Effects of Precipitation on Jamaica Bay Water Quality

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Guiding Question

How has rainfall effected the Jamaica bay water quality?

I. Introduction

Runoff pollution is a growing problem in urban cities like New York. Often, when it rains the rain water picks up trash and pollutants on the street and sends them to the estuaries, bays and sewers the water runs to. The pollutants in the runoff go to the water bodies and kill fish, bacteria and vegetation growing there. One area often affected by runoff pollution is Jamaica bay.

Figure 1. Jamaica Bay. Source: nps.gov

What is Runoff pollution?

Runoff pollution can be anything from soda cans to spilled oil left on the streets.

Figure 2: Pollution fish. Source: howtosmile.org

II. Methodology

Water quality data sampled at locations within the bay was obtained from EPA STORET. The data was sorted (by date, precipitation amount and contaminants), and examined using three different chemical parameters to asses the overall quality of the water. The three chemical components are turbidity, salinity and fecal coliform. The Fecal coliform test is used to show sewage leaks. Salinity test for the salt levels in the water, showing flooding from the ocean. Turbidity tests for pollutants such as gasoline, turbidity is how murky the water is.

Figure 3 :Google Earth image representing the station location

III. Results

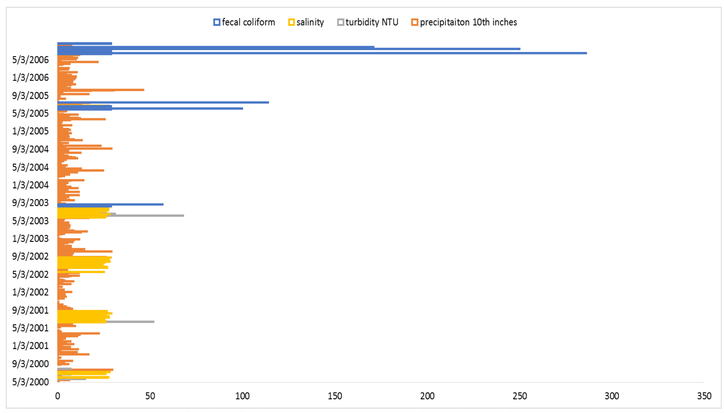

Figure 4: Graph of all of the parameters; fecal coliform, salinity, turbidity and precipitation.

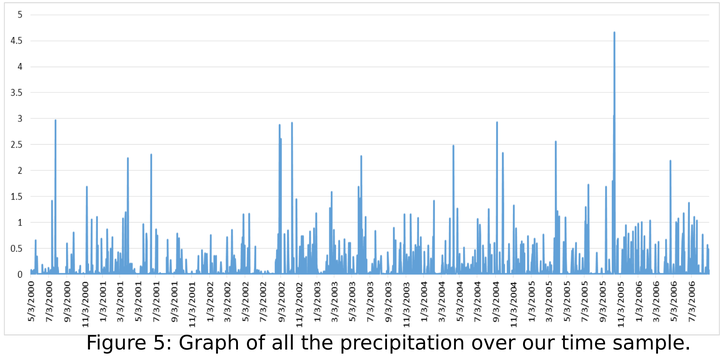

Figure 5: Graph of all the precipitation over our time sample.

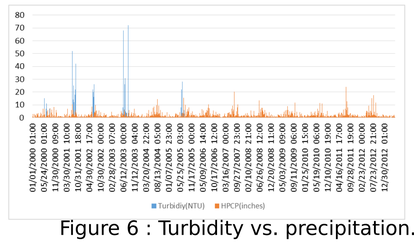

Figure 6 : Turbidity vs. precipitation.

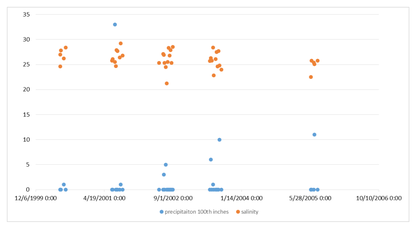

Figure 7: Precipitation vs. salinity.

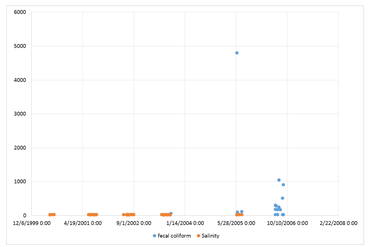

Figure 8: Fecal coliform vs. salinity.

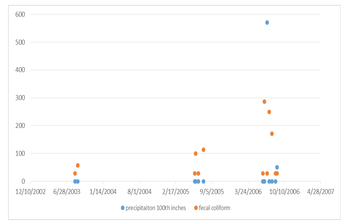

Figure 9: Precipitation vs fecal coliform.

Table 1: Correlation of water quality parameters.

Variable	Correlation
Precipitation v. Turbidity	0.023
Precipitation v. salinity	-0.105
Precipitation v. fecal coliform	-.224
Salinity v. fecal coliform	0.664

IV. Conclusion

The results show that as it rains the turbidity increases and the salinity and fecal coliform decrease. However, with an increase in turbidity it shows there must be an increase in pollution. Looking towards the future we should plan on finding and analyzing data on Combined Sewage Overflow and its correlation to the chemicals in the Jamaica bay waters.

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