

Collecting and Analyzing Recreational Beach Water Samplings for Coliform Contamination in Wareham, MA. Summer 2017

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Sampling Locations

- ◆ Marine Water
 - Briarwood Beach
 - East Boulevard
 - Forbes Beach
 - Hamilton Beach
 - Indian Mound
 - Little Harbor
 - North Boulevard
 - Onset Beach
 - Parkwood Beach
 - Pinehurst Beach
 - Point Independence
 - Riverside Beach
 - Shell Point
 - Standish Shores
 - Swifts Beach
 - Swifts Neck Beach
- ◆ Fresh Water
 - Blackmore Pond
 - Shangri-la
 - Wareham Lake Shores
 - White Island Pond

Introduction:

The town of Wareham has over 54 miles of coastline consisting of marine and fresh water beaches, ponds and lakes, most of which are used for recreational activities. There can be a wide range of potential health hazards associated with swimming in polluted water, resulting in respiratory and gastrointestinal problems, as well as skin irritation and rashes. Because of this, weekly samples are taken at each recreational beach during the summer season. The samples are tested for indicator organisms including enterococci for marine water and *Escherichia coli* for fresh water. These pathogens typically enter beach water by way of rainfall, resulting in runoff and fecal contamination.

Results:

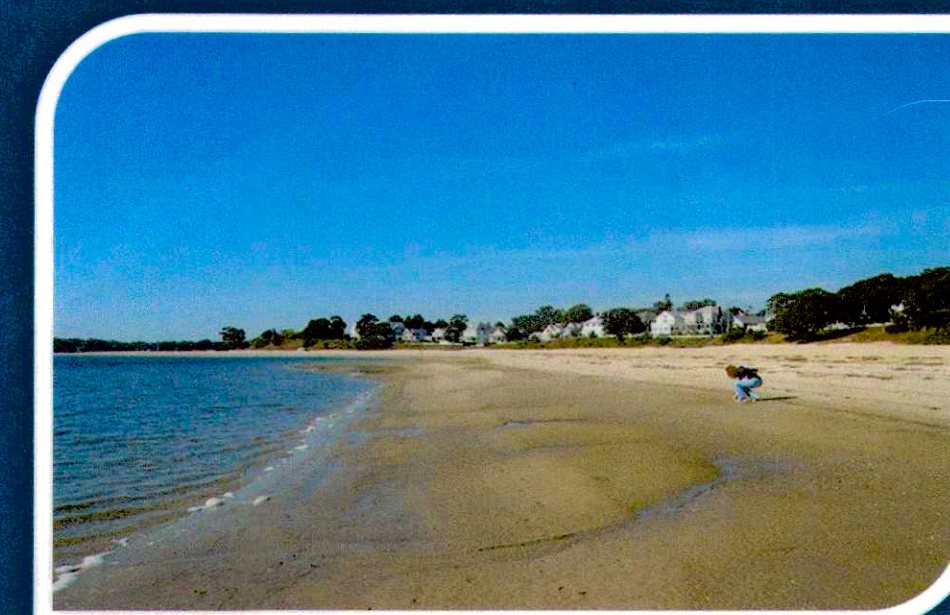
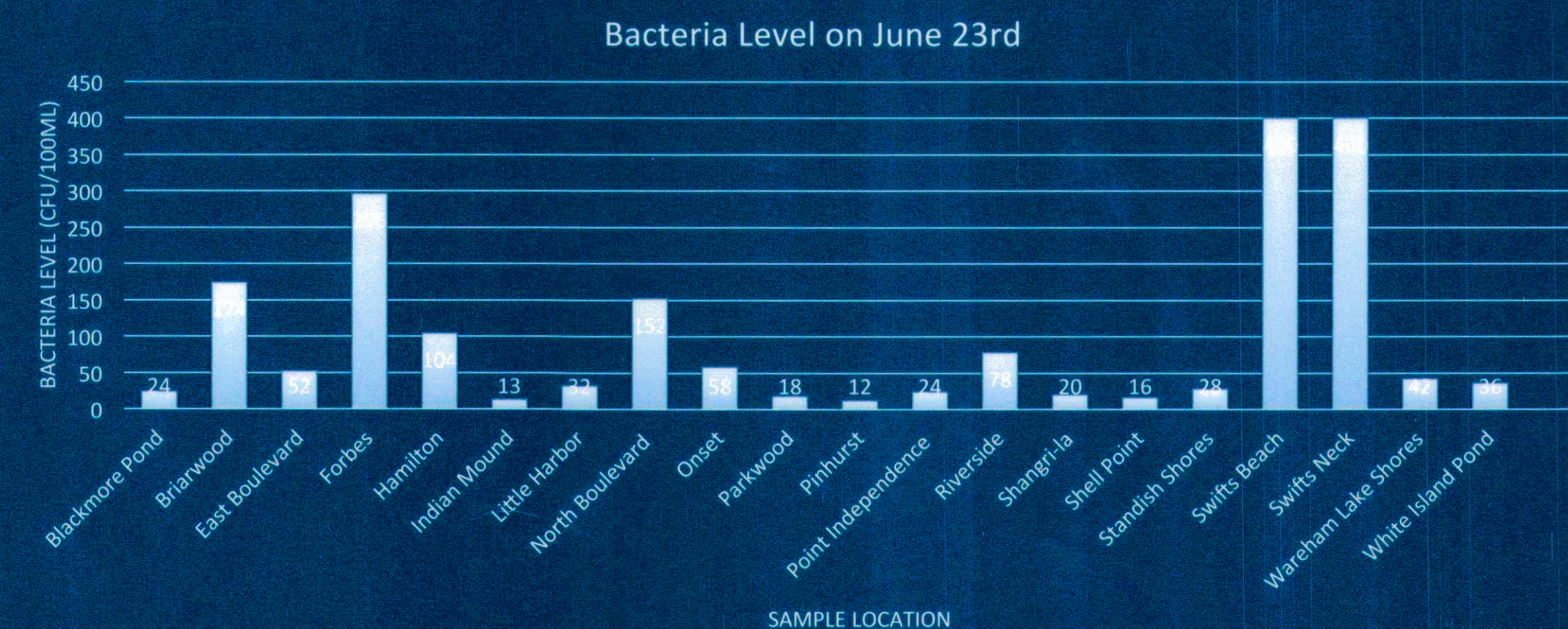
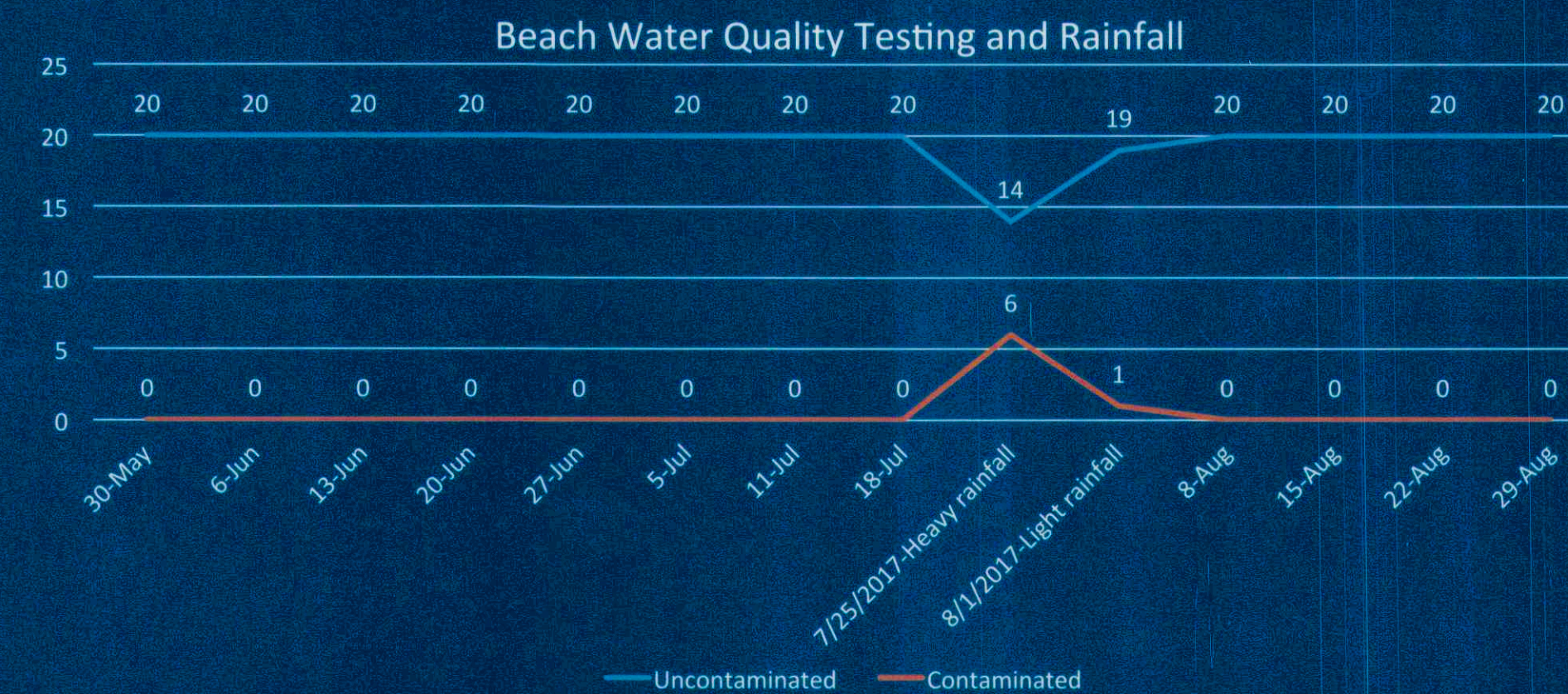
All samples were tested to see if coliform units (CFU) per 100mL were fewer than 104 CFU for marine water and 235 CFU for fresh water. For the weeks of June 23rd and June 30th several samples exceeded these amounts, resulting in a retest the following day. Sampling on June 23rd occurred on a heavy rainfall, resulting in six sampling locations having higher than acceptable levels of coliform contamination. One of the resamples, North Boulevard, failed for a second time and was to remain closed until a passing sample was submitted. In this case, a passing sample was submitted the following day. Sampling on June 30th occurred on a light rainfall that resulted in one sample location to have a higher than acceptable level of coliform contamination. The resample passed with acceptable levels.

Methods:

Between the dates of May 30th and August 29th, weekly samples are collected from each of the 20 recreational beaches. Observational data collected at each beach includes water clarity, water temperature, number of swimmers, number of dogs, and number of birds in the water. Date of last rainfall is also documented. Samples are collected from each beach at a uniform depth. Data is documented on the state sampling forms and delivered with all the water samples to the state laboratory, located in Barnstable, MA.

Discussion:

During the weeks where a rainfall occurred within 24 hours of sampling, the levels of bacteria and fecal contamination were higher than acceptable levels for several beaches. This is most likely due to the rainwater flushing pollutants into the water from surrounding areas. The fecal contamination can be attributed to humans, birds and dogs. North Boulevard's several failing samples could be accredited to the fact that this beach sits especially close to the street as compared to other recreational beaches, resulting in more runoff. Beaches will continue to be tested for the remainder of summer months to ensure safety for all.



References:

- Wareham Health Department. Retrieved July 15, 2017, from <http://www.wareham.ma.us/health-department>
- Costa, J. Buzzards Bay Beach Information. Retrieved July 15, 2017, from <http://buzzardsbay.org/enjoy-buzzards-bay/beach-information/>
- State of the Beach/State Report. (2017, March 30). Retrieved July 15, 2017 from http://www.beachapedia.org/State_of_the_Beach/State_Reports/MA/Water_Quality