Greater Stockport Creek Watershed

Fact Sheet– ENTEROCOCCI AND E. COLI BACTERIA

EPA STUDIES SHOW THAT ENTEROCOCCI WERE A VERY GOOD PREDICTOR OF ILLNESS IN **ALL** WATERS, AND *E. COLI* WAS A VERY GOOD PREDICTOR IN FRESH WATERS.

Indicator Organisms—What are they?

Most disease-causing bacteria exist in very small amounts and are difficult and expensive to find in water samples. "Indicator organisms" have been used for more than a century to help identify where fecal contamination has occurred, and therefore, where disease-causing bacterial may be present. These organisms generally do not cause illness themselves. They do have characteristics that make them good indicators that fecal contamination has occurred and that harmful pathogens may be in the water.

What are Coliforms?

Coliforms are bacteria that are always present in the digestive tracts of animals, including humans, and are found in their wastes. They are also found in plant and soil material.

What is Fecal Coliform/*Escherichia coli* (*E. coli*)?

Fecal coliform bacteria are a specific kind of total coliform. *Escherichia coli* (abbreviated as *E. coli*) is part of the fecal coliform group, and may be tested for by itself. Of the five general groups of bacteria that comprise the total coliforms, only *E. coli* is generally not found growing and reproducing in the environment. Consequently, *E. coli* is considered to be the species of coliform bacteria that is the best indicator of fecal pollution and the possible presence of harmful germs that have found their way into the water system.

What is Enterococcus?

Enterococcus bacteria is commonly found in the feces of humans and other warm-blooded animals. The presence of enterococci in water is an indication of fecal pollution and the possible presence of pathogens.

Enterococci

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In the late 1970's and early 1980's, the US Environmental Protection Agency (EPA) conducted public health studies evaluating several organisms as possible indicators, including fecal coliforms, E. coli and enterococci. These bacteria are present in the digestive tracts of animals, including humans, and are found in their wastes. Their presence in water is an indication of fecal pollution and the possible presence of pathogens. The studies showed that enterococci were very good predictors of illness in all waters, and E. coli bacteria were very good predictors in fresh waters. As a result, EPA recommended in 1986 the use of E. coli for fresh recreation waters and enterococci for fresh and marine recreation waters. These recommendations replaced EPA's previously recommended bacteria criteria for fecal coliform.

TO VIEW RESULTS OF JULY 2011 TESTS GO TO http://WWW.STOCKPORTWATERSHED.ORG

Sampling in the Stockport Creek Watershed

Because the Greater Stockport Creek Watershed Alliance (GSCWA) wanted to coordinate results from the watershed with Hudson Riverkeeper's ongoing survey of enterococcus bacteria throughout the Hudson River Estuary, samples were analyzed for the same bacteria using the same EPA-approved analytical procedure (Enterolert). This procedure produces a statistically-based "most probable number" (MPN) of "colony forming units" (CFUs) per 100 ml of sample water. A colony forming unit is a unit of measurement used in microbiology that indicates the number of microorganisms present in a water sample. The Enterolert procedure involves dividing the 100ml sample volume into a number of large and small "wells" each of which respond as either positive or negative for enterococcus bacteria after 24 hours of incubation. The number of positive large and positive small wells allows for statistical computation of the most probable number of CFUs.

Water Quality Standards

If the geometric mean of no less than 5 samples equally spaced over 30 days exceeds 33 enterococcus CFU/100ml, the EPA standard for recreational water is exceeded. If an individual sample is greater than 61 CFU/100ml the standard is also exceeded. Because only one sample is depicted in the color coded results, only red symbols indicate an exceedance of the EPA standard. Yellow symbols (>33 but <62 CFU/100ml) are sites that would exceed the standard if conditions persist over time. Green symbols are below the 33 CFU/100ml standard.