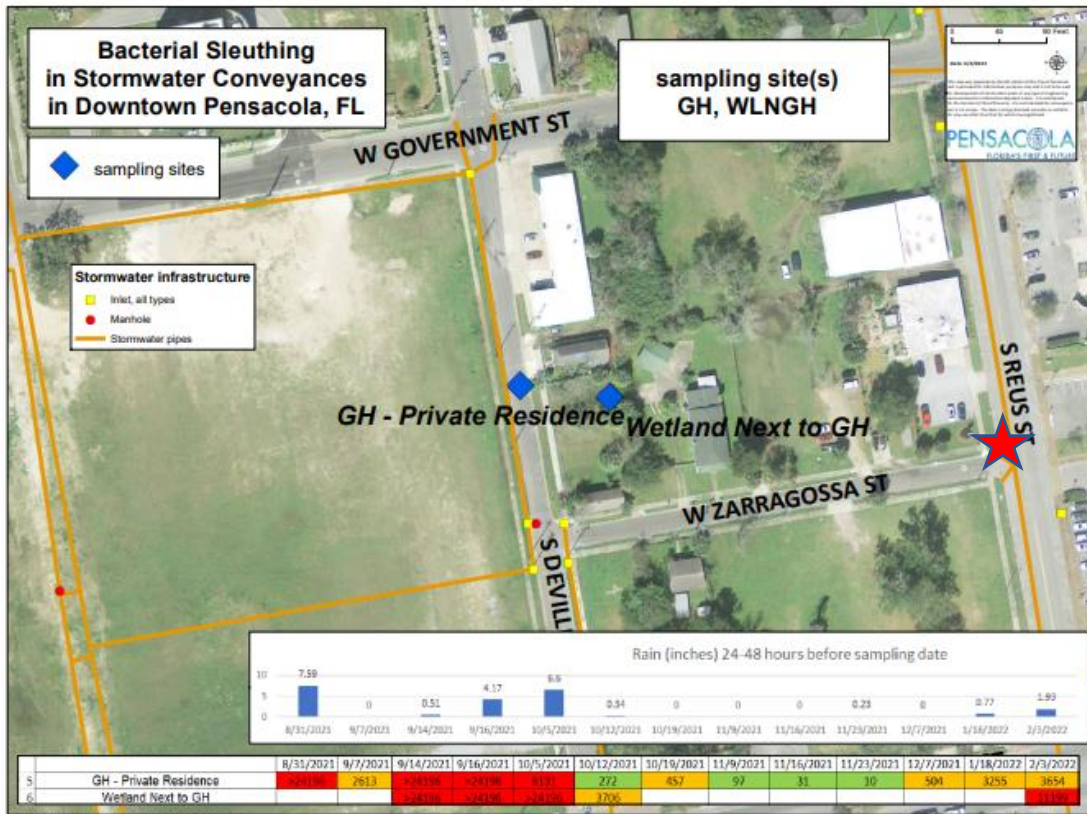


# Spring and Garden Streets SCI Bldg & SW

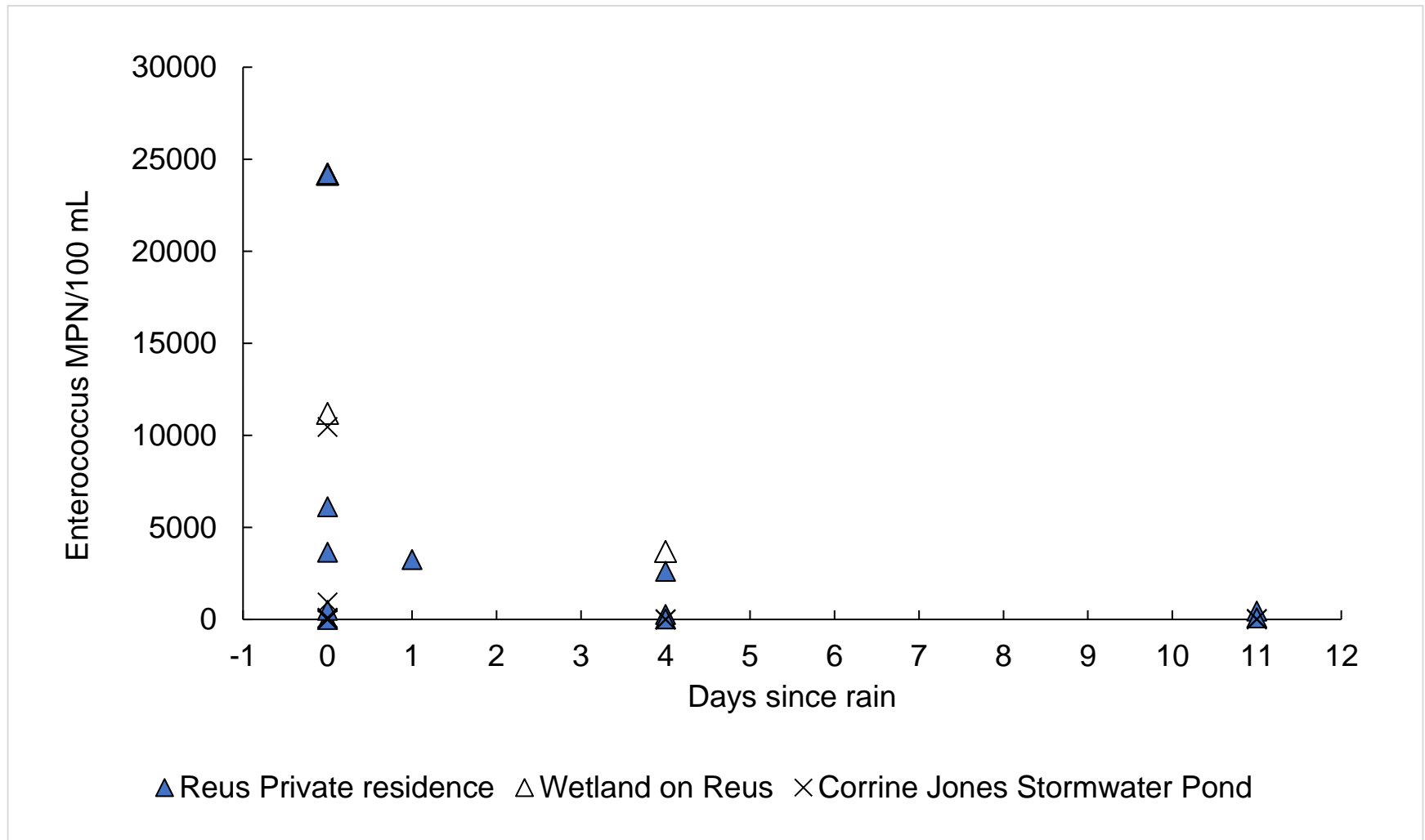


# South DeVillers

## Private Residence (GH) and Wetland Next to GH

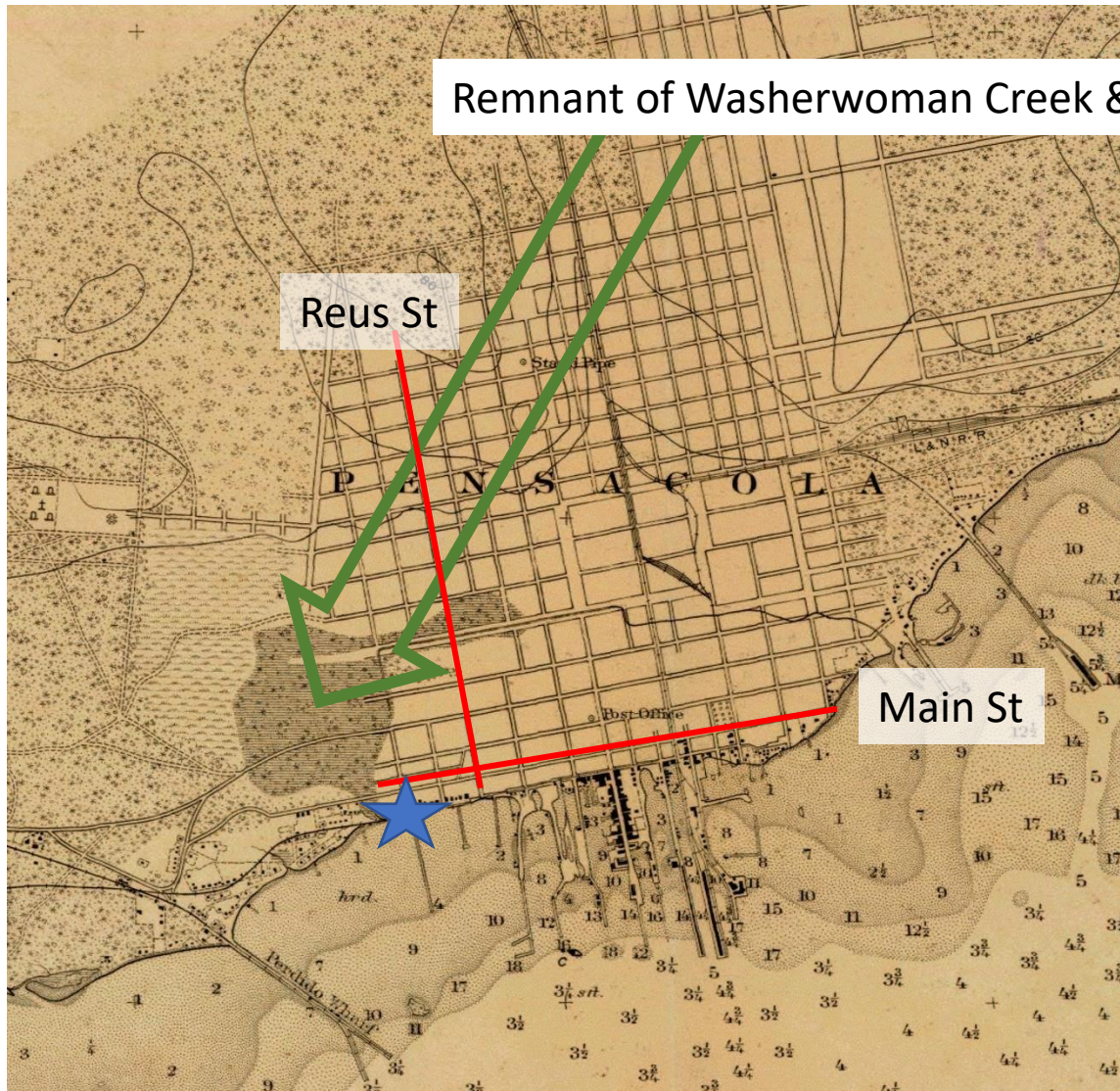


# Stormwater flush – Enterococcus declines over time



# Historical context

## 1908 Coast & Geodectic Survey map



Remnant of Washerwoman Creek & wetlands

Reus St

Main St

# Other informative studies

- Beazley Research Laboratory (UCF qPCR)
  - Reus private residence and Reus & Zaragossa
  - Collected Nov 9, 2021
  - Both sites showed only human biomarkers (no dog or bird biomarkers)
- Tanyards report by Laurie Murphy – Jan 9, 2019
  - Tracks south of Garden St to Main – AE flood zone
  - Tracks south of Main – AE and VE flood zone
  - Tidal influence in stormwater in VE
- Tanyards report by Niehuis (FSU)
  - Rainfall rather than storm surge causes flooding
  - Worse during high tides
  - Tanyards east of Coyle and south of Intendencia not connected to Corrine Jones stormwater pond

# Preliminary conclusions and next steps

- **This is a difficult problem with no quick or easy solutions**
- Locations with consistently higher Enterococcus (e.g. Reus & Zarragossa, DeVillers) should be highest priority for improving infrastructure
  - Cracked/missing mortar in brick pipes/culverts
- Bathrooms needed at Bruce Beach
- Flooding of low-lying areas
  - Tanyards – lowest elevation, most susceptible to problems
  - Residents exposed to potential pathogens in stormwater
  - How will new & continuing development in downtown affect Tanyards?
- Need better understanding of how water is moving in this region
  - Dye study? Camera probes?
- Scientific studies
  - How long do Enterococcus indicators survive in stormwater pipes?
  - Sampling for other microbial indicators?



# Acknowledgements

- Bruce Beach study: UWF Students: Marshay Harvin, Julianna O'Bar, Hope Ebert, Joel Lukens, Dave Kawula, Michael Swords, Jessica Marquis, Maisha Epps
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- ECUA: Wendy Gavin

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- CEDB

