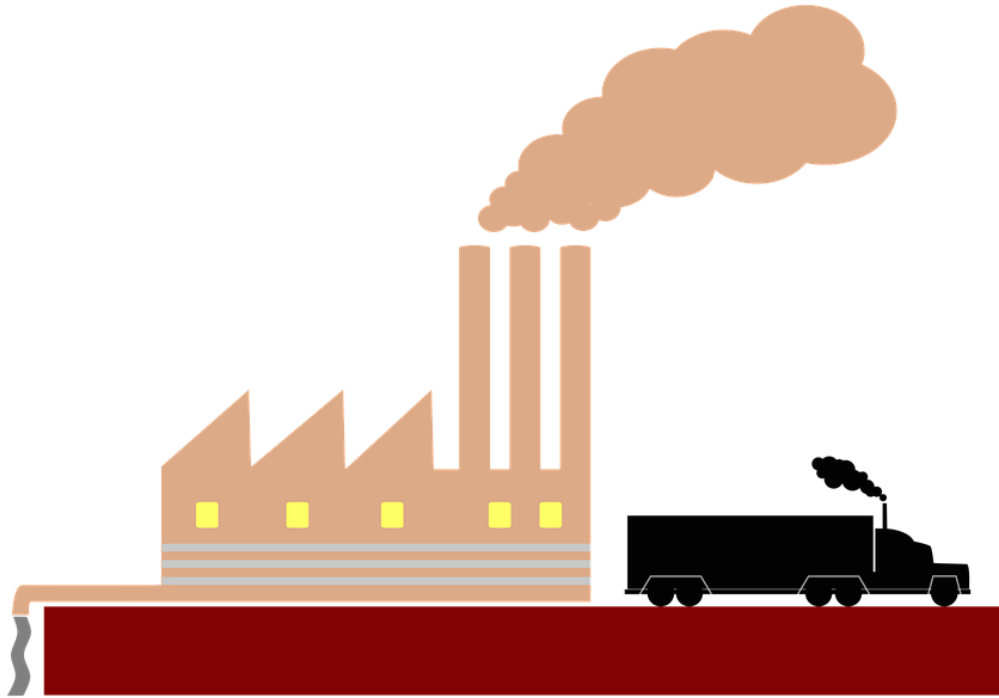

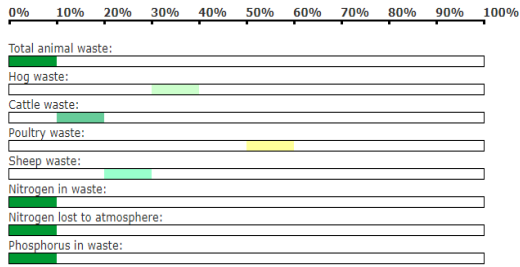


Environmental Community Profile of Plymouth MA



Biomedical Innovations B1

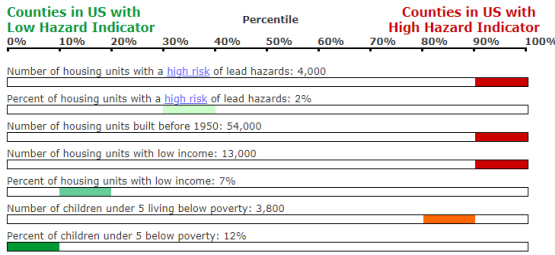
Problem 4.1.5 Environmental Health Community Profile Evidence Log

Evidence Reference #	Description/Title of Document	Relevant Findings
Hazardous Waste	Major Pollutants in Plymouth County- http://scorecard.goodguide.com/community/pollution.tcl?fips_county_code=25023&name=PLYMOUTH&zip_code=02360	 <p>This is a list of all the major pollutants that are released in Plymouth County, the highest being Trichloroethylene. This is a commercial solvent used to clean grease off of machinery.</p>
Hazardous Waste	Animal Wastes - http://scorecard.goodguide.com/env-releases/aw/county.tcl?fips_county_code=25023#summary	 <p>This is a graph showing the amount of animal waste that is produced in Plymouth County compared to national averages. Plymouth produces more poultry, pig, and sheep waste than many other counties.</p>

Hazardous Waste

Homes with Lead Hazards - http://scorecard.goodguide.com/env-releases/lead/county.tcl?fips_county_code=25023#rank

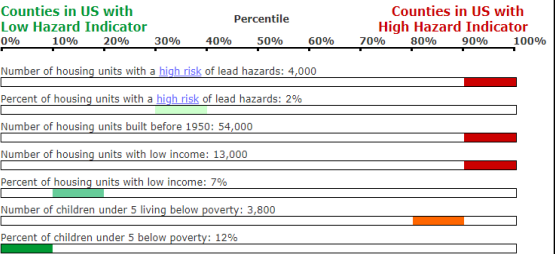
This a graphic showing the number of houses in Plymouth that have lead hazards compared to the national averages.



Hazardous Waste

Tech Etch Hazards- <https://www.nytimes.com/interactive/2018/02/06/climate/flood-toxic-chemicals.html?smid=tw-share>

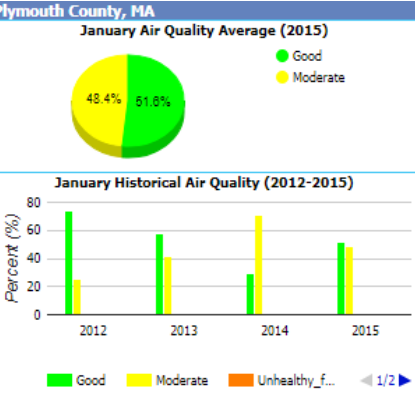
This is a news article outlining the effects that a flood could have on the community if it reaches the Tech Etch company in Plymouth County since they house a variety of harmful chemicals.

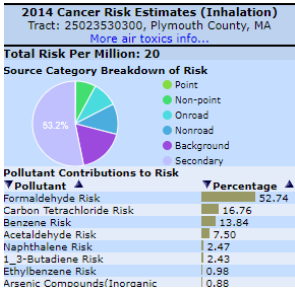
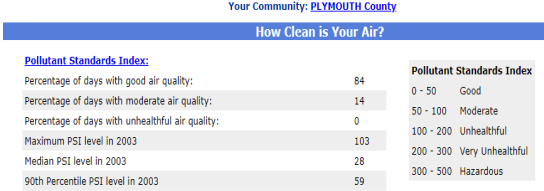
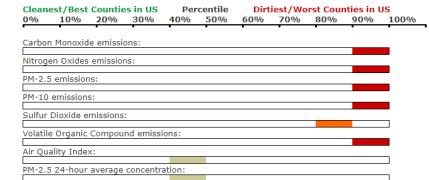


Air Quality

January Air Quality Assessment- <https://www3.epa.gov/myem/envmap/myenv.html?minx=-70.86462&miny=41.76251&maxx=-70.47262&maxy=42.15451&ve=9.41.95851,-70.66862&pText=02360%2C%20Plymouth%2C%20Massachusetts&pTheme=>

This is a graphic of the air quality so far in the month of January for Plymouth County. It shows 51.6% of days being good quality and 48.4% being moderate quality.

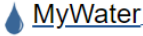


<p>Air Quality</p>	<p>Cancer Risks Due to Inhaled Toxins- https://www3.epa.gov/myem/envmap/myenv.html?minx=-70.86462&miny=41.76251&maxx=-70.47262&maxy=42.15451&ve=9,41.95851,-70.66862&pText=02360%2C%20Plymouth%2C%20Massachusetts&pTheme=</p>	 <p>This is a graphic of airborne toxins that contribute to a person's risk of generating cancer. The highest risk being formaldehyde with 52.74%.</p>
<p>Air Quality</p>	<p>Air Cleanliness Chart- http://scorecard.goodguide.com/community/cmy-cap-psi.tcl?fips_county_code=25023&ame=PLYMOUTH&zip_code=02360</p>	 <p>This is a chart showing the quality of the air in Plymouth County over a year including the pressure index. There were 0 days with hazardous air quality.</p>
<p>Air Quality</p>	<p>Plymouth County Emissions- http://scorecard.goodguide.com/env-releases/cap/county.tcl?fips_county_code=25023#air_rankings</p>	 <p>This is a graphic showing the emissions of Plymouth County. Many of these values are far over national averages and pose a threat to health.</p>
<p>Air Quality</p>	<p>Effects of Pollutants on Health- https://www.epa.gov/no2-pollution/basic-information-about-no2#Effects</p>	<p>This web page from the EPA shows how various pollutants and emissions in the air can affect the health of the people who are breathing it. Effects include respiratory issues, asthma, heart failure, unconsciousness, and even death.</p>

Air Quality	<p>How AQI is Assessed-</p> <p>https://airnow.gov/index.cfm?action=aqibasics.index</p>	<p>This web page explains how the measurement for air quality that the EPA uses is determined. AQI uses things like emissions, particulate matter, smog, etc to generate a number between 1-500 for how clean the air your breathing is.</p>
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Water quality	<p>Plymouth Harbor Water Assessment-</p> <p>https://ofmpub.epa.gov/waters10/attains_waterbody.control?p_auid=MA94-16</p>	<p>Water Quality Assessment Status for Reporting Year 2014 The overall status of this waterbody is Impaired.</p> <table border="1"> <thead> <tr> <th colspan="3">Description of this table</th> </tr> <tr> <th>Designated Use</th> <th>Designated Use Group</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>Aesthetic</td> <td>Aesthetic Value</td> <td>Good</td> </tr> <tr> <td>Fish Consumption</td> <td>Aquatic Life Harvesting</td> <td>Not Assessed</td> </tr> <tr> <td>Fish, Other Aquatic Life And Wildlife</td> <td>Fish, Shellfish, And Wildlife Protection And Propagation</td> <td>Impaired</td> </tr> <tr> <td>Primary Contact Recreation</td> <td>Recreation</td> <td>Good</td> </tr> <tr> <td>Secondary Contact Recreation</td> <td>Recreation</td> <td>Good</td> </tr> <tr> <td>Shellfish Harvesting</td> <td>Aquatic Life Harvesting</td> <td>Impaired</td> </tr> </tbody> </table> <p>This is a graphic that shows an assessment of Plymouth Harbor in which the site was named impaired.</p>	Description of this table			Designated Use	Designated Use Group	Status	Aesthetic	Aesthetic Value	Good	Fish Consumption	Aquatic Life Harvesting	Not Assessed	Fish, Other Aquatic Life And Wildlife	Fish, Shellfish, And Wildlife Protection And Propagation	Impaired	Primary Contact Recreation	Recreation	Good	Secondary Contact Recreation	Recreation	Good	Shellfish Harvesting	Aquatic Life Harvesting	Impaired
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Water Quality	<p>Causes of Plymouth Harbor Water Impairment-</p> <p>https://ofmpub.epa.gov/waters10/attains_waterbody.control?p_auid=MA94-16</p>	<p>Probable Sources Contributing to Impairment for Reporting Year 2014</p> <table border="1"> <thead> <tr> <th colspan="3">Description of this table</th> </tr> <tr> <th>Probable Source</th> <th>Probable Source Group</th> <th>Cause(s) of Impairment</th> </tr> </thead> <tbody> <tr> <td>Discharges From Municipal Separate Storm Sewer Systems (MS4)</td> <td>Urban-Related Runoff/Stormwater</td> <td>Fecal Coliform</td> </tr> <tr> <td>Municipal Point Source Discharges</td> <td>Municipal Discharges/Sewage</td> <td>Fecal Coliform</td> </tr> <tr> <td>Source Unknown</td> <td>Unknown</td> <td>Nutrient/Eutrophication</td> </tr> </tbody> </table> <p>This is a graphic that shows the sources of pollution for Plymouth Harbor when it was named impaired.</p>	Description of this table			Probable Source	Probable Source Group	Cause(s) of Impairment	Discharges From Municipal Separate Storm Sewer Systems (MS4)	Urban-Related Runoff/Stormwater	Fecal Coliform	Municipal Point Source Discharges	Municipal Discharges/Sewage	Fecal Coliform	Source Unknown	Unknown	Nutrient/Eutrophication
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Water Quality	<p>Impaired Bodies of Water in Plymouth County-</p> <p>https://www3.epa.gov/myem/envmap/myenv.html?minx=-70.86462&miny=41.76251&maxx=-70.47262&maxy=42.15451&ve=9,41.95851,-70.66862&pText=02360%2C%20Plymouth%2C%20Massachusetts&pTheme=</p>	<p> MyWater</p> <p>The Assessment Total Maximum Daily Load (TMDL) Tracking and Implementation System (ATTAINS) provides information reported by the states to EPA about the conditions in their surface waters. This information is required every two years under Clean Water Act Sections 305(b) and 303(d). Read more about water quality.</p> <table border="1"> <thead> <tr> <th>Name</th> <th>Type</th> <th>Size</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>Fuller Street Pond</td> <td>390</td> <td>18.8 Acres</td> <td>Impaired</td> </tr> <tr> <td>Ellisville Harbor</td> <td>566</td> <td>0.2 Miles</td> <td>Impaired</td> </tr> <tr> <td>Fresh Pond</td> <td>390</td> <td>56.7 Acres</td> <td>Good</td> </tr> <tr> <td>Furnace Pond</td> <td>390</td> <td>97.7 Acres</td> <td>Impaired</td> </tr> <tr> <td>Great South Pond</td> <td>390</td> <td>276.1 Acres</td> <td>Impaired</td> </tr> <tr> <td>Island Pond</td> <td>390</td> <td>10.1 Acres</td> <td>Not Assessed</td> </tr> <tr> <td>Keene Pond</td> <td>390</td> <td>10.6 Acres</td> <td>Not Assessed</td> </tr> <tr> <td>Little South Pond</td> <td>390</td> <td>58.1 Acres</td> <td>Not Assessed</td> </tr> <tr> <td>Maquan Pond</td> <td>390</td> <td>42.4 Acres</td> <td>Good</td> </tr> <tr> <td>Hobomock Pond</td> <td>390</td> <td>11.1 Acres</td> <td>Good</td> </tr> <tr> <td>Agawam River</td> <td>460</td> <td>0.6 Miles</td> <td>Not Assessed</td> </tr> <tr> <td>Crane Brook Bog Pond</td> <td>390</td> <td>34.6 Acres</td> <td>Impaired</td> </tr> </tbody> </table> <p>This is a graphic that shows some of the impaired bodies of water in Plymouth County</p>	Name	Type	Size	Status	Fuller Street Pond	390	18.8 Acres	Impaired	Ellisville Harbor	566	0.2 Miles	Impaired	Fresh Pond	390	56.7 Acres	Good	Furnace Pond	390	97.7 Acres	Impaired	Great South Pond	390	276.1 Acres	Impaired	Island Pond	390	10.1 Acres	Not Assessed	Keene Pond	390	10.6 Acres	Not Assessed	Little South Pond	390	58.1 Acres	Not Assessed	Maquan Pond	390	42.4 Acres	Good	Hobomock Pond	390	11.1 Acres	Good	Agawam River	460	0.6 Miles	Not Assessed	Crane Brook Bog Pond	390	34.6 Acres	Impaired
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Water Quality



Drinking Water Assessment-
https://www.plymouth-ma.gov/sites/plymouth_hma/files/uploads/2017_water_quality_report.pdf

This is the annual report of drinking water safety and contaminants from the town of plymouth. In the report are all the tests that the EPA requires towns to run on their drinking water as well as what to do if your water doesn't look right in your home. Plymouth was well within all the standards set by the EPA for drinking water, even performing extra tests not required by them.

Water Quality

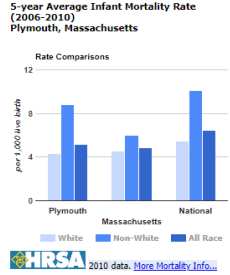
Bartlett Pond Contamination News Article -
<http://plymouth.wickedlocal.com/news/2018/07/17/plymouths-bartlett-pond-brook-closed-up-to-eight-weeks>

This is a news article that discusses the contamination of Bartlett pond and the brook that runs off from it into the ocean. This contamination due to bacteria closed off the brook, pond, and beach for several weeks of the summer in the past year.

Health Status

Infant Mortality Rates-
<https://www3.epa.gov/myem/envmap/myenv.html?minx=-70.86462&miny=41.76251&maxx=-70.47262&maxy=42.15451&ve=9.41.95851,-70.66862&pText=02360%2C%20Plymouth%2C%20Massachusetts&pTheme=>

This is a graphic that shows the mortality rates of infants in Plymouth county compared to state and national averages which shows the development of the community.

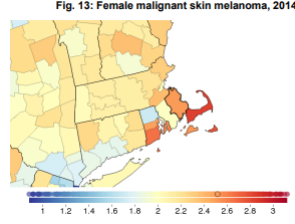


Location	White	Non-White	All Race
Plymouth	~4.5	~8.5	~5.5
Massachusetts	~4.5	~5.5	~5.5
National	~5.5	~9.5	~7.5

Health Status

Female Malignant Skin Melanoma Rates for Plymouth County-
http://www.healthdata.org/sites/default/files/files/county_profiles/US/2015/County_Report_Plymouth_County_Massachusetts.pdf

This is a graphic that shows the high concentration of malignant skin melanoma in females in Plymouth County. This number is high in comparison to other surrounding counties.



Health Status

Male and Female Tracheal, Bronchus, and Lung Cancer Rates-
http://www.healthdata.org/sites/default/files/files/county_profiles/US/2015/County_Report_Plymouth_County_Massachusetts.pdf

Sex	Plymouth County	Massachusetts	National	National rank	% change 1988-2014
Female	82.3	48.9	43.8	2015	+22.9
Male	71.2	84.1	87.6	1280	-33.6

rate per 100,000 population, age-standardized, 2014

This is a graphic displaying the lung cancer rates in males and females in Plymouth County. Both numbers are lower than the national average.

Health Status

Male and Female Life Expectancy in Plymouth County-
http://www.healthdata.org/sites/default/files/files/county_profiles/US/2015/County_Report_Plymouth_County_Massachusetts.pdf

Sex	Plymouth County	Massachusetts	National	National rank	% change 1988-2014
Female	81.9	82.5	81.5	714	+4.9
Male	77.3	78.1	76.7	807	+8.4

life expectancy at birth (years), 2014

This is a graphic comparing male and female life expectancy in Plymouth County. The female life span is longer in accordance with national averages.

Industry History

Plymouth County Super Fund -
https://ofmpub.epa.gov/apex/cimc/f?p=CIMC:MAP:0::NO::P71_IDSEARCH:SF_SITE_ID|0100726

This graphic shows the location of a super fund in Plymouth County. This is the former location of Cannon Engineering Corp and the site has since been cleaned up after being put on the NPL by the EPA.

Industry History

Restrictions on Fishing -
<https://www.google.com/url?sa=i&source=images&cd=&ved=2ahUKEwiT8oiPxeTfAhXoYN8KHVuoC7sOjRx6BAGBEAQ&url=http%3A%2F%2Fwww.bioone.org%2Fdoi%2F>

This is a graphic pointing out the number of restrictions on fishing over time. The number of restrictions increases significantly in the late 19th and early 20th centuries.

	<p>Fpdf%2F10.1656%2F045.025.0111&psig=A0vVaw2UeSv3nEsWk7PwQJ3NLL6t&ust=1547255150239502</p>	<p>fishing that have been implemented since the 1700s. This indicates an increase in the fishing industry and possibly an increase in fishing pollutants like oil spills in water.</p>
<p>Industry History</p>	<p>Protected Fishing Areas- https://www.google.com/url?sa=i&source=images&cd=&cad=rja&uact=8&ved=2ahUKEwjFrqjBxuTfAhXpRd8KHQ2iB5wQjRx6BAgBEAU&url=http%3A%2F%2Fwww.patriotledger.com%2Fnews%2F20180925%2Fnew-restrictions-imposed-on-commercial-herring-fishery&psig=A0vVaw1NLprMDpzSJOsLfJklrBK7&ust=1547255611516629</p>	<div data-bbox="1029 422 1252 709"> <p>Sensitive Coastal Areas Protected From Intensive Herring Fishing in New England <small>New England will prohibit midwater trawling in more than 12,000 square miles of sensitive area.</small></p> </div> <p>This is a graphic of the protecting fishing areas in and surrounding plymouth harbor for specific types of fish species.</p>

Hazardous Waste Sites and Dangerous Chemicals

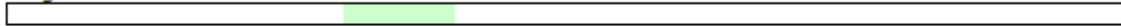
What Are the Major Pollutants? Reported Environmental Releases from TRI Sources in 2002		
Rank	Chemical Name	Pounds
1	TRICHLOROETHYLENE	27,150
2	TOLUENE	16,674
3	N-HEXANE	9,334
4	METHYL ETHYL KETONE	6,567
5	PHENOL	2,558
6	METHANOL	924
7	CYCLOHEXANE	568
8	DICHLOROMETHANE	467
9	NITRIC ACID	463
10	VINYL ACETATE	289
11	METHYL ISOBUTYL KETONE	253
12	COPPER	169
13	MANGANESE	16
14	LEAD	10
15	LEAD COMPOUNDS	8
16	4,4'-METHYLENEBIS(2-CHLOROANILINE)	5

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Total animal waste:



Hog waste:



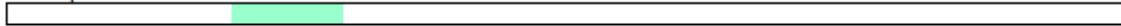
Cattle waste:



Poultry waste:



Sheep waste:



Nitrogen in waste:

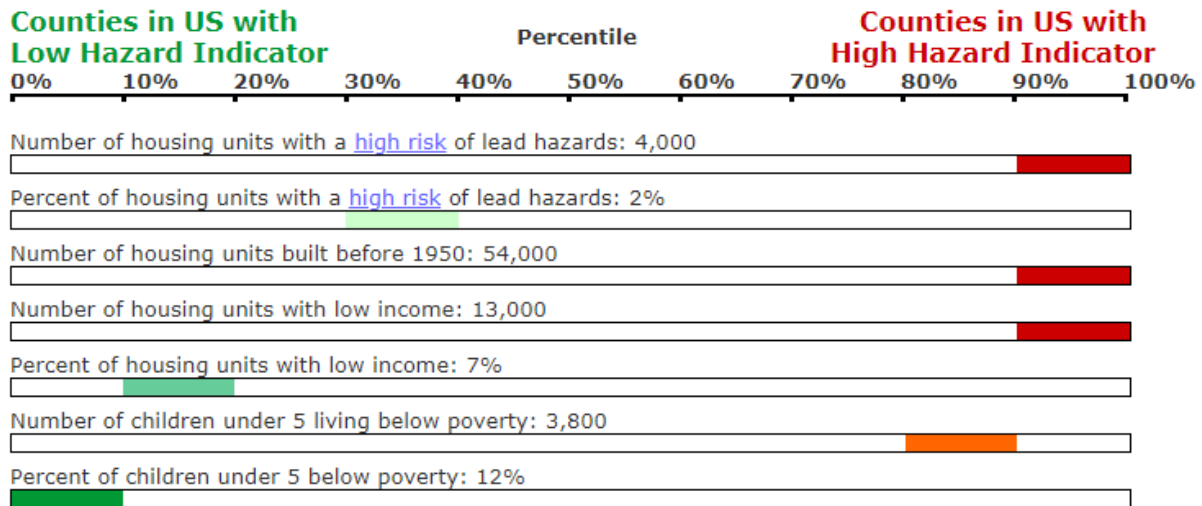


Nitrogen lost to atmosphere:



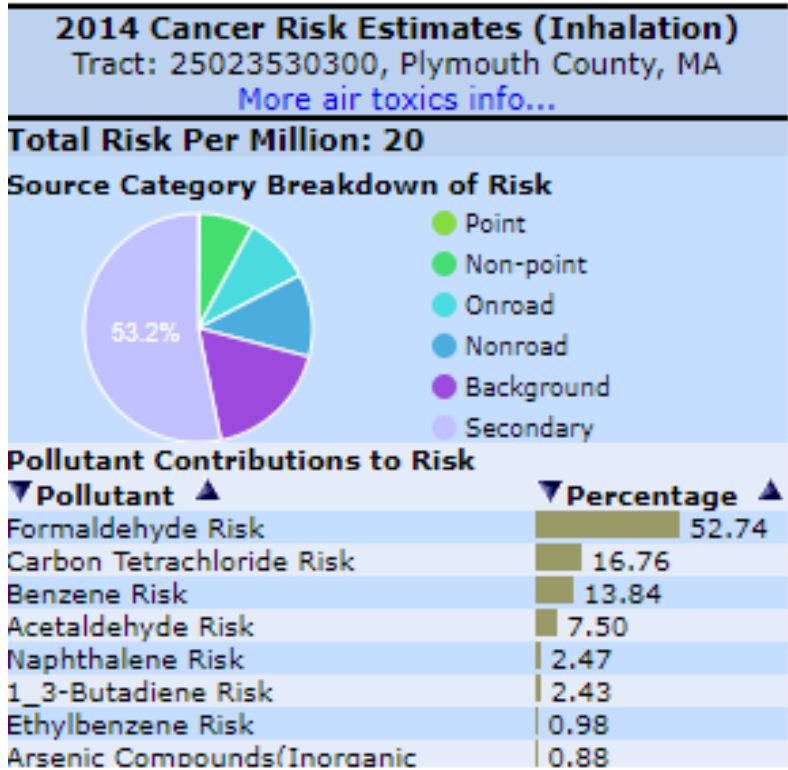
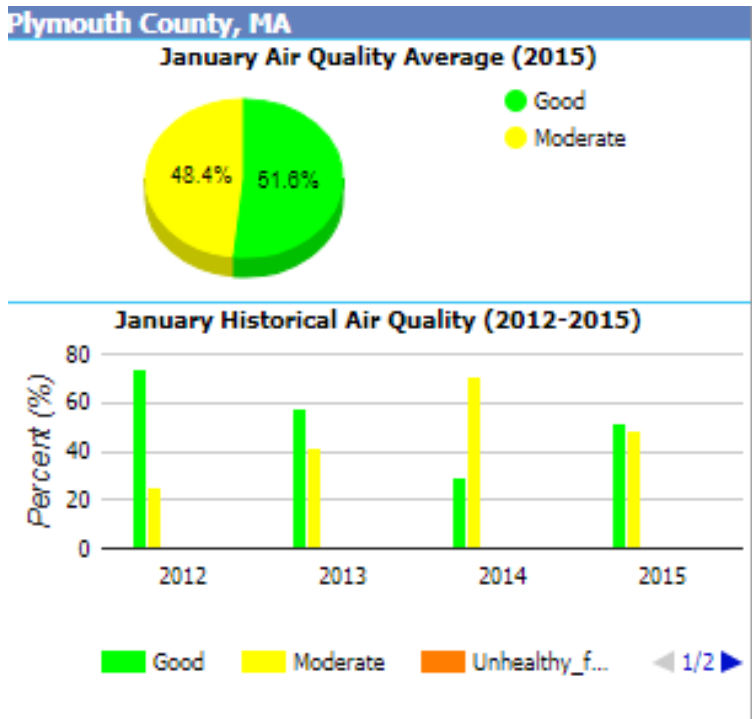
Phosphorus in waste:





Plymouth County in Massachusetts is home to many businesses, farms, and industries. With this comes a variety of toxic or hazardous materials and waste. The many farms in plymouth county are producing 30% higher hog waste and 50% higher poultry waste than the national averages. These inflated numbers show a high potential for pollution of nearby water sources by either run off or dumping or could be disease carriers for things that are dangerous to humans. The industrial parts of Plymouth are responsible for the high levels of trichloroethylene seen at the top of the list of dangerous chemicals that are part of pollution. Trichloroethylene is a solvent used in many industrial settings to clean grease off of machine parts and can cause health effects on the nervous system, liver, respiratory system, kidneys, blood, immune system, heart, and body weight as well as Scleroderma- an autoimmune disease. Plymouth is also a former colonial town with many historic houses and buildings that are still standing today. Many of these buildings contain lead paint, which poses a threat to those who live there- especially young children. Another large concern area is that of the Tech- Etch company. This site has been named by the EPA as a chemical site that will become a danger if a flood is to occur. Flooding has started to become a large problem for many communities and places that use and store large amounts of harmful chemicals can pose an even greater threat.

Air Quality



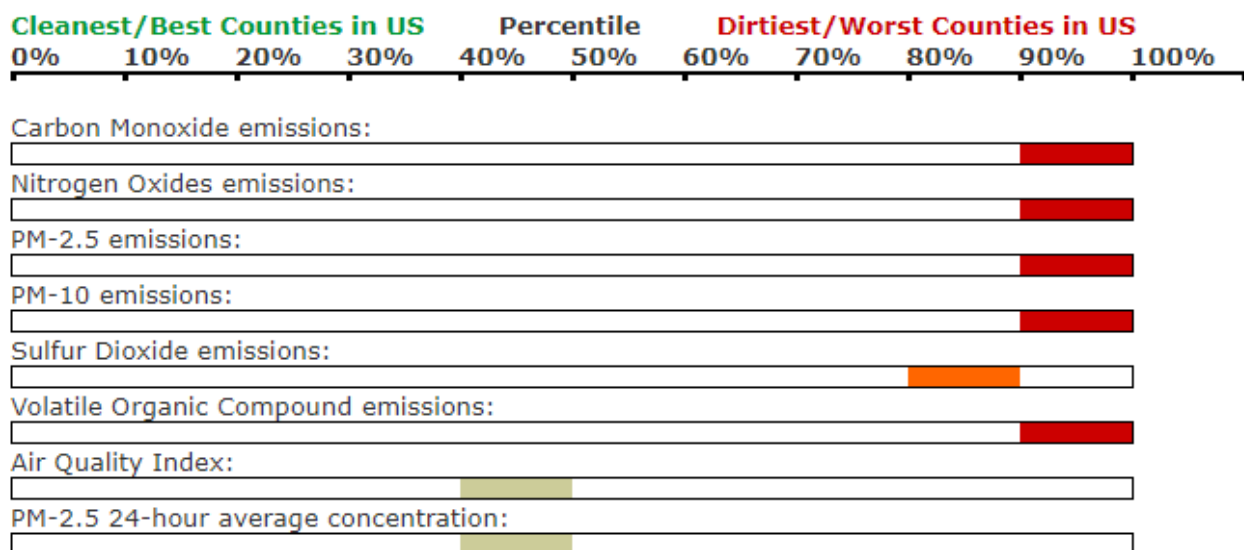
How Clean is Your Air?

Pollutant Standards Index:

Percentage of days with good air quality:	84
Percentage of days with moderate air quality:	14
Percentage of days with unhealthful air quality:	0
Maximum PSI level in 2003	103
Median PSI level in 2003	28
90th Percentile PSI level in 2003	59

Pollutant Standards Index

0 - 50	Good
50 - 100	Moderate
100 - 200	Unhealthful
200 - 300	Very Unhealthful
300 - 500	Hazardous



Plymouth County has been assessed to have a good to moderate air quality rating overall, and in the last month air quality has been 51% good. This rating is based upon an Air Quality Index, a rating from 1 to 500 that a space can have to show how clean or polluted the air is. The good range is between 0 and 50, moderate is between 51 and 100, unhealthy for sensitive groups is 101-150, unhealthy is 151 to 200, very unhealthy is 201 to 300, and hazardous is 301 to 500. The sensitive groups section is referring to elderly, young children, people with respiratory conditions, or heart and lung disease. To determine the air quality rating, the EPA looks at ground-level ozone, particle pollution (also known as particulate matter), carbon monoxide, sulfur dioxide, and nitrogen dioxide. However good the ratings are there are still issues with air quality like that of emissions. Plymouth County is among the worst 90% of counties in the US for the emissions of carbon monoxide, nitrogen oxides, PM 2.5 and 10, and volatile organic compounds. The county is also among the worst 80% of counties for sulfur dioxide emissions. These chemicals and compounds are released into the air by companies or as products of industry. They can also cause health side effects like heart disease, nausea, vomiting, respiratory disorders, coughing, choking, etc. Not only are emissions high but inhalation of common pollutants in the area like formaldehyde and carbon tetrachloride can lead to increased risk of cancer. Formaldehyde may contribute to over 50% of a person's risk to develop cancer.

Water Quality

Water Quality Assessment Status for Reporting Year 2014

The overall status of this waterbody is Impaired.

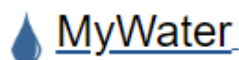
Description of this table

<u>Designated Use</u>	<u>Designated Use Group</u>	<u>Status</u>
Aesthetic	Aesthetic Value	Good
Fish Consumption	Aquatic Life Harvesting	Not Assessed
Fish, Other Aquatic Life And Wildlife	Fish, Shellfish, And Wildlife Protection And Propagation	Impaired
Primary Contact Recreation	Recreation	Good
Secondary Contact Recreation	Recreation	Good
Shellfish Harvesting	Aquatic Life Harvesting	Impaired

Probable Sources Contributing to Impairment for Reporting Year 2014

Description of this table

<u>Probable Source</u>	<u>Probable Source Group</u>	<u>Cause(s) of Impairment</u>
Discharges From Municipal Separate Storm Sewer Systems (Ms4)	Urban-Related Runoff/Stormwater	Fecal Coliform
Municipal Point Source Discharges	Municipal Discharges/Sewage	Fecal Coliform
Source Unknown	Unknown	Nutrient/Eutrophication Biological Indicators



The Assessment Total Maximum Daily Load (TMDL) Tracking and Implementation System (ATTAINS) provides information reported by the states to EPA about the conditions in their surface waters. This information is required every two years under Clean Water Act Sections 305(b) and 303(d). [Read more about water quality.](#)

Name	Type	Size	Status	▲
Fuller Street Pond	390	18.8 Acres	Impaired	
Ellisville Harbor	566	0.2 Miles	Impaired	
Fresh Pond	390	56.7 Acres	Good	
Furnace Pond	390	97.7 Acres	Impaired	
Great South Pond	390	276.1 Acres	Impaired	
Island Pond	390	10.1 Acres	Not Assessed	
Keene Pond	390	10.6 Acres	Not Assessed	
Little South Pond	390	58.1 Acres	Not Assessed	
Maquan Pond	390	42.4 Acres	Good	
Hobomock Pond	390	11.1 Acres	Good	
Agawam River	460	0.6 Miles	Not Assessed	
Crane Brook Bog Pond	390	34.6 Acres	Impaired	

REGULATED SUBSTANCES							
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Barium (ppm)	2017	2	2	0.007	0.003–0.074	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chlorine (ppm)	2017	4.0	4.0	0.53	0.04–0.53	No	Water additive used to control microbes
Nitrate (ppm)	2017	10	10	1.96	0.10–1.96	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] (ppb)	2017	80	NA	20.5	3.22–20.5	No	By-product of drinking water disinfection
Trichloroethylene (ppb)	2017	5	0	1.07	0.73–1.07	No	Discharge from metal degreasing sites and other factories

Tap water samples were collected for lead and copper analyses from sample sites throughout the community

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/ TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2016	1.3	1.3	0.060	0/30	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2016	15	0	2	0/30	No	Corrosion of household plumbing systems; Erosion of natural deposits

SECONDARY SUBSTANCES							
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Aluminum (ppb)	2017	200	NA	23	NA	No	Erosion of natural deposits; Residual from some surface water treatment processes
Chloride (ppm)	2017	250	NA	180	NA	No	Runoff/leaching from natural deposits
Copper (ppm)	2017	1.0	NA	0.060	0.00–2,810	No	Corrosion of household plumbing systems; Erosion of natural deposits
Iron (ppb)	2017	300	NA	330	0.0–2,810	No	Leaching from natural deposits; Industrial wastes
Manganese ¹ (ppb)	2017	50	NA	141	NA	No	Leaching from natural deposits
Sulfate (ppm)	2017	250	NA	8.3	NA	No	Runoff/leaching from natural deposits; Industrial wastes

Plymouth county is a coastal community containing over 400 bodies of water, including ponds, rivers, brooks, and a town harbor. Since there are so many bodies of water the chances of contamination of the water increases. One of the most recent contaminations was the small brook that runs off from Bartlett pond into the waters of White Horse Beach. This brook was found to have bacterial contamination of Chroococcus and the most likely source of the contamination is the septic systems from the surrounding homes. The brook was closed to swimming for animals and humans for eight weeks in the summer and is still under observation now. Another recent change is that of the status of Plymouth's Town Harbor. This harbor has been labeled as impaired for several different reasons. For aesthetic value and recreational uses the harbor was allotted good but in shellfish harvesting and fish and wildlife they were noted as impaired. Upon further investigation of this problem the EPA attempted to find the sources of the impairment. In the chart directly above, the sources were identified and described. There are two sources of fecal coliform, one from urban runoff or storm water and the other from municipal discharges and sewage. This can cause health issues for humans including a variety of diseases which can be picked up from contact with the water, ingestion of water or food that is fished from the water. The last source of contamination is unknown but had caused changes in nutrient levels and eutrophication of the water. Nutrient levels can affect animals and the plant life in the water (fishing) as well as changing the look of the water (color and clarity) which is important for aesthetic value. Since the harbor has many recreational uses like jet skiing and housing a tourist attraction (the Mayflower II boat) there are also commercial uses like private fishing charters, shell fishing, etc. These all allow for easy exposure of the contaminants to people so the issue should be solved quickly. 64% of bodies of water in Plymouth County are impaired in some manner according to the EPA, with 85% of them yet to be corrected. The Town of Plymouth 2017 drinking water report also stated that there were no violations in any substances that the EPA has guidelines to test for.

Local Water Testing Results-

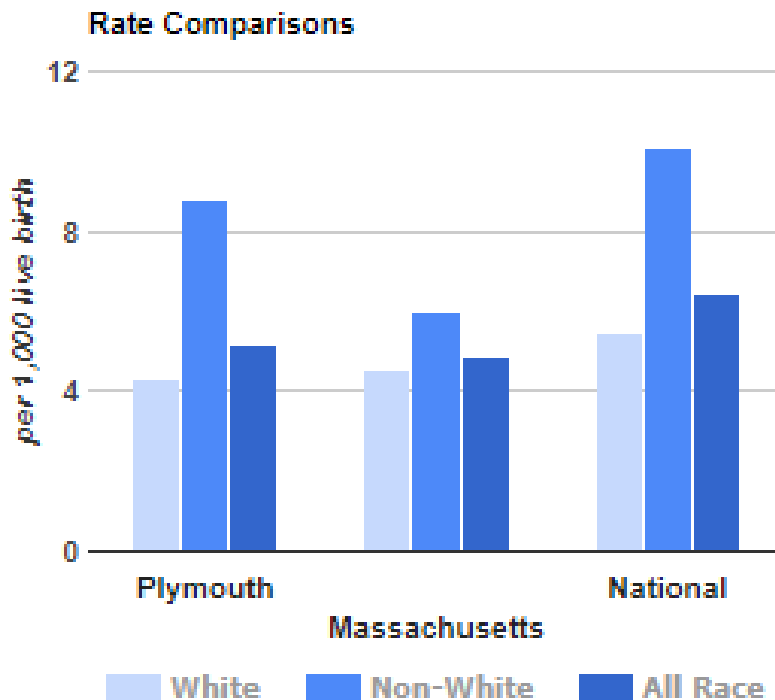
Sample from Morton Pond

Test Name	Color Observed	Positive or Negative Result
Ammonia Nitrogen	Yellow	+
pH	Yellow	pH value of 7
Chlorine	Clear	-
Chromium	Clear	-
Copper	Clear	-

Cyanide	Clear	-
Iron	Clear	-
Nitrate Nitrogen	White	-
Phosphorous	Clear	-
Silica	Blue	+
Sulfide	Clear	-

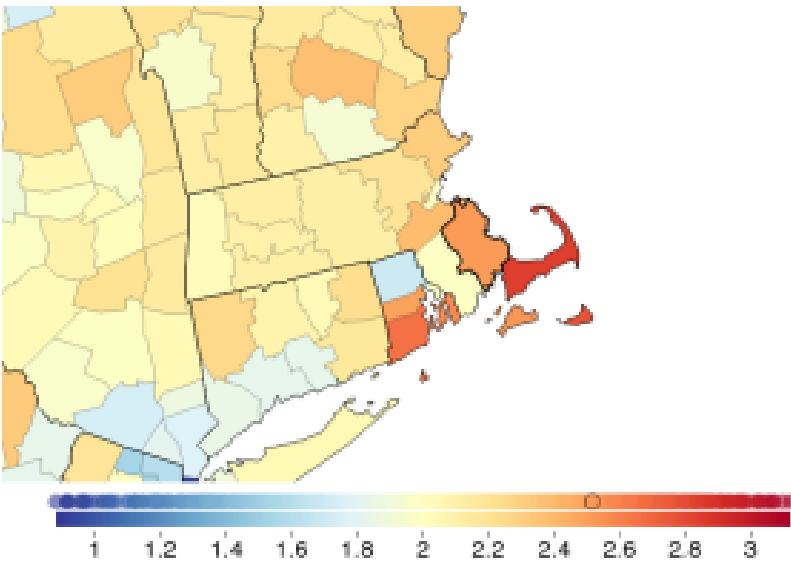
Health Status

5-year Average Infant Mortality Rate (2006-2010) Plymouth, Massachusetts



2010 data. [More Mortality Info...](#)

Fig. 13: Female malignant skin melanoma, 2014



Sex	Plymouth County	Massachusetts	National	National rank	% change 1980-2014
Female	52.3	46.6	43.8	2073	+22.9
Male	71.2	64.1	67.6	1280	-33.6

rate per 100,000 population, age-standardized, 2014

Fig. 9: Female tracheal, bronchus, and lung cancer, 2014

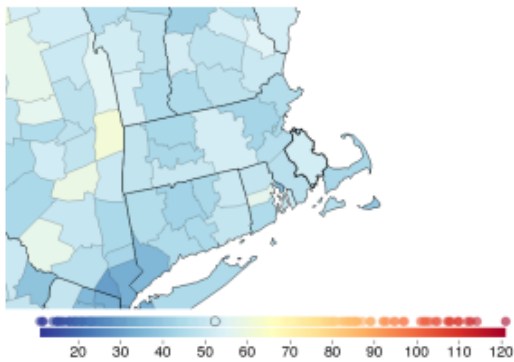
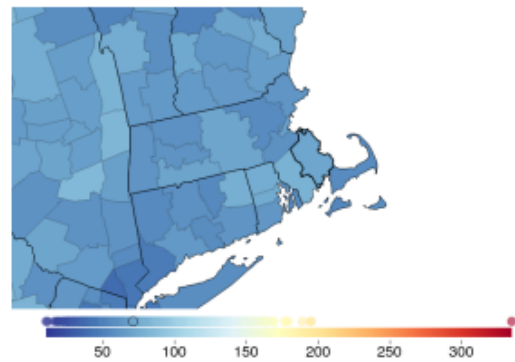


Fig. 10: Male tracheal, bronchus, and lung cancer, 2014



Sex	Plymouth County	Massachusetts	National	National rank	% change 1980-2014
Female	81.9	82.5	81.5	714	+4.9
Male	77.3	78.1	76.7	807	+8.4

life expectancy at birth (years), 2014

Fig. 1: Female life expectancy, 2014

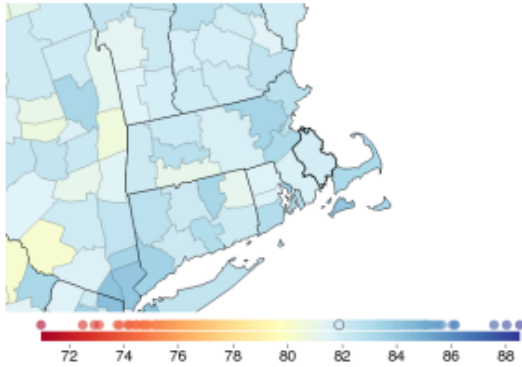
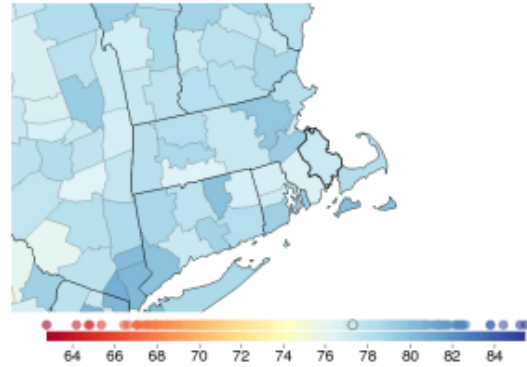
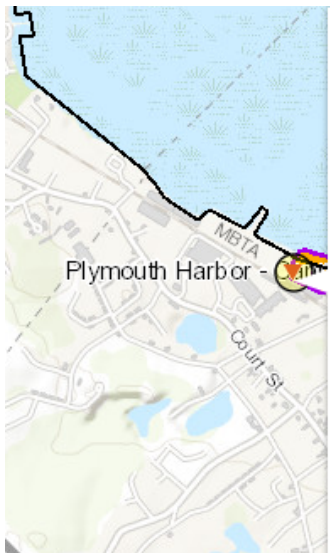


Fig. 2: Male life expectancy, 2014



Plymouth has a fairly low infant mortality rate compared to national average which may be due to the fact that there is a hospital within the town as well as many fire stations to help and come quickly when/if an accident happens. A low infant mortality rate is indication that an area is well developed. The female average life expectancy is slightly higher than the males by almost 5 years, this coincides with national averages where female life expectancy is longer than the males as well. Within a health report of Plymouth County, most statistics were lower than or near national average except for female malignant cell melanoma. For this category, the county is within the middle high region which is significant. The likely cause of this is that this is a coastal county with lots of beaches so sun tanning and over-exposure to UV rays may be common. Rates of lung cancer are normal in comparison to the national average which show clean air and high quality despite the high emissions that are reported. There have been no significant outbreaks in recent years which shows high rates of vaccinations in both children and adults. Overall Plymouth is a fairly healthy county with a few small anomalies.

Industry History



Click, hold, and drag to move the popup box

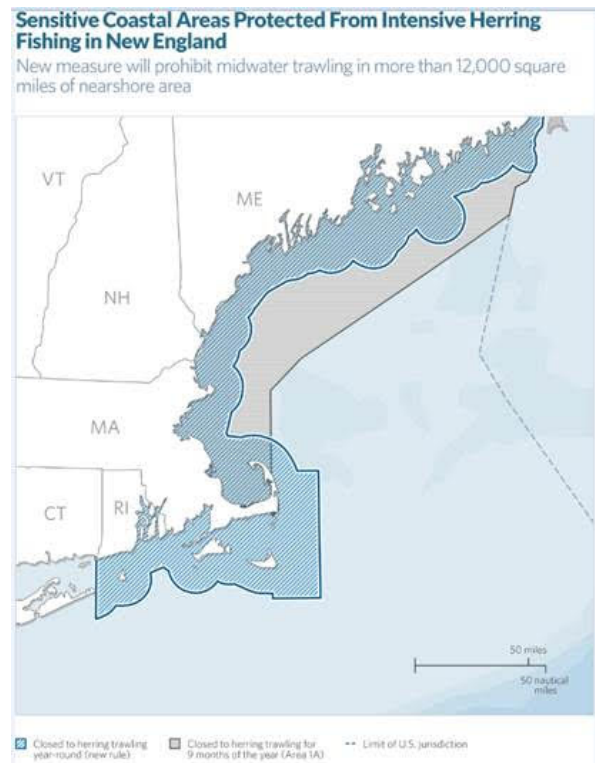
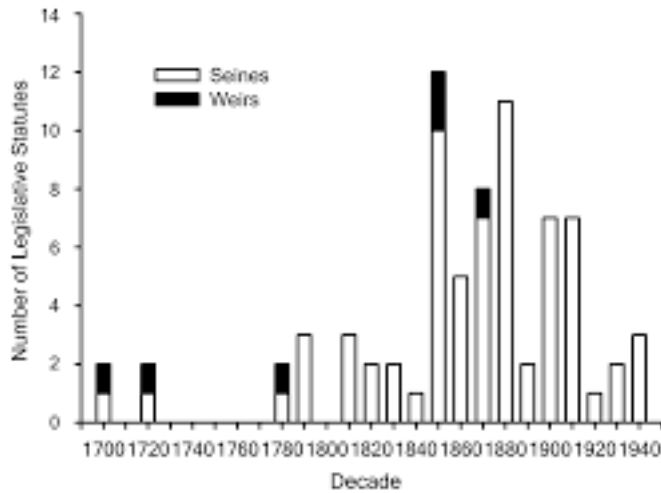
Cleanups

Census Profiles:
[Census 2010 1 Mile Report \(PDF\)](#)
[Census 2008-2012 - 1 mile \(PDF\)](#)

PLYMOUTH HARBOR/CANNON ENGINEERING SITE ▼
[FRS Profile](#)
[Superfund Site Home Page](#)

Name: Plymouth Harbor - Cannon Engineering Core
 Superfund Institutional Control Boundary

[Superfund Site Home Page](#)
[Institutional Control Information](#)



Since Plymouth County is a very old colonial town there are lots of old sites of industry that have since been revitalized to a new form. One of these sites was in Cordage Park, a large industry site that housed a variety of companies. Two of the most known would be the Cannon Engineering Corporation and the Plymouth Cordage Company which was a factory to produce rope. Both of these companies closed their doors a long time ago but they left their mark on the land. The site that the

Cannon Engineering Corporation was built on was place on the National Priority List by the EPA for site clean up. In this clean up they removed large storage tanks that held motor oils, industrial oils and emulsions, solvents, lacquers, organic and inorganic chemicals, cyanide and plating wastes, plating sludge, oily solids, pesticides, and clay and filter media only about 100 feet from the water of the harbor. These tanks were removed 60 years after they were built so there is a high chance that these materials permeated the soil and surrounding land or water. This site was named as a superfund site (mapped in the graphic at the top of this section). There is now restrictions on the land as to what can be built on it and how it can be used due to these risks. The restrictions include no residential homes, schools, hotels, or recreational facilities as well as guidelines for how to reassess the land every five years. There were lots of industrial factories in this area during the 1900s which may account for some of the poor emissions that this county has had overtime. Another industry that is still alive and well is fishing. Since this is a coastal community, fishing has always been a large part of its history. As commercial fishing came to prominence, problems began to rise. Overfishing of certain areas and certain fish populations caused populations to decline and almost drive many species to extinction in this area not to mention oil leaks from boats and further contamination of water. In order to protect the fishing industry and the economy built upon it, regulations were set over time as seen in the two graphics immediately above. These regulations contain things like restricted areas to fish in, species to not fish, and many others. Violations come with large fines and as seen in the graph on the left, they increase over time as more environmental issues are brought to light. The fishing industry has always played a large role in the local economy of Plymouth and a collapse of a fish population could be very detrimental so close regulations are placed to ensure that doesn't occur.