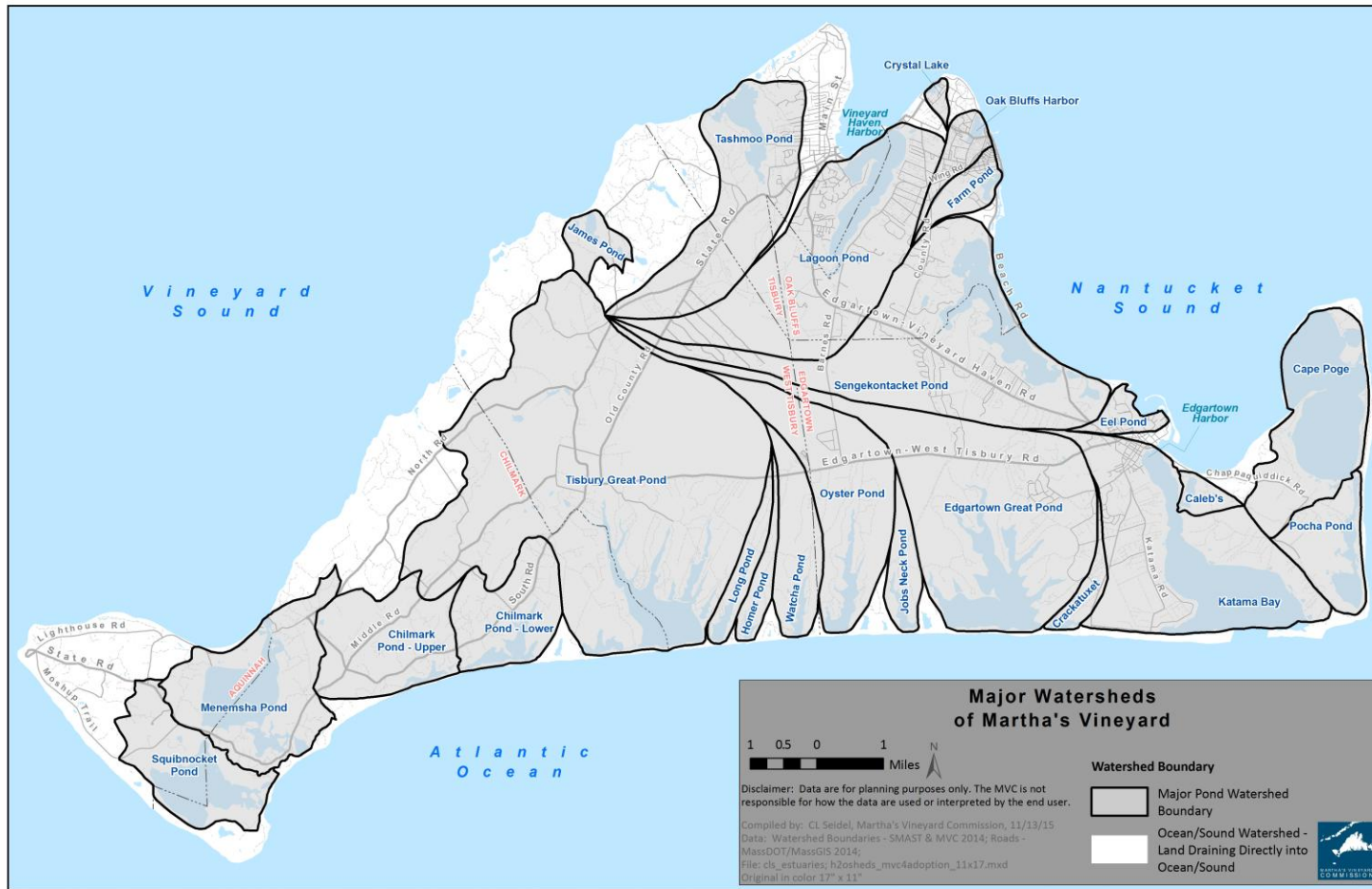


Water Quality on Martha's Vineyard



1. Why do we monitor our ponds?
2. What do we monitor?
3. What are we doing to protect our ponds?



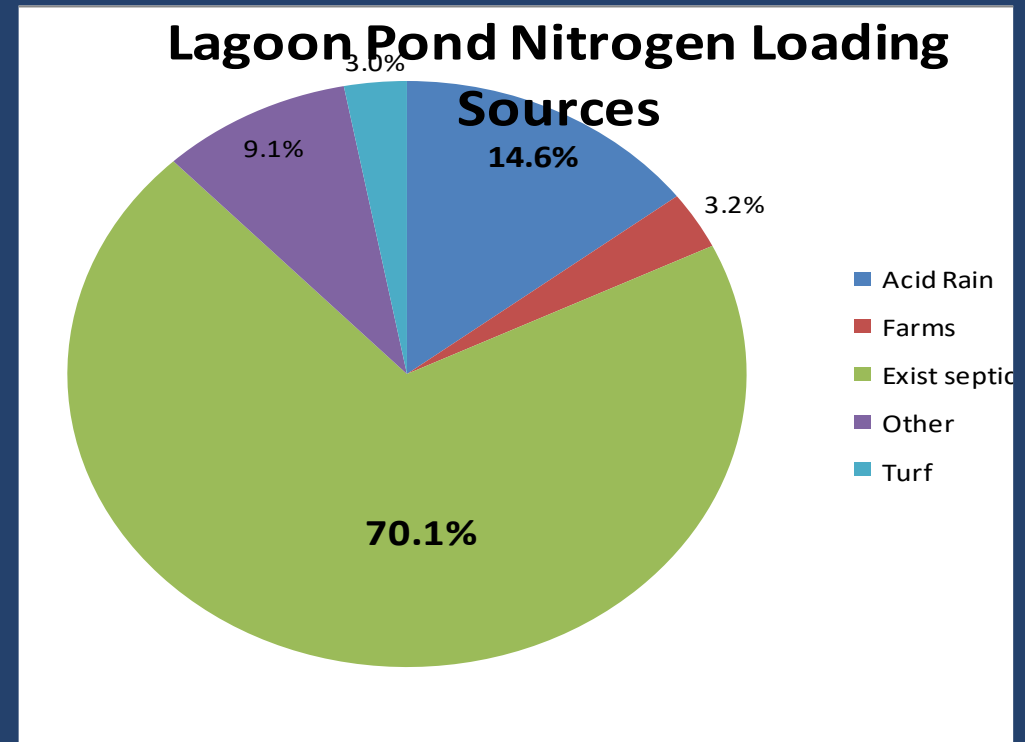
Island-wide water quality monitoring



The sources of excess nitrogen in coastal ponds

- Septic Systems
- Fertilizer
 - Landscaping/ lawn fertilizer
 - Agriculture
- Acid Rain
- Road Runoff

The largest manageable source of nitrogen on the Vineyard is wastewater discharged by individual septic systems.

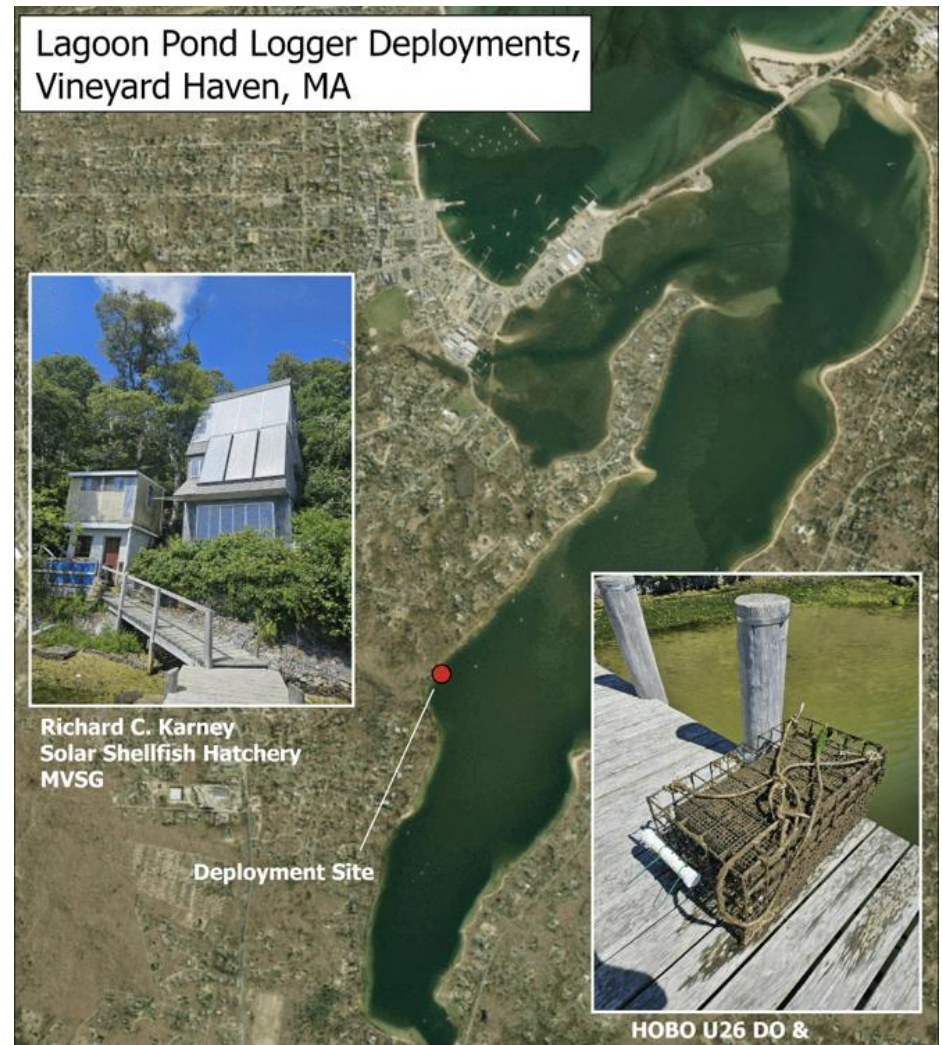




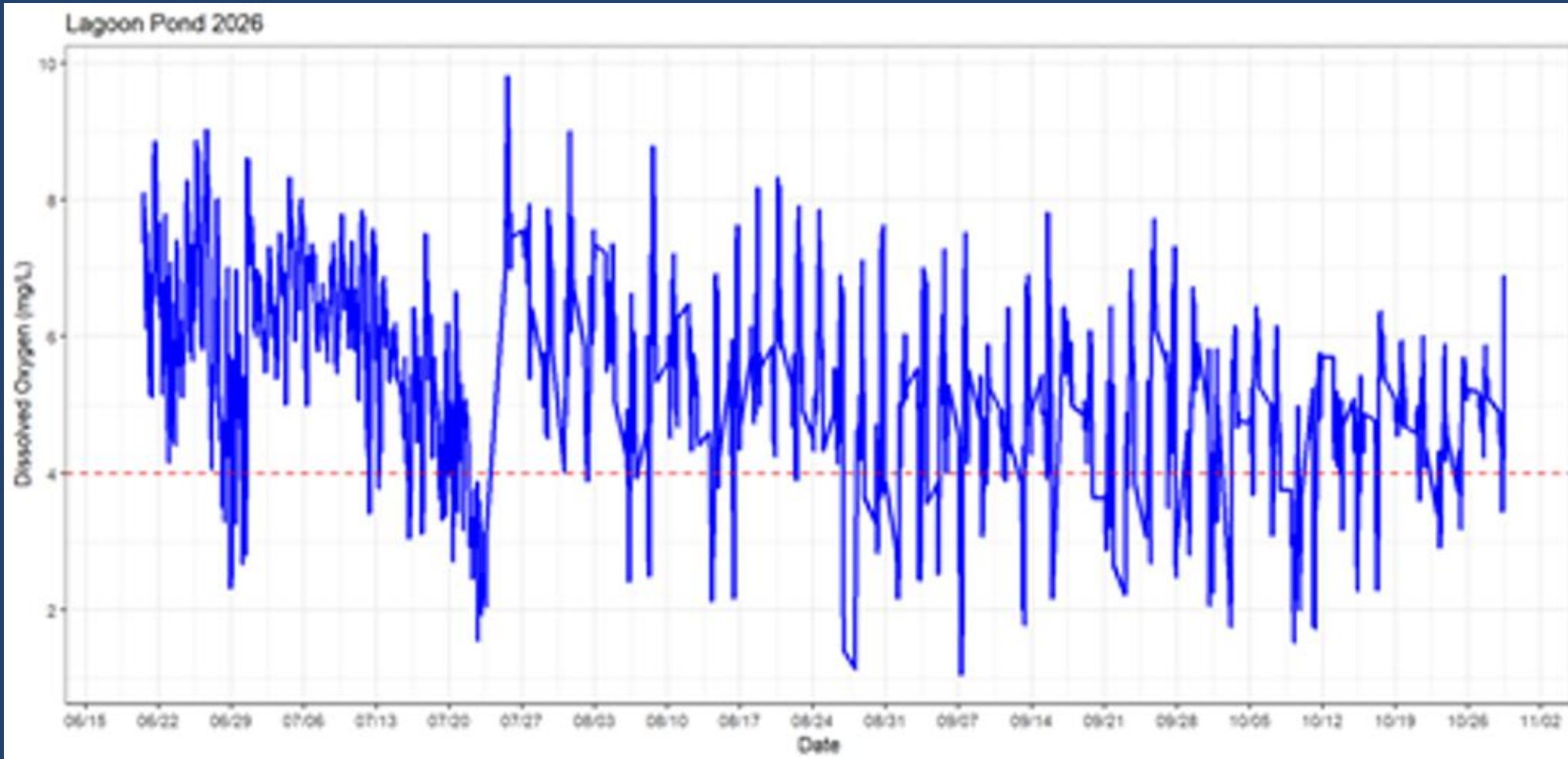
We collect...

- Weather conditions
- Temperature
- Salinity
- Dissolved oxygen
- Conductivity
- Sample time
- Observations
- Water clarity
- pH
- Water samples for lab analysis
- **Nitrogen**
- **Phosphorous**

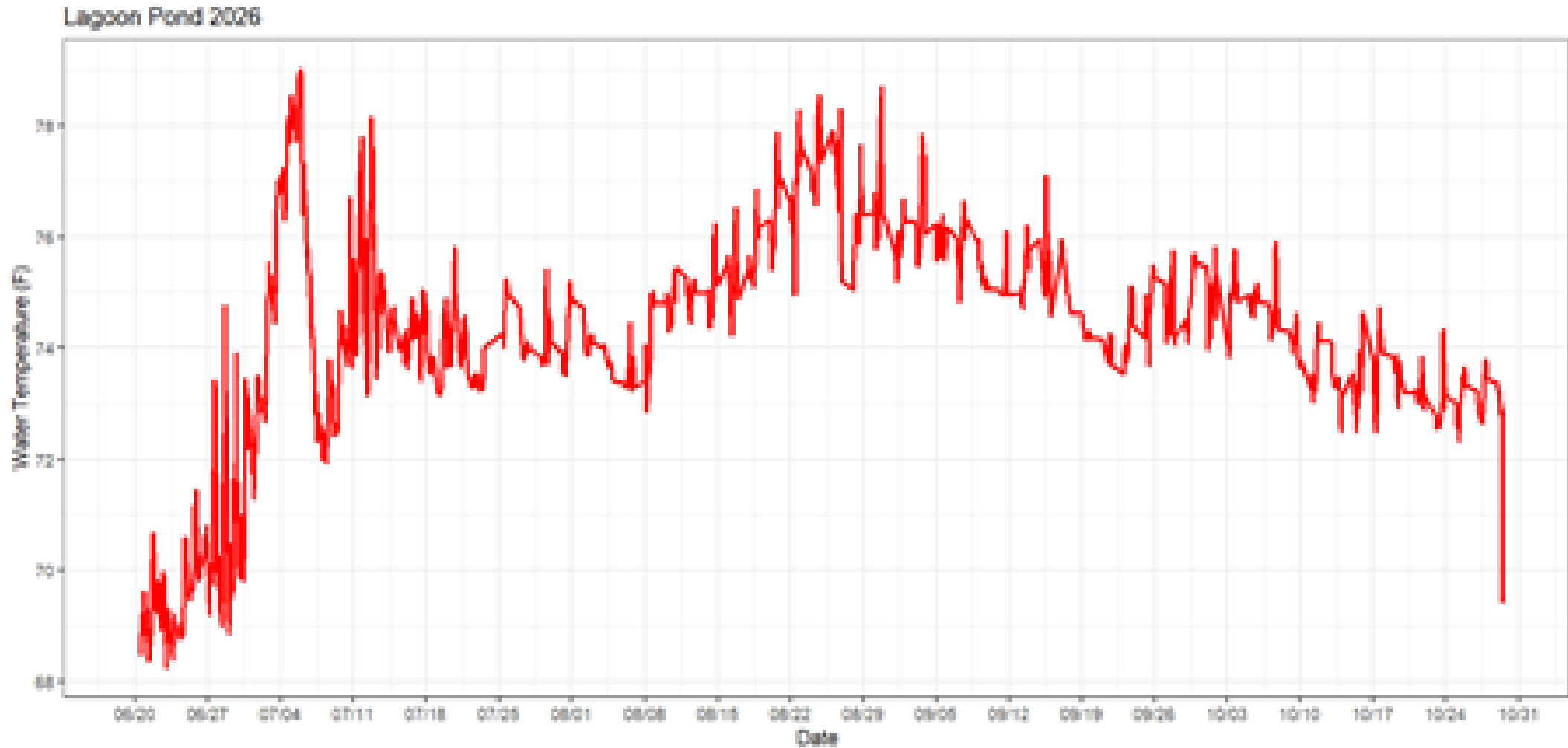
Lagoon Pond Water Quality Sample Sites



- Dissolved Oxygen-Amount of oxygen dissolved and available to species in the water
- All life in the ponds require oxygen. A minimum of 4 mg/L is recommended for a surviving ecosystem, and 6 mg/L for a happy ecosystem.



Temperature

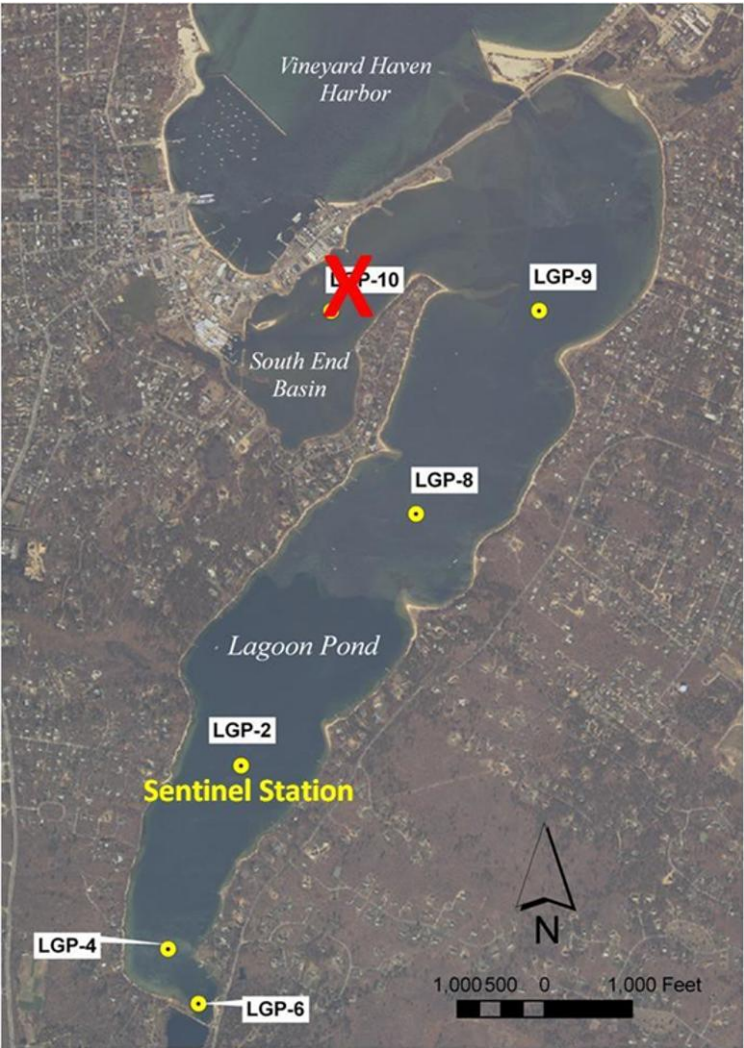
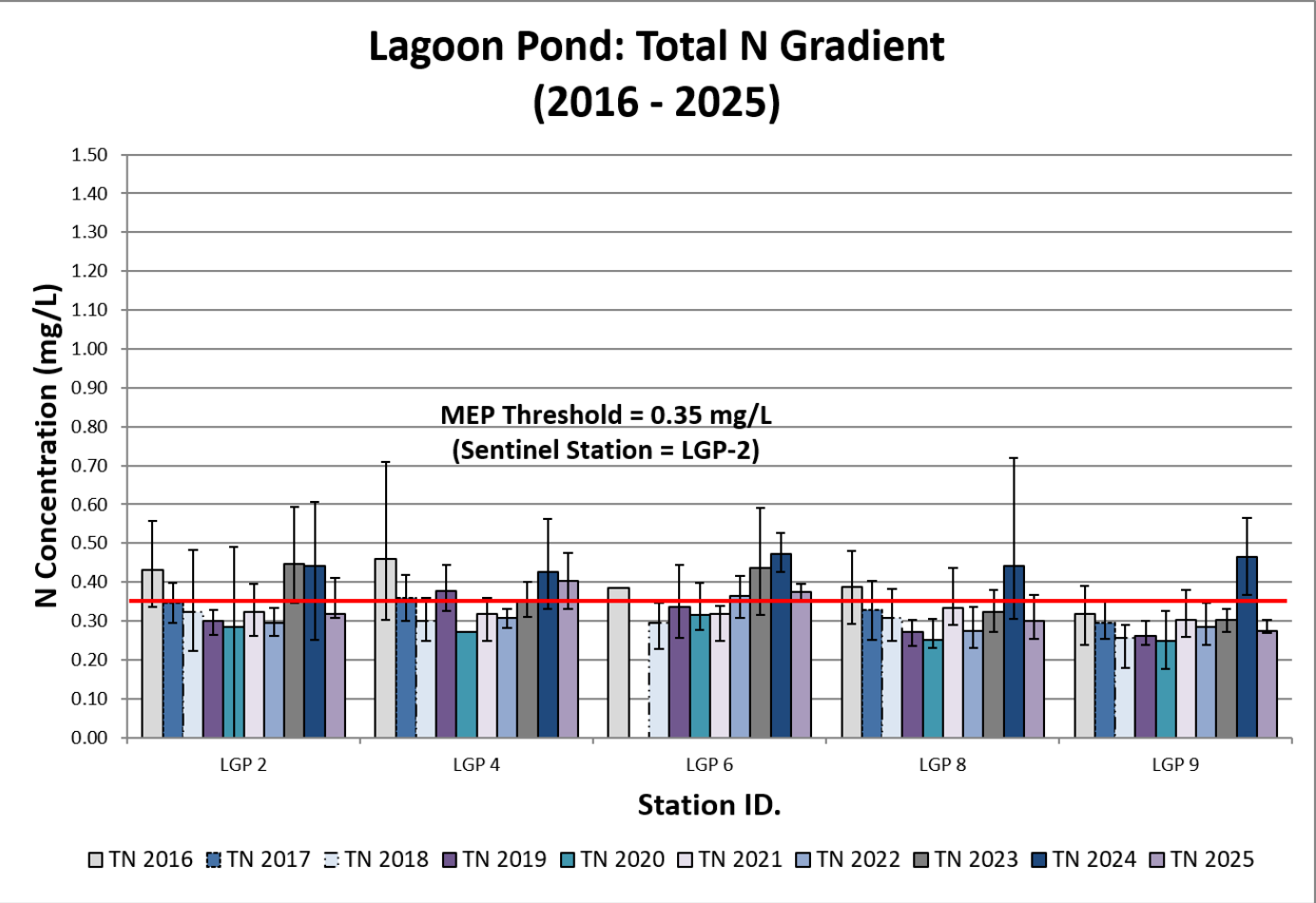


Standards for Nitrogen

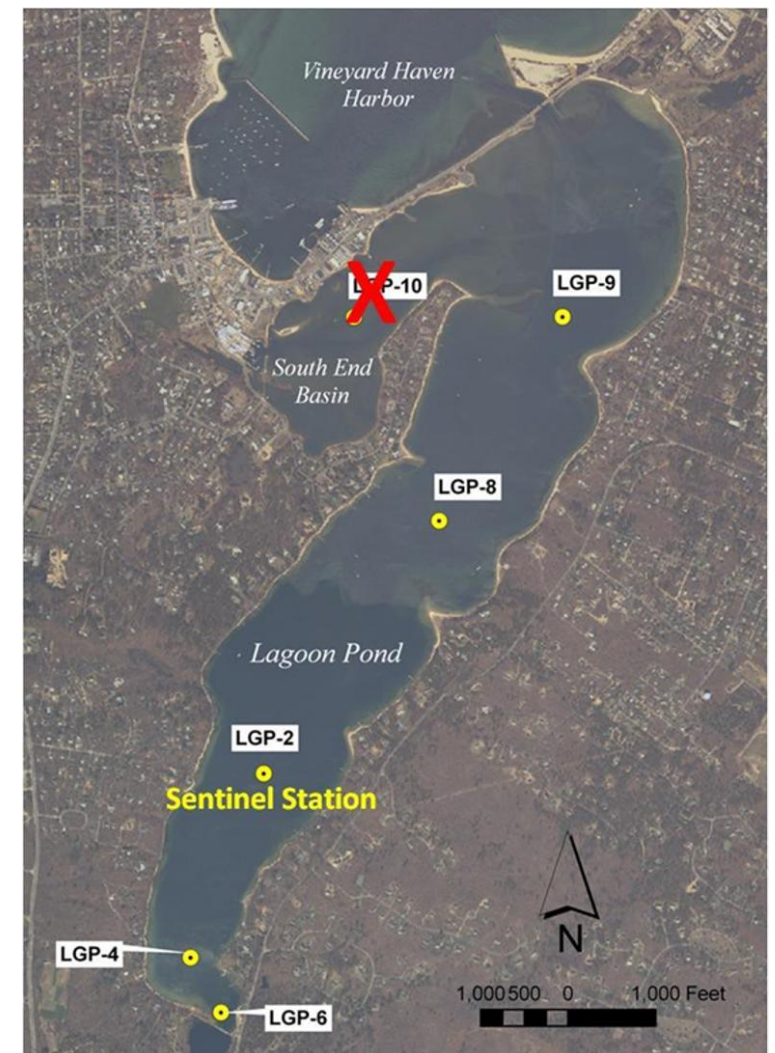
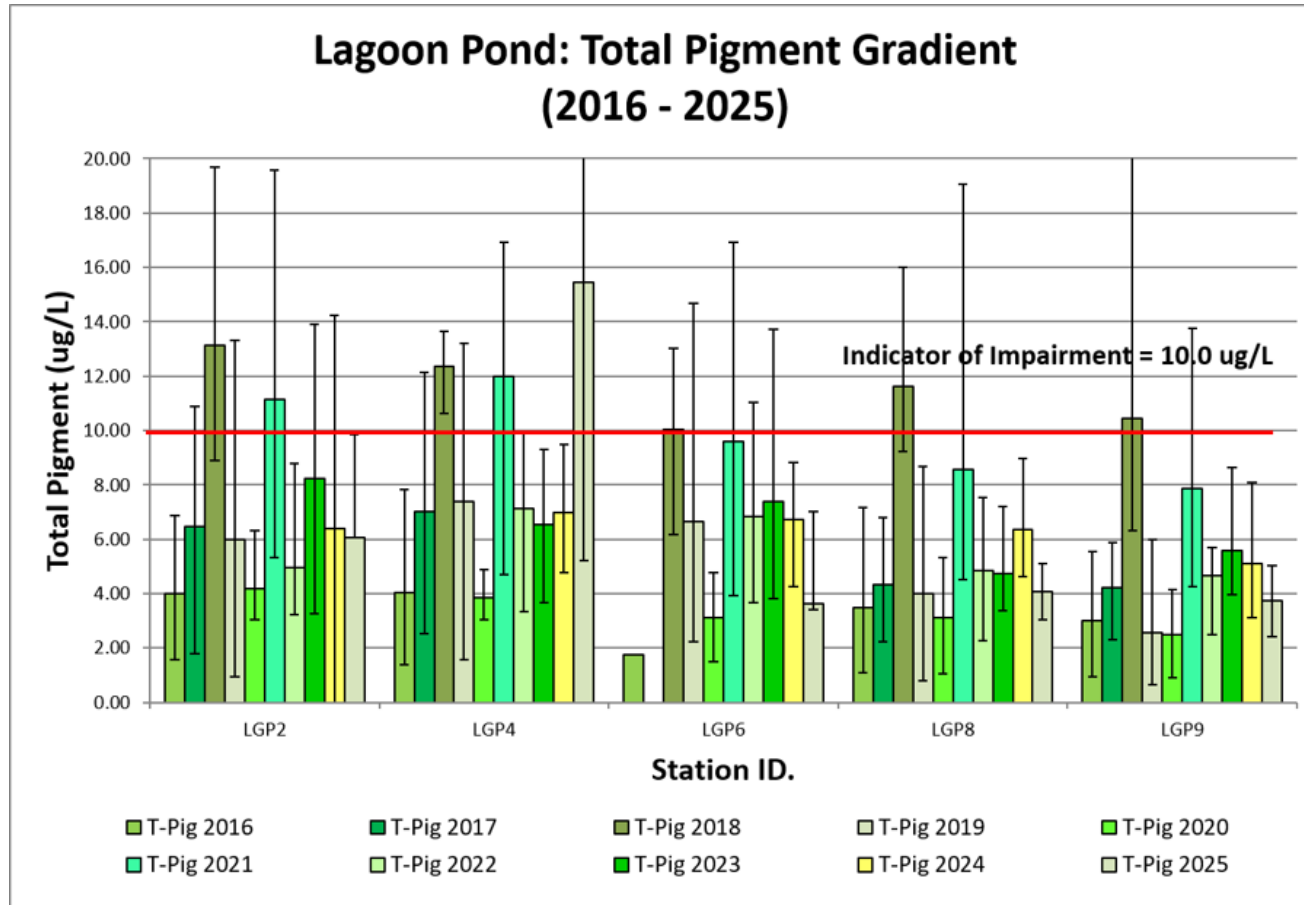
- Drinking water 10 mg/l (ppm)
- Planning guideline 5 mg/l
- Estuary eutrophication 0.2 to 0.5 mg/l



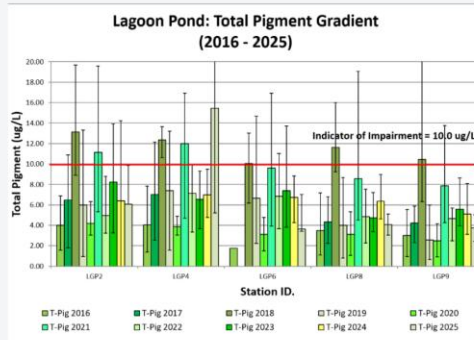
Nitrogen- essential for plant growth but in excess can cause blooms that reduce sunlight penetration and decreases the amount of dissolved oxygen



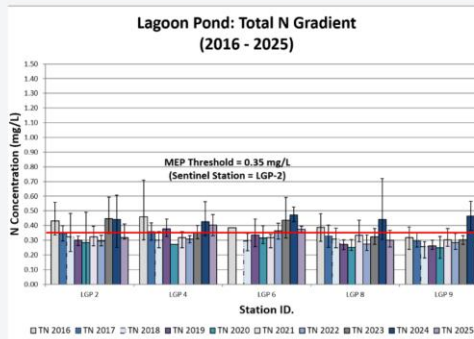
Chlorophyll – measure of the ratio of algae living and dying at a given time



Plant Pigment in Lagoon Pond

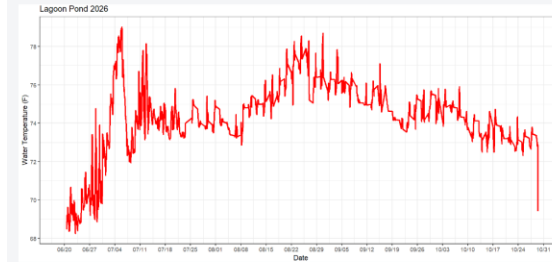


Total Nitrogen in Lagoon Pond



One-page summaries for each pond

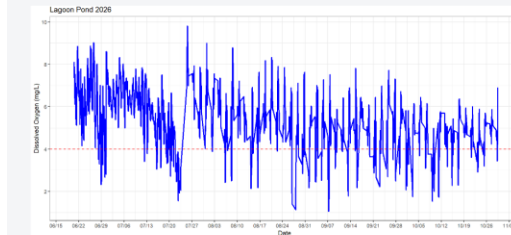
Water Temp in Lagoon Pond



Healthy Pond Water Temperature

- Healthy range: About 10–25°C (50–77°F) for many freshwater pond organisms.
- Too hot (>25–30°C / 77–86°F): Holds less dissolved oxygen, stresses fish, and can increase algae growth.
- Too cold (<5–10°C / 41–50°F): Slows metabolism, feeding, and growth; some organisms become less active.

DO in Lagoon Pond



Dissolved oxygen (DO) is important for pond life.

Too little DO, less than 3 mg/L, Fish and other aquatic organisms become stressed, and at less than 2 mg/L can cause suffocation.

- Healthy range (about 5–8 mg/L): Generally supports most pond organisms.



Forward Questions to:
Sheri Caseau, Water Resource Planner
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(508) 693-3453

This research was made possible via grants from Tisbury Waterways Inc. and the District Local Technical Assistance Program. The Martha's Vineyard Commission is a regulatory agency tasked with monitoring the environmental health of all towns on Martha's Vineyard. We'd like to extend a special thanks to Danielle Ewart and the shellfish staff for all of their boat trips and knowledge.



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Island Ponds Page

- Virtual tour of the Ponds
- a summary of each pond
- the data we have on those ponds
- all studies and reports that we can access for each pond.



What are we doing to protect our ponds?

Permeable Reactive Barrier
Innovative/Alternative Septic
Shellfish
Urine Diversion
Watershed Based Plan
Regional Management Entity





Thank you!! Any Questions?



Sheri Caseau
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