

Charlotte's Estuary Health & Water Quality Declining Rapidly

Peace + Myakka Waterkeeper

Public Workshop April 9, 2022

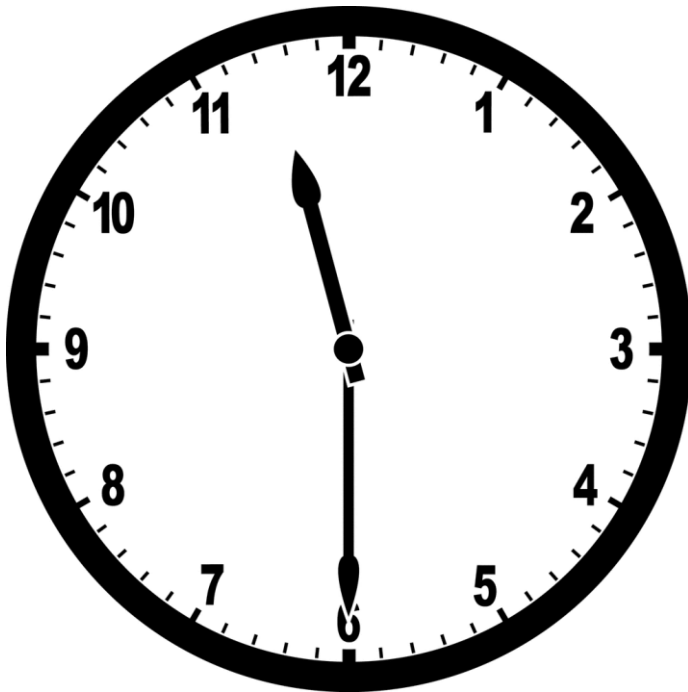
Coty Keller

A scenic sunset over a body of water. The sky is filled with vibrant orange, red, and yellow clouds, with the sun low on the horizon. The water reflects the colors of the sky. In the foreground, there are dark silhouettes of trees and foliage on the right side.

**Ideas for Enhancing Charlotte
County's Management of
Our Exceptional Estuaries,
Waterways and Water Quality –
Now**

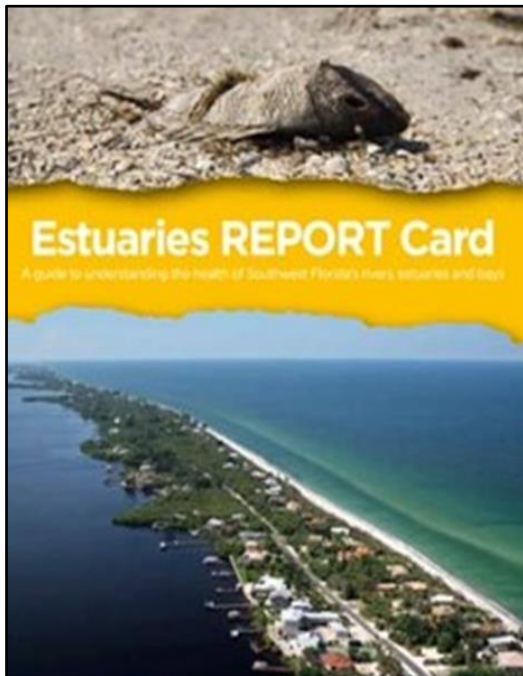
**Coty Keller, David Blewett, and Judy Ott
October 21, 2019**

Thought Process



- How do we know we are at a tipping point in Charlotte estuaries?
- What's at stake?
- **Local** Causes
- **Local** Solutions
- What we each can do
- Take home messages

How do we know we are at the tipping point in Charlotte Estuaries?



“What used to be an expansive seagrass flat that is now a mix of open sand and thick algae”

Reports

- 2017 Conservancy of SW FL Estuary Report Card
- 2018 CHNEP Water Quality Status Reports
- 2021 Calusa Waterkeeper
- Current FDEP State’s Impaired Waters List

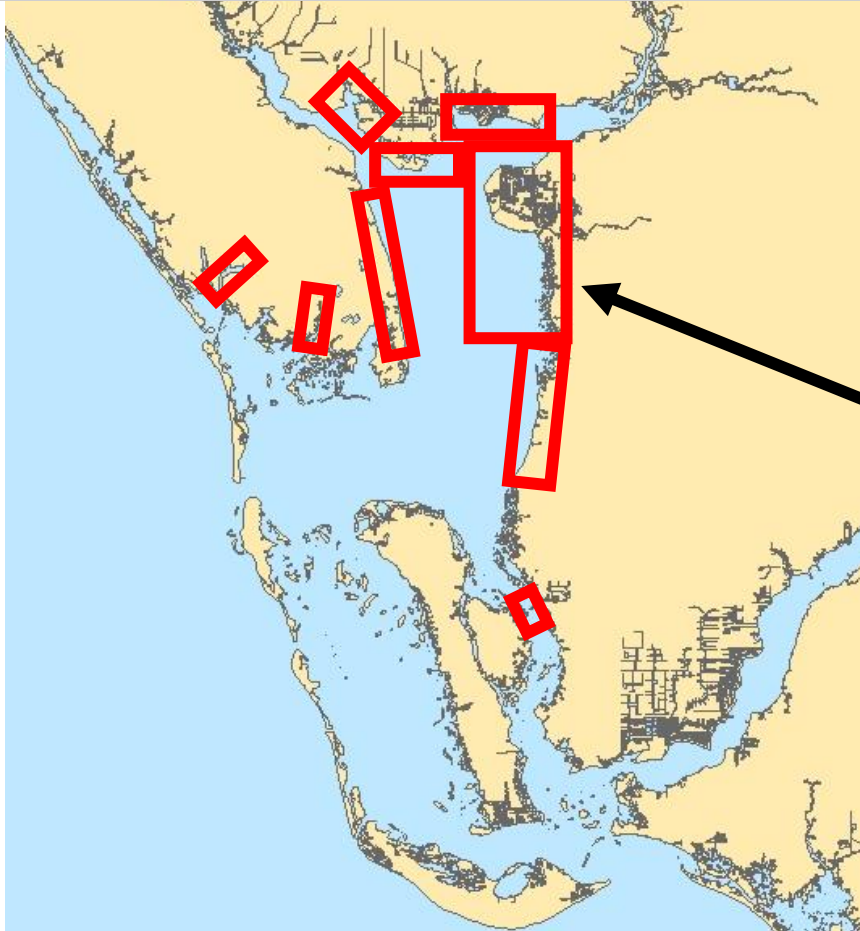
(Aaron Adams 2021. *Will Charlotte Harbor be the next domino to fall?* Bonefish and Tarpon Trust)

How do we know? A decade of FWC observations of Filamentous algae blooms



Until recently we thought Charlotte Harbor was immune to these water quality problems

locations (in red) where large algae outbreaks are now occurring (2012-present)



Green Filamentous Algae

Illustrations courtesy of FWC/FWRI

How do we know? Lessons Learned from Indian River Lagoon

- Chronic Water Quality Problems Can Lead to Irreparable “Tipping Points”.
- Nutrients Reaching the Estuary (brackish water) are a Bigger Problem than Red Tide (salt water) or Blue Green Algae (fresh water).
- Once Severely Degraded, an Estuary Cannot be Repaired in a Timely or Affordable Way – If Ever.

4/11/2022

Charlotte's Estuary Health & Water Quality
Declining Rapidly - PMWK Public Workshop



What's at stake?

Worth significant investment (higher taxes) to solve this problem

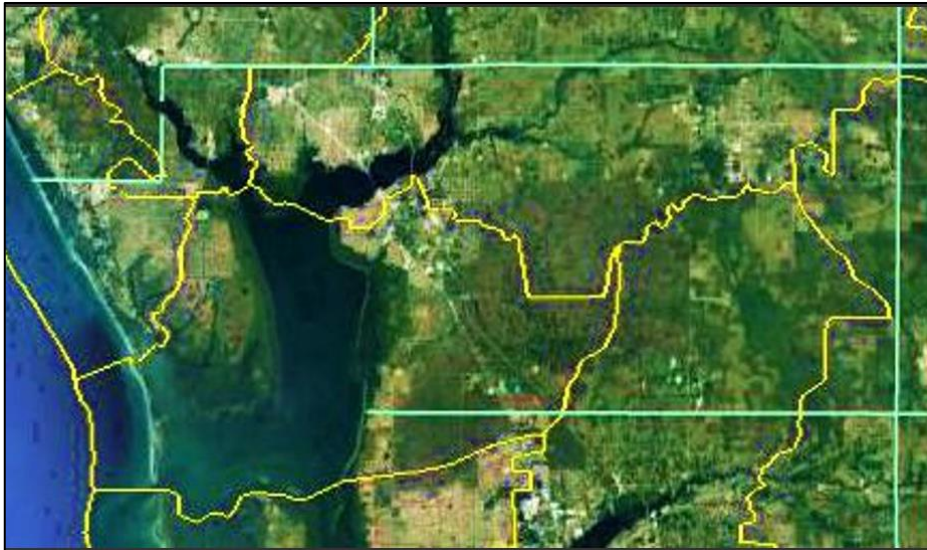
Estuaries cover about 1/3 of Charlotte

Beaches are a highlight, but without healthy estuaries, lifestyles and economy are shot

Estuaries are where:

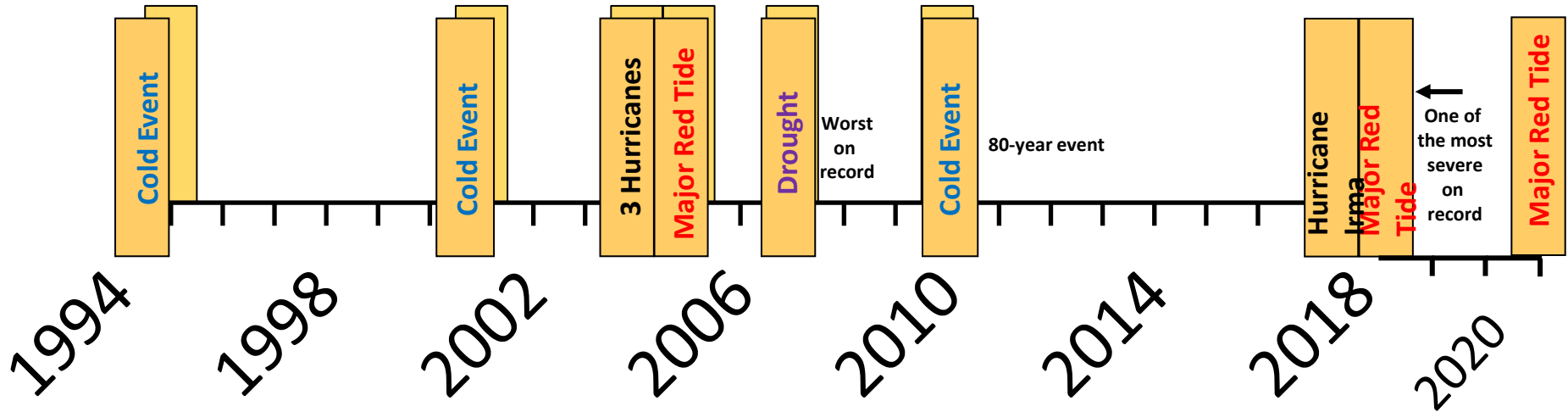
- Most Fish are Born & Raised
- Wildlife Thrives
- Locals & Tourist Recreate
- Aesthetic Enjoyment is Derived
- Marine, Seafood & Tourism Industries are Supported

Waterfront Property Values Depend on sweet smelling, algae free brackish estuary



What's at Stake? Sportfish!

In healthy estuaries, fish populations are resilient.

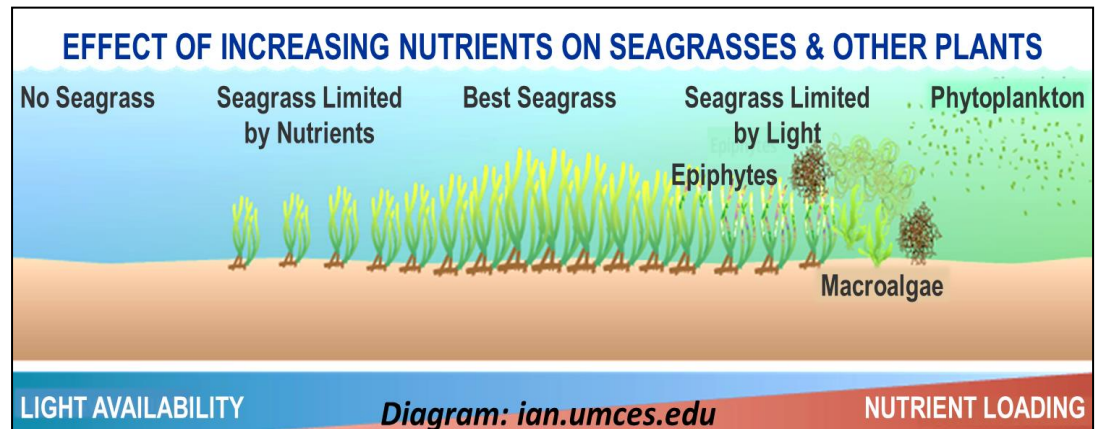


Northern Indian River Lagoon Snook population has still not recovered to this day

Stevens, P.W., Blewett, D.A., Boucek, R.E., Rehage, J.S., Winner, B.L., Young, J.M., Whittington, J.A. and Paperno, R., 2016. Resilience of a tropical sport fish population to a severe cold event varies across five estuaries in southern Florida. *Ecosphere*. Blewett, D.A. et al. 2020 FWC/FWRI/FIM. Charlotte Harbor – an exceptional estuary that needs our attention. Presentation to Charlotte Co. Beaches and Shores Committee June 2020

Local Causes – Nutrient and Carbon Cycles out of balance from Human Activity

- As off 2005, nutrient loading reached 3 times above pre-developed times.
- Leads to higher amounts of phytoplankton and hypoxic (low oxygen oxygen) conditions
- Excess carbon in atmosphere >boom in algae blooms (temperature, flashier rain events)



Turner, R.E. et al., 2006 Paleo-indicators and water quality change in the Charlotte Harbor estuary (Florida). *Limnology and Oceanography*



Local Specific Causes of Nutrients in Estuary – Stormwater

Lapointe et. al. 2016 *Charlotte County Water Quality Assessment* FAU

Global warming makes it worse

- Algae blooms in warmer water
- Flashier rain events

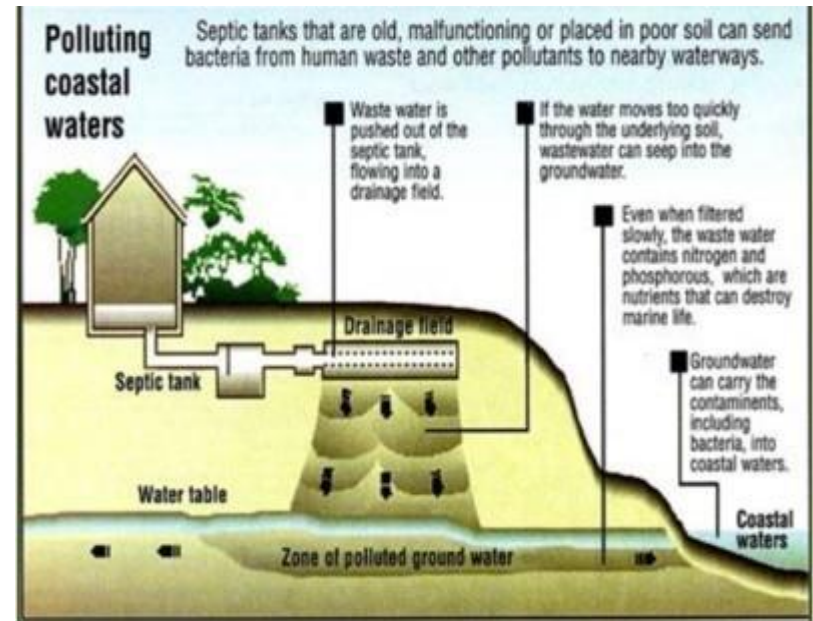
Water Quality – It's Not Just Nutrients: How Climate Change is Necessitating New Restoration Strategies. Judy Ott CHNEP Watershed Summit – June 1, 2020.

Local Specific Causes – Wastewater

Septic Systems Not Suitable for Florida Soils

Sewers have risks:

- Leaks ,
- Major storm events,
- Sea Level Rise



Lapointe et. al. 2016 *Charlotte County Water Quality Assessment*

Local Solution – Manage to Standards

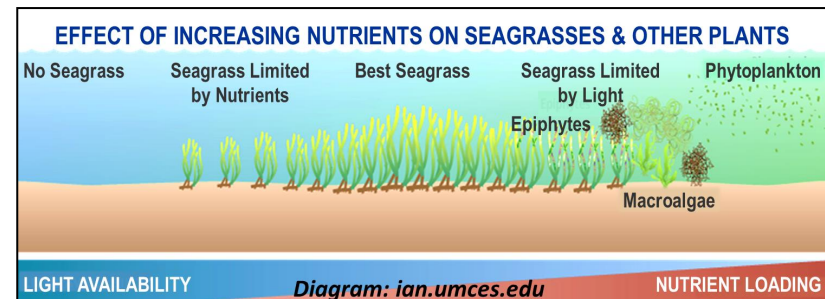
Managing sewage and stormwater systems to meet state water quality standards

- for nitrogen,
- phosphorus,
- and chlorophyll. (Lapointe, Brian, et al. 2016. Charlotte County Water Quality Assessment. FAU)

Standards

- NNC- Numeric Nutrient Criteria
- 2012 - input from local local scientists.

Standards designed to achieve nutrient levels that make sea grasses thrive



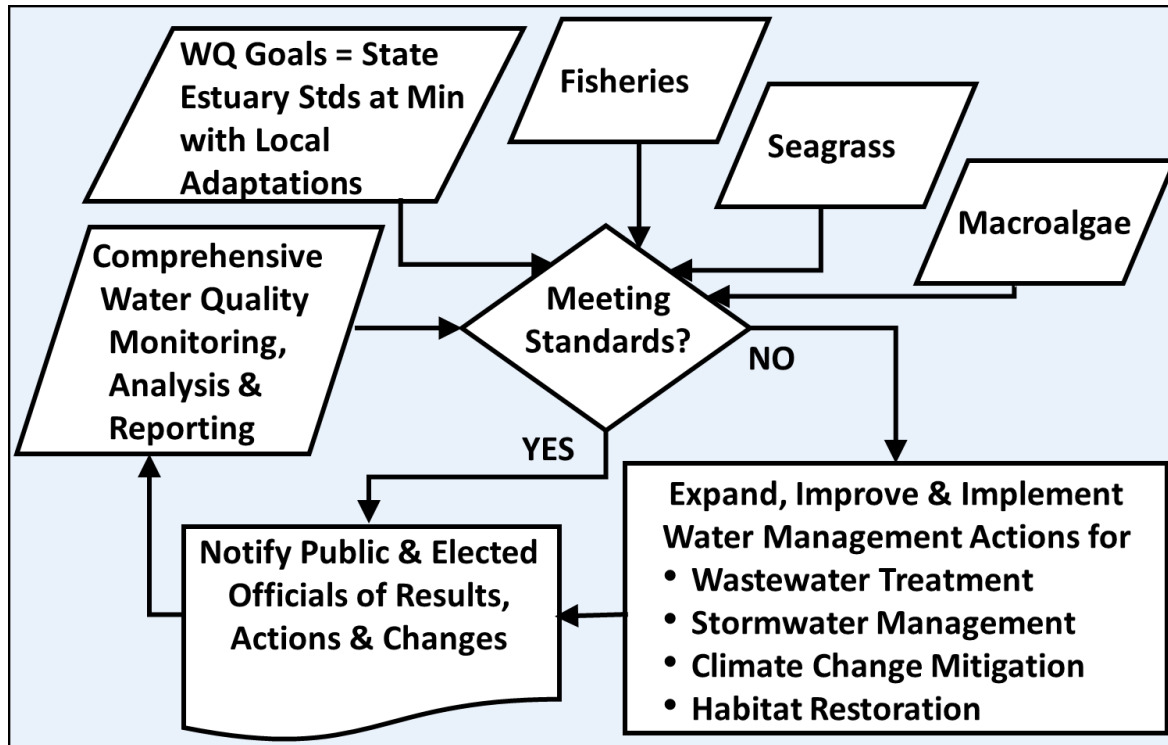
Management intervention needed (Christine Angelini, UF Center for Coastal Solutions)

Get Proactive (Captain Van Hubbard)

State Nutrient Standards for Charlotte County Estuaries

Estuary Nutrient Standards Analyzed as annual geometric means and are <i>not to be exceeded more than once in a 3-year period.</i>				
	Tidal Myakka (includes Tippecanoe Bay)	Tidal Peace River	Charlotte Harbor Proper	Lower Lemon Bay
Total phosphorus	0.31 mg/L	0.50 mg/L	0.19 mg/L	0.17 mg/L
Total nitrogen	1.02 mg/L	1.08 mg/L	0.67 mg/L	0.62 mg/L
Chlorophyll a	11.7 µg/L	12.6 ug/L	6.1 µg/L	6.1 µg/L
Chlorophyll <i>a</i> is a useful indicator of algae levels in the water. Source: Florida DEP Surface Water Quality Standards Source: https://www.flrules.org/gateway/ruleNo.asp?id=62-302.300				

Local Solutions – Transparent, Science-based Process for Managing to Standards



What we each can do - stormwater

Install **native landscapes** – at home and in community.

Tell officials

- **Invest - upgrades to existing systems** and apply **forward thinking in new development***
- **Stop** new development **clear cutting**
- **Reforest** vacant properties and parking lots.

* so long as the decision process and results are transparent.



What we each can do -wastewater



- Lobby for **universal sewers-** businesses, all residents- chip in for septic replacement.
- **Got septic?**
 - Tell officials –**replace it quickly**
 - **Maintain** system .
- Tell commissioners: **Fund resiliency upgrades** (reduce leak risk, protect against storm damage).
- Applaud county -**upgraded reclaimed water systems**. Meanwhile bird dog use of reclaimed -**nutrient enriched** – water.

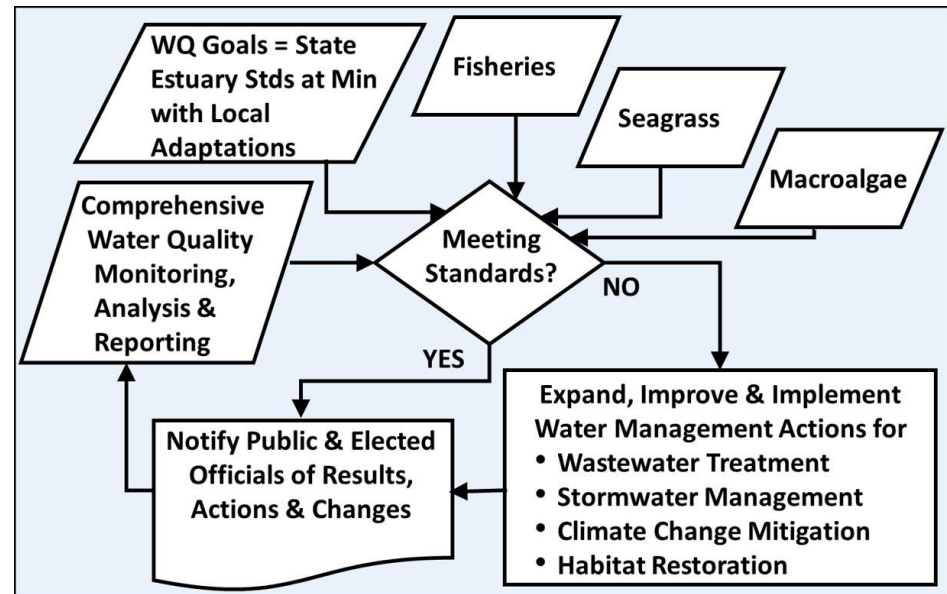
What we can do for most impact – Tell commissioners

Commit to goal of achieving state nutrient standards in all estuaries

- Tidal Peace and Myakka River
- Charlotte Harbor
- Lower Lemon Bay

Transparent, science-based process of managing to standards
(stricter where necessary)

Your vote depends on it



What we can do – Promote and/or Participate “K to Gray” Education & Awareness Campaign

Audiences:

- School Kids
- College Students
- Adults
- New Residents



Photo: Independent School Parent

Examples of Topics

- Estuaries & You
- Water Pollution Basics
- Human Impacts & Estuaries – History & Future
- Water Quality Monitoring & Reporting
- Managing Water to Meet State Standards
- Wastewater & Stormwater Explained
- Florida Friendly Landscaping
- Reducing Our Climate Impact

Take Home Messages

- There is **much at stake**
- We **know the local solutions**, and must be **willing to invest in them**
- **Time is of the essence**
- There are things we can each do, **now**

We must **manage to standards**

County **commit to a goal** of achieving (or exceeding) estuary **water quality standards**

AND adopt a **transparent, science-based process** that restores estuary water quality to better than established standards. **Now**

Thanks for Listening

Questions?



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