

Treds Final Project
Eastern Point Beach (Groton)
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Link to group PowerPoint:

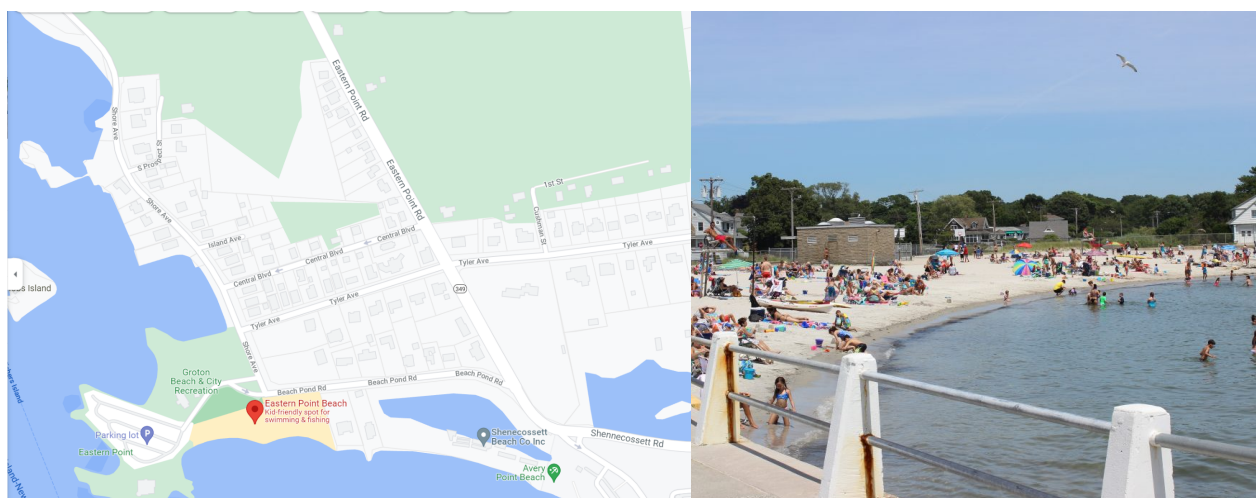
[Treds Final Project.pptx](#)

Link to Google Slides:

<https://docs.google.com/presentation/d/1o25coaw08IZHNo1OxN49QdGywhHVJNsAGvCNikYYRo4/edit?usp=sharing>

1. Provide a brief description and map of the site (*Alethea*):

- Eastern Point Beach is a recreational beach for families located in Groton, CT and provides a view of the Thames River and Long Island Sound. It is open from June through Labor Day, with multiple amenities for people to access.



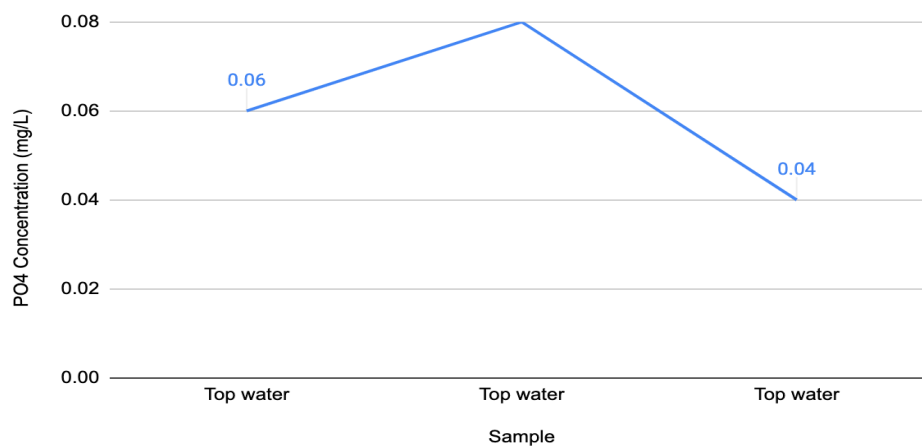
2. Summarize the data collected during the 2nd boat trip for that site, in both tabular and graphical format (*Alethea*):

Phosphates

Sample	PO ₄ Concentration (mg/L)
Top water	0.06

Top water	0.08
Top water	0.04

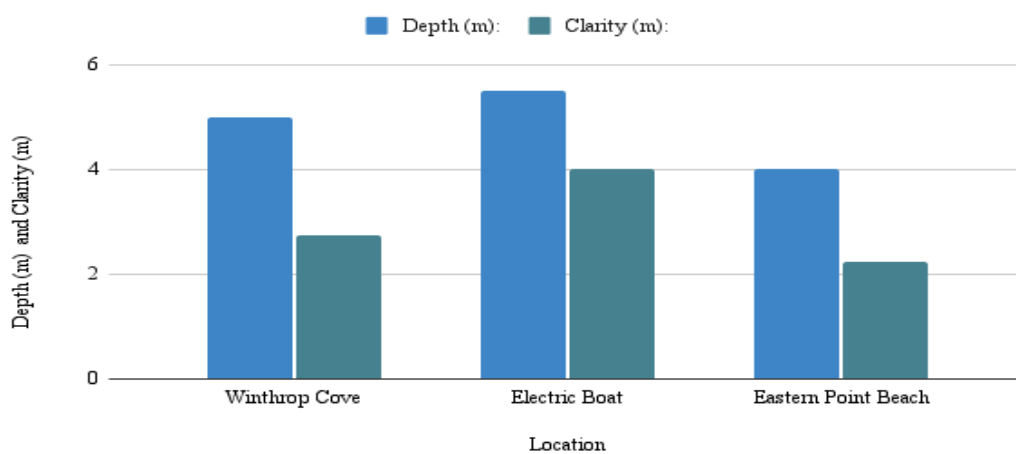
PO₄ Concentration (mg/L) vs. Sample



Water Clarity / Color

Location:	Eastern Point Beach
Depth (m)	4
Color	XII (Green)
Clarity (m)	2.25

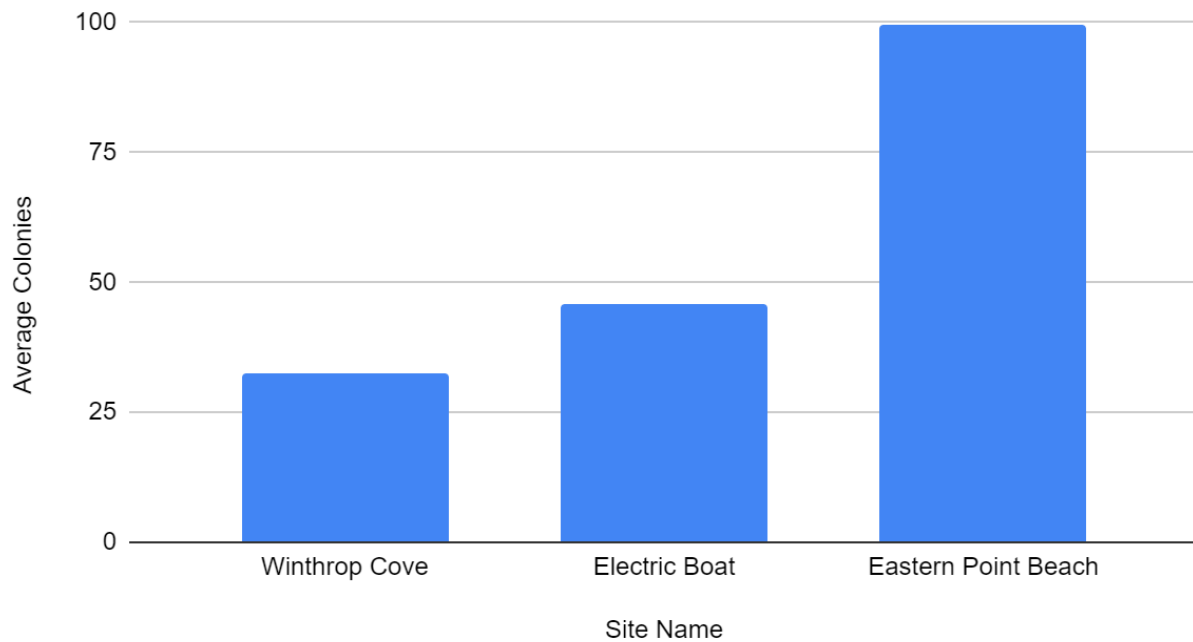
Depth and Clarity



Fecal Coliform

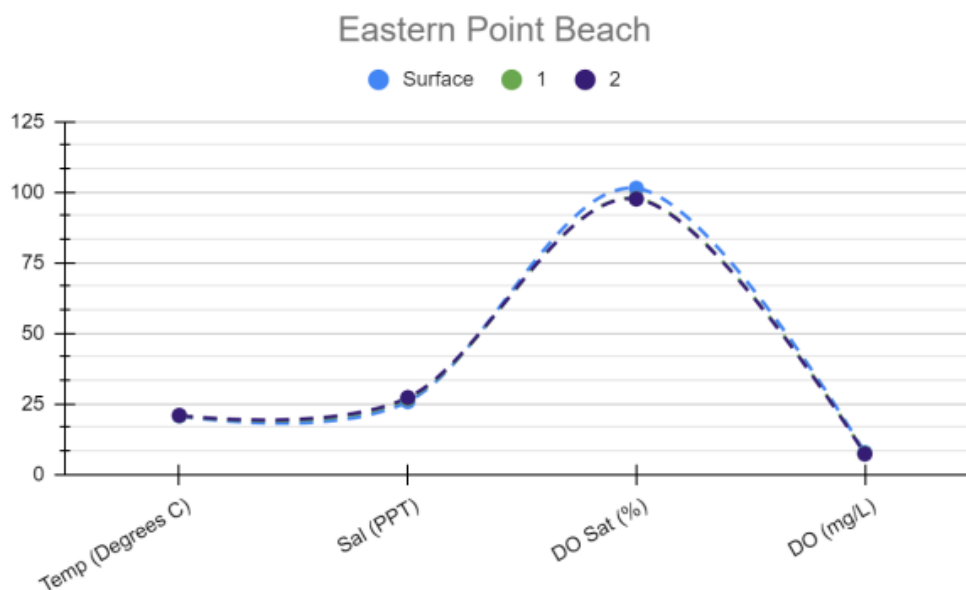
Site Name	Individual Samples Colony #	Average Colonies per Site
1. Winthrop Cove	Sample 1: 38 Sample 2: 25 Sample 3: 35	32.7
2. Electric Boat	Sample 1: 36 Sample 2: 40 Sample 3: 61	45.7
3. Eastern Point	Sample 1: 115 Sample 2: 32 Sample 3: 152	99.7

Average Number of Coliform Colonies at Different Locations



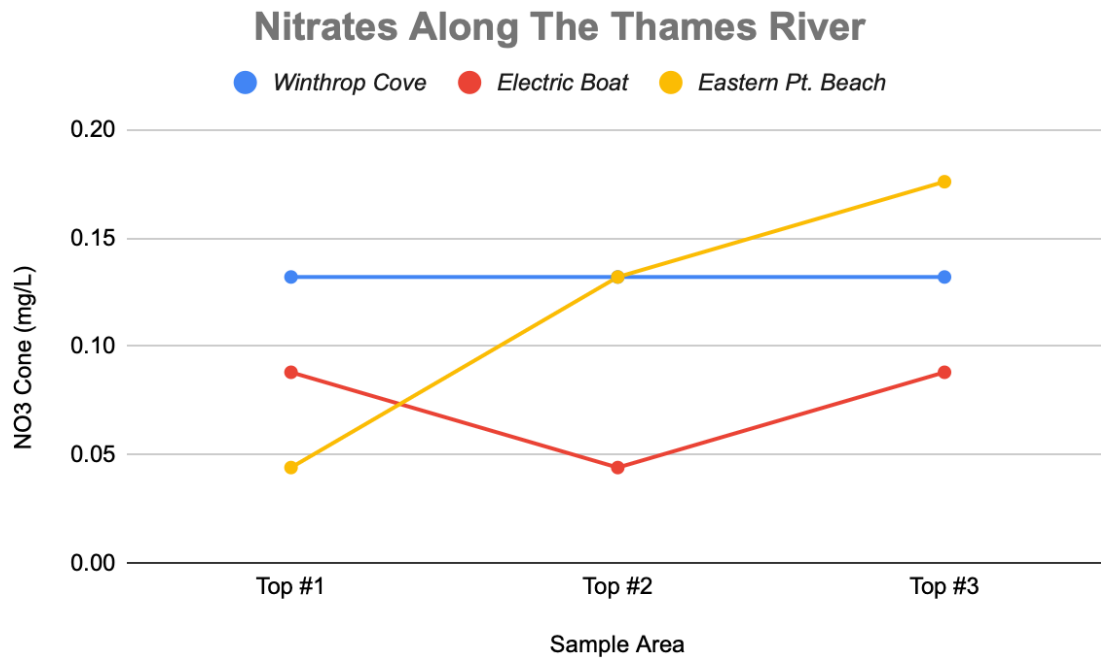
Temperature, Salinity, D.O

Depth	Temp (Degrees C)	Sal (PPT)	DO Sat (%)	DO (mg/L)
Surface	20.70	25.81	101.4	7.76
1	20.83	26.84	97.8	7.43
2	20.91	27.24	97.6	7.22



Nitrates

	Top 1	Top 2	Top 3
Winthrop Cove	0.132 mg/l	0.132 mg/l	0.132 mg/l
Electric Boat	0.088 mg/l	0.044 mg/l	0.088 mg/l
Eastern Pt. Beach	0.044 mg/l	0.132 mg/l	0.176 mg/l



Oyster Counts

	Total Oysters	Mean Size (mm)	Median Size (mm)	Mode (mm)
Avery Point Aug 21	40	71	69	67
Avery Point Sept 21	50	82	82	84

***Limited entry for oysters due to un-uploaded data from class google drive.

3. Using the data collected on the Project O cruises along with the EPA EJ Screen, Neighborhoods at Risk, and any other relevant data, identify and explain any environmental justice concerns that you find (Maize):

Many know of or can recall what environmental justice is, although I feel as if it is important to state its meaning once again to jog the memory and to recall or learn its definition. Environmental justice is the inclusion and fair treatment of all people no matter their race, color, gender, or ethnicity on the matter of the development and implementation of environmental laws and regulations. During the past semester we have been collecting a lot of data on four sites along Long Island Sound. Within the data we have collected from each of the four sites we can interpret the amount or extent to which environmental justice is shown. Looking at the data collected from Eastern Point Beach we can find what kinds of environmental justice factors can be found from this location. By using the EJScreen we can see what kinds of environmental issues or risks are impacting the area. 69% of this population is exposed to hazardous waste. People of color represent 36% of the population in this region compared to 46% of the states. Only 27% of the region's population is poor and 50% of the whole state population is low income. About 70% of this population creates or is exposed to wastewater as well. From this we might interpret that these people represent a major part of this population and have an even bigger percentage of environmental factors impacting their area. When we look at the data found from the Neighborhoods at Risk website we find that 11.7% of the population is people of color. 0% of families are in poverty. These results came from the Groton population. By comparing the data from these two sites we can conclude that a lot of these percentages are meeting or exceeding the percentages for the whole U.S. population. Some people in certain areas may be more exposed to certain environmental indicators than others. As we can see from the data pulled from these websites and the data used from the Project O trip we can conclude that there are

some environmental justice issues being represented here. For example the fact that more people of color live where there are higher risks of exposure to certain environmental issues is an injustice to these people as well as the people in poverty or low income houses. This wasn't a high percentage but it being a percentage of exposure at all is a concern.

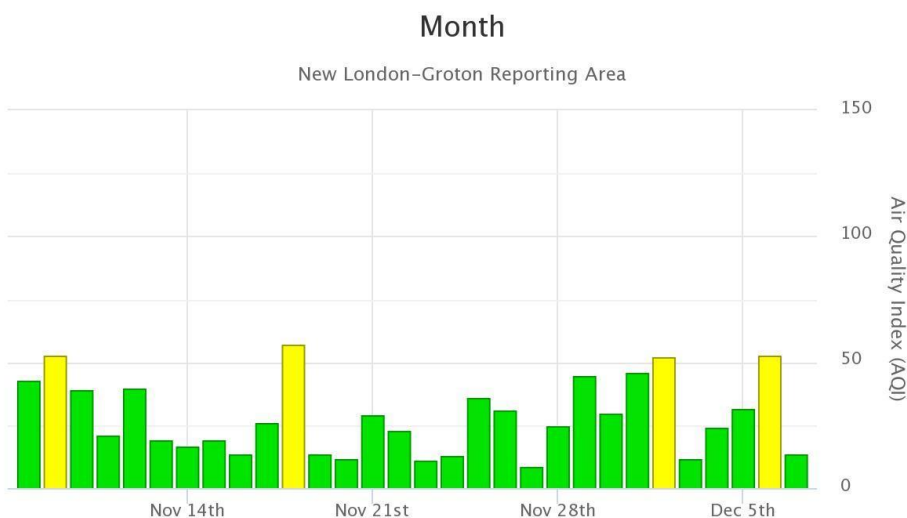
4. Answer the following Questions:

What environmental amenities are located near the area? (Nina):

Environmental amenities include the accessibility of, and quality of, environmental services and goods. Eastern Point Beach is home to a variety of different environmental amenities. These include: access to clean air, clean water, natural landmarks, sand / substrate, plants, and so on and so forth. In regards to clean air, there is little smog / air pollution surrounding Eastern Point Beach. The official Air Quality Index for this area falls below 50 AQI regularly (green), with only a few days above 50 AQI (yellow). Likewise, the water pollution / toxicity has been very low. According to The Swim Guide, Eastern Point Beach has passed its water quality tests at least 95% of the time. It has also scored A+ ratings all across the board in the Long Island Sound beach report (2016-2018).

Beyond air and water, Eastern Point Beach also has natural sands and rocks. Some of the rocks in particular are protected (signs are displayed discouraging visitors from climbing them). This protects organisms that live on or around those rocks (such as snails, barnacles, algae, etc.) from potential harm. In regards to plants, there are a few ornamental plants that decorate the parking lot surrounding the beach, as well as native grass along the outskirts of the beach sands.

***Data below shows Air & Water quality reports.



This chart shows the daily AQI in your area for each of the last 30 days. Mouse over or tap a bar to see which pollutant (ozone or PM) was highest that day.

AirNow.gov

NEW LONDON COUNTY						2018						2017						2016					
#	Beach Name	FD	FW	MD	MW	GRD	FD	FW	MD	MW	GRD	FD	FW	MD	MW	GRD	FD	FW	MD	MW	GRD		
1	duBois Beach					A+					A+					A+					NA		
2	Noank Dock					B					A+					A+					A+		
3	Esker Point Beach					A+					A+					A+					A+		
4	Eastern Point Beach					A+					A+					A+					A+		
5	Green Harbor Beach					A-					C					C					A+		
6	Ocean Beach Park					B					A+					A+					A-		
7	Waterford Town Beach					A+					A+					A+					A-		
8	Pleasure Beach					A+					A+					A+					A+		
9	Hole-in-The-Wall Beach					A+					A+					A+					A-		
10	McCook Point Beach					A+					A+					A+					A+		
11	Rocky Neck State Park					C+					C					C					B-		
12	Soundview Beach					B					A-					A-					A+		
13	White Sands Beach					A+					A+					A+					A+		

What environmental hazards are located near the area? (Nina):

An environmental hazard is one such substance, event, or state that threatens a natural environment (and its occupants) health. There are a few environmental hazards surrounding Eastern Point Beach. For example, there is an effluent drain located north of the beach, which was just fairly recently implemented. Besides that, various industries (such as Pfizer, E.B, and Buckeye Terminals) contribute to some runoff pollution, both in the air and in the water (liquid runoffs and gas emissions). The many businesses and houses surrounding the area may also

contribute to noise and light pollution. Locals and visitors may either purposefully or inadvertently pollute the beach by not disposing of cigarettes, food wrappers, and other such anthropogenic items properly. There are other factors to consider as well- such as how the parking lot by the beach may pose a hazard when it needs repaving.

What past land uses may have influenced the results? (Ryan):

Until the mid 1800s, the land surrounding Eastern Point beach was used as farmland for the prominent Avery family of Groton. Since the farm was so close to the water, the subsequent runoff and waste eventually ended up in Long Island Sound and this undoubtedly contributed to the results we found. Manure from livestock is often phosphate-rich and the runoff can lead to excessive algae growth. In the 19th and early 20th century, Eastern Point became a popular vacation spot for Connecticut's wealthy residents. This land was transformed to be a "summer resort" and was made to suit the needs of affluent summer tourists and local residents. This led to the area becoming more developed, having more homes, more paved roads, and more pollution. Despite this, the present day water quality is good and pollution overall has been kept to a minimum.

What present land uses may be influencing the results? (Ryan):

The land surrounding Eastern Point beach is currently covered by a parking lot and various private residences. The beach is a popular summer spot in Groton and the regular vehicle traffic along with human pollution has undoubtedly led to the increased runoff of waste into the Thames river and Long Island Sound. In addition, the area is extremely close to Electric Boat, Pfizer, and Buckeye Terminals, a petroleum company. Despite its proximity to these large

manufacturers, the water quality surrounding Eastern Point Beach has managed to remain good according to our results and the EPA.

What is the demographic composition (income, minority population, etc.) of the community adjacent to the sampling sites? (Ryan):

The majority of the residents surrounding Eastern Point Beach are middle to upper-middle class with 59% of the population earning over \$75,000 a year. In addition, 92% of Eastern Point's residents identify as white and over half of all the residents have a bachelor's degree or higher.

5. Describe new question(s) that should be investigated to build on these results, and what future data should be collected to answer these questions (J.):

As the data for Eastern Point Beach shows levels that fall within the normal historical ranges for the site, it appears that water quality at Eastern Point Beach is good and is being monitored well. The EPA is keeping a close tab on the water quality at this beach, perhaps because it is close to so much industry and because other local beaches, such as Greens Harbor Beach have not fared well water quality-wise. These results are also somewhat surprising due to the effluent drain which is located just north of Eastern Point Beach which carries runoff from the Town of Groton. We cross-checked these findings against the historical data courtesy of The Swim Guide - and they concluded that Eastern Point Beach passed water quality tests at least 95% of the time. Save The Sound also ranked Eastern Point Beach in its Top 10 beaches for water quality in Connecticut for 2021.

6. Describe an Action Project that might be developed at each impacted site to improve conditions for the local community (J.):

Monitoring at this site shows continually strong numbers. However, Save the Sound points out that rain can be a “primary driver for water pollution at area beaches,” and causes failure rates to double up to 48 hours after rainfall. Rain itself is not so much the problem, as is the runoff it causes from land and from combined sewage outfalls. An action project could be to inform the public more about where to go to access water quality results, and to remind people that water quality is worse after rainfalls. Especially as climate change causes more frequent and heavier storms, the effect will be that water quality suffers more often than we may be accustomed to. Public education will be key.

As always, public beach access (even at a beach like Eastern Point which isn’t truly open to the public in the truest sense of the word) is still a crucial resource and should be maintained and cared for. Regular beach clean ups to account for debris which washes up on the shore or that lands there through negligence or accidental release should be removed to keep the beach beautiful and to protect the marine life both in the water or at the water’s edge.

Works Cited

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“Neighborhoods at Risk.” *Headwaters Economics*,

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<http://lhdct.org/district/eastern-point-historic-district>

“Groton, Connecticut Population 2021.” *Groton, Connecticut Population 2021 (Demographics, Maps, Graphs)*

<https://worldpopulationreview.com/us-cities/groton-ct-population>

Other Resources

Google drive: https://drive.google.com/drive/u/0/folders/0AF0o0l_0zQQzUk9PVA

EPA EJScreen/US Census data: <https://ejscreen.epa.gov/mapper/>

Neighborhoods at risk: <https://headwaterseconomics.org/apps/neighborhoods-at-risk/>

EJ mapping tools:

https://www.youtube.com/playlist?list=PLTO9X5Qd_Q7UQPlek-TqJLrPHES2nZ2jK