Tracking and Reducing the Nutrient Pollution that Fuels Harmful Algae Blooms (HABs)

Jennifer Hecker, Executive Director

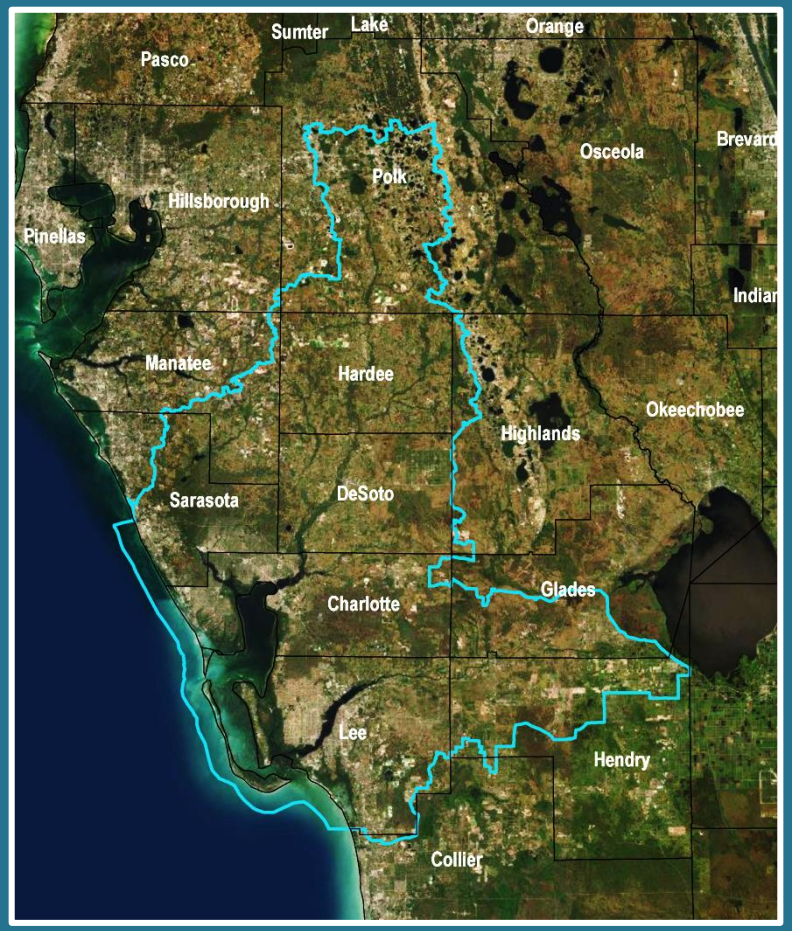
Uniting Central and Southwest Florida to Protect Water and Wildlife

Who We Are

- Formed in 1995 and one of only 28 Congressionally designated “national estuaries” in the United States.
- Receive special funding and support from USEPA under the Clean Water Act to protect and restore water resources in the CHNEP area.

Where We Work

- CHNEP study area encompasses 5,400 sq. mile
- Estuaries include Lemon Bay, Dona & Roberts Bay, Charlotte Harbor, Pine Island Sound, Caloosahatchee, San Carlos Bay and Estero Bay
- Rivers including Myakka, Peace, Caloosahatchee, and Estero
- Inland and coastal communities incl. 10 counties and 25+ cities



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What We Do

CHNEP's Comprehensive Conservation & Management Plan

Reducing Nutrient Pollution

Restoring Hydrological Flow

Restoring Aquatic Habitat

Public Engagement

Through Research, Restoration, & Education

Full CCMP available at https://www.chnep.org/our-plan. More info. about CHNEP at chnep.org

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Nutrient Pollution

Human-generated sources of Nitrogen and Phosphorus

Sources include:

- **Agricultural runoff**
- **Stormwater runoff**
- **Wastewater discharges / failing septics**

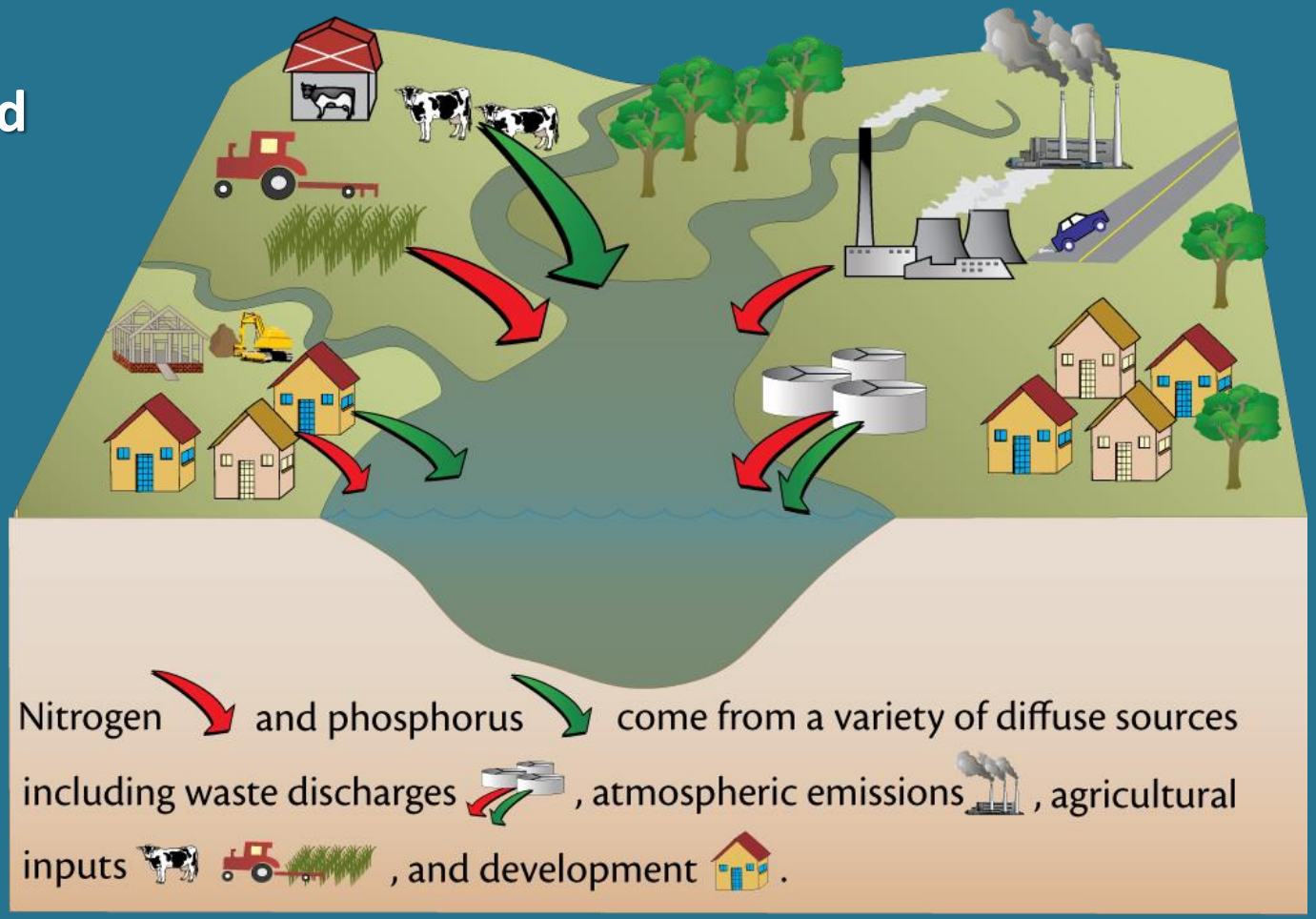


Diagram courtesy of the Integration and Application Network (ian.umces.edu), University of Maryland Center for Environmental Science. Source: Lane, H., J.L. Woerner, W.C. Dennison, C. Neill, C. Wilson, M. Elliott, M. Shively, J. Graine, and R. Jeavons. 2007. Defending our National Treasure: Department of Defense Chesapeake Bay Restoration Partnership 1998-2004. Integration and Application Network, University of Maryland Center for Environmental Science, Cambridge: MD.

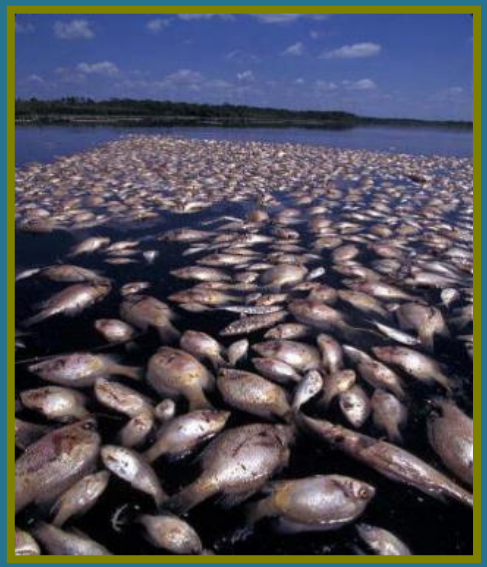
Effects of Excess Nutrients

Can increase Harmful Algae growth, creating longer, more frequent and/or more severe outbreaks of blue-green algae or red tide

Nutrient induced harmful algal blooms in the Caloosahatchee River, Ft. Myers FL

- **Lowers dissolved oxygen to levels too low to support aquatic life**

- **Can also produce toxins**

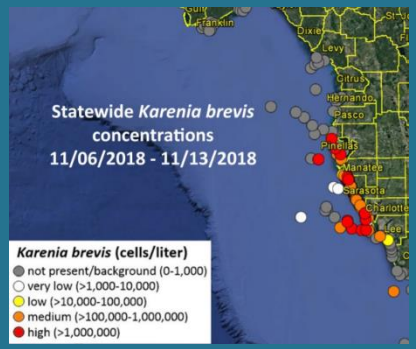


Thousands dead fish due to nutrient-laden run-off. Lake Trafford, Florida

HABs:
Blue Green Algae – Cyanobacteria & Red Tide

Red Tide

- Primarily in marine waters, originating off-shore
- Can produce brevetoxins
- Many influencing factors – with nutrient pollution being one in fueling more frequent, severe, and longer-lasting events



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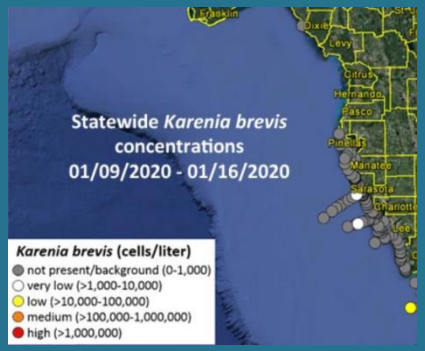

Now

Cyanobacteria

- Primarily in freshwater
- "Green slime" appearance
- Microcystis, a toxin that can be produced by cyanobacteria, is capable of strong uptake of nutrient pollution.

A holistic HAB control approach

Reducing Nutrient Pollution

- Improved wastewater, stormwater and ag runoff retention and treatment
- Increased nutrient sampling for more assessment, TMDLs and BMAPs
- Improved stormwater treatment regulation

Restoring Hydrological Flow

- Flow volume affects pollution concentrations and loads - so restoring appropriate flows with hydrological restoration and better flow management is important

Restoring Aquatic Habitat

- Seagrass and shellfish restoration, wetlands, and living shorelines provide natural systems approaches to nutrient uptake, as well as assist natural systems being more resilient to the impacts of red tide

Public Engagement

- Monitoring and publicly reporting data
- Environmental and policymaker education, as well as citizen science initiatives to reduce nutrient pollution

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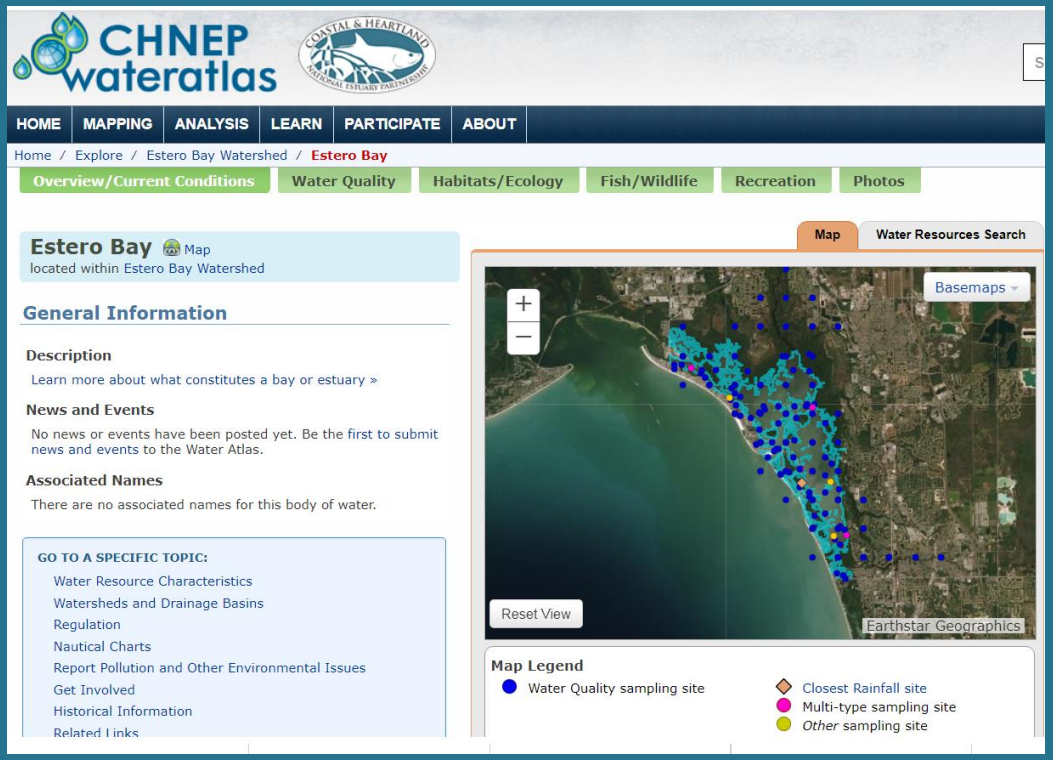


- **One-stop to readily accessible way to find all publicly accessible water quality, flow, clarity, trends, and other data.**
- **2020: CHNEP adding a numeric nutrient calculator, WQ Dashboard, and HAB page**

Location: CHNEP area

Partners: University of South Florida Water Institute, CCHMN Partners, CHNEP Management Conference

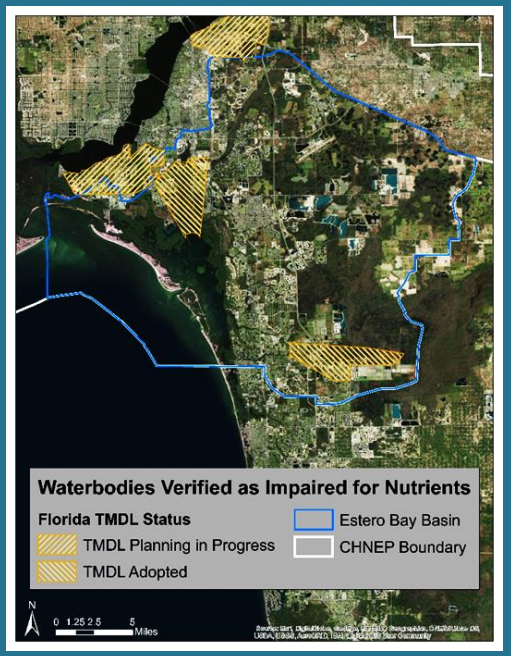
Status: Ongoing

CHNEP Cost: $52,000 maintenance + $17,000 for upgrades in FY20

CCMP Plan Activ 1.2
Water Quality Improvement 1.2: Support uploading and archiving of data in standard, common public databases, including FDEP's database and the CHNEP Water Atlas.

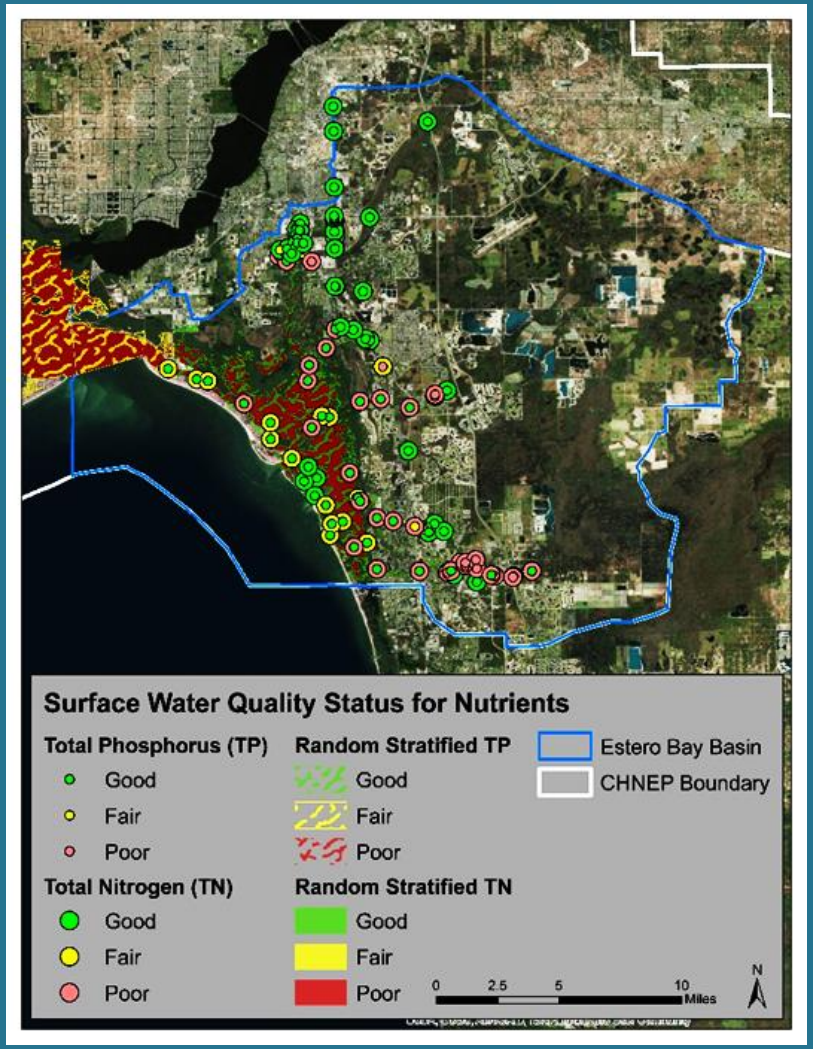
Estero Bay Nutrient Pollution Issues

Nutrient Pollution is a common widespread problem in FL - including in Estero Bay basin and in the nearby mouth of the Caloosahatchee River



← Long-term condition

Near-term snapshot →



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Caloosahatchee Cyanobacteria Rapid Response Pilot Program

- **Conduct research regarding the efficiency of new technologies in removing nutrients, cyanobacteria, and its associated toxins**
- **Large scale assessment of AquaFlex open-cell foam technology on Caloosahatchee River**

Location: Lee County

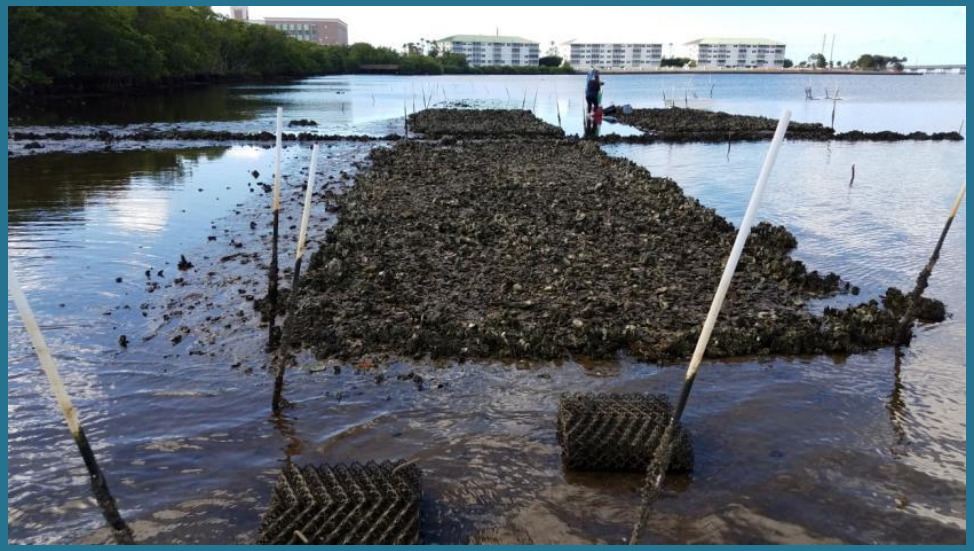
Partners: Sea and Shoreline Aquatic Restoration, Florida Gulf Coast University, AquaFlex Holdings LLC

Status: Ongoing

CHNEP Cost: $65,000

Aquatic Habitat Restoration

CHNEP is working with volunteers and partners all through Southwest Florida to restore our estuaries – planting seagrasses and oysters, conducting water quality monitoring, and other projects to bring them back to ecological health!



Quantifying WQ Benefits of SAV Restoration

- **Quantify nutrient removal capacity of Submerged Aquatic Vegetation (SAV), specifically tapegrass**
- **Nitrogen and phosphorus will be measured in plant tissue, epiphytes, soils, and water column in both a lab and field setting (Caloosahatchee River)**

Location: Lee County

Partners: Florida Gulf Coast University, Angler Action Foundation, Sea and Shoreline LLC, and Johnson Engineering, Inc.

Status: Ongoing

Cost: $45,000

Public and Policymaker Education

*MEET*CALL*WRITE A LETTER*WRITE AN EMAIL*

STATE

- **Continue and expand annual funding for the Coastal & Heartland National Estuary Partnership including recurrent dedicated funding (HB 791) and (SB 1608).**
- **Support specific legislative authorization for the Florida Department of Environmental Protection to update stormwater standards and other nutrient reduction policies.**
- **Support increased funding of Florida Forever and Florida Rural and Family Lands programs.**
- **Support of local governments' continued ability to enact more stringent environmental protection ordinances.**

FEDERAL

- **Reauthorization of the National Estuary Program (HR 4044)**