



Anacostia Watershed Society Bacteria Monitoring in Sligo Creek 2004-2005

In the summer of 2004, the Anacostia Watershed Society sampled Sligo Creek for the presence of *E. coli* and other fecal coliform bacteria, both common bacteria originating from sources such as sewer leaks and the feces of animals (geese, dogs, etc.). The results can be seen in the images below.

E. coli

Escherichia coli (*E. coli*) is a species of fecal coliform bacteria that comes specifically from the fecal material of warm blooded animals including humans. EPA studies showed a high correlation between gastroenteritis (digestive tract illness) and high *E. coli* counts at swimming areas; therefore, *E. coli* is recommended as a good indicator of health risk from water contact in freshwater recreation areas.

The Maryland state regulations for Use I waters such as Sligo Creek sets the steady state geometric mean indicator density for *E. coli* bacteria at 126 or less. This should be based on at least five samples taken representatively over 30 days. Thus this image indicates that all tested sites exceeded Maryland state regulatory levels.

1) Almost all of the results at SC5 were greater than the highest number in the test analysis range. When the test analysis range was 0-2400, the results exceeded 2400; when 0-4000, the results exceeded 4000. This being the case, the maximum number in the test analysis range was used to generate the geometric mean (ie, 2400 when the analysis range was 0-2400, 4000 when 0-4000). This means the calculated result of 3400 is likely to be significantly lower than the actual geometric mean at the SC5 site.

E. Coli Data on Sligo Creek

Data collection duration: 6/23 to 8/11/2004



*data unit: MPN/100ml

*The number of data for each site is 7.

*GM: Geometric Mean

Sampling site description

SC1: Main stream

SC2: Takoma Park Tributary

SC3: Main stream

SC4: Long Branch

SC5: Stormwater pipe outfall

SC6: Main stream

SC7: Wheaton Branch

SC8: One of headwaters

Fecal coliform

Coliforms are bacteria that commonly inhabit the intestines of humans and other vertebrates; however, they may also be found in the environment in soil and submerged wood. Fecal coliforms are types of coliform bacteria more specific to feces. Fecal coliform used to be the principal bacteria indicator of health risk for recreational waters until fairly recently, when the EPA began recommending E. coli as a better indicator of health risk.

Fecal Coliform Data on Sligo Creek

Data collection duration: 6/23 to 9/1/2004



Sampling site description

- | | |
|----------------------------|------------------------------|
| SC1: Main stream | SC5: Stormwater pipe outfall |
| SC2: Takoma Park Tributary | SC6: Main stream |
| SC3: Main stream | SC7: Wheaton Branch |
| SC4: Long Branch | SC8: One of headwaters |

Reference

| station name | site description | Geometric Mean | | |
|--------------|----------------------------|----------------|------|------|
| | | 2002 | 2003 | 2004 |
| BA(1) | Bladensburg Road Bridge | 793 | 525 | 1700 |
| CA(2) | 11th Street Bridge | 152 | 355 | 350 |
| RP(3) | At the mouth of Rock Creek | 46 | 95 | --- |
| MP(4) | Memorial Bridge | 57 | 98 | --- |
| | Number of samples taken | 100 | 89 | 20 |

Update

Because of the high levels of fecal coliform found coming from the pipe outfall at SC5, the Anacostia Watershed Society (AWS) attempted further testing in December 2004 with DNA analysis to determine if more of the fecal bacteria derived from humans, pets, or wildlife. However, the water was found to be chlorinated and this interfered with these tests, as the bacteria cannot survive in chlorinated water.

The Montgomery Department of Environmental Protection (DEP) then investigated and found an illegal connection from a condominium building pool drain and a leak from a nearby fire hydrant. The fire hydrant may be the source of the chlorinated water and the drain from a foot shower the source of the high fecal coliform levels. The sources are not confirmed. As a result of the DEP's enforcement the fire hydrant leak and illegal connection were fixed.

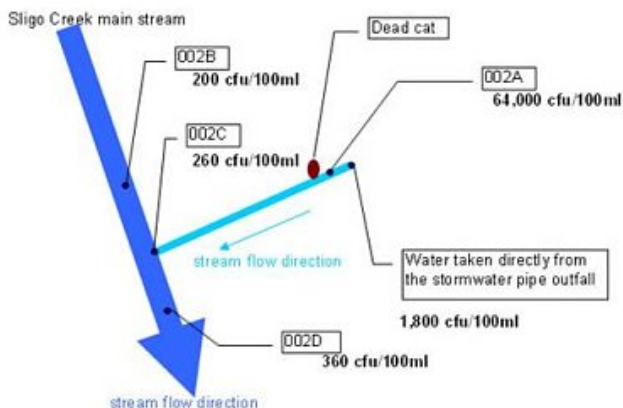
After the leak was fixed, the flow amount in the stormwater pipe decreased dramatically and became negligible. The AWS and DEP waited for rainfall to flush any legacy bacteria and chlorine remaining in the system; then they sampled jointly on September 13, 2005. They tested the same samples and their results were found to be consistent.

Sligo Creek, SC5 site **Anacostia Watershed Society (www.anacostiaws.org)**

| Sampling / Analysis date | Sample Name | S. Collection Time | Sampler | Parameter | Result | Units | Analysis Method | Memo |
|--------------------------|---------------------------|--------------------|---------|-----------------|--------|-----------|-----------------|--|
| 9/13/2005 | ST01SCR002 Control | 9:20 | John | Fecal Coliforms | <2 | cfu/100mL | SM 9222D | |
| 9/13/2005 | ST01SCR002A | 10:30 | John | Fecal Coliforms | 64,000 | cfu/100mL | SM 9222D | outfall, around carcass |
| 9/13/2005 | ST01SCR002B | 10:45 | John | Fecal Coliforms | 200 | cfu/100mL | SM 9222D | main stream, upstream from the discharge |
| 9/13/2005 | ST01SCR002C | 11:00 | John | Fecal Coliforms | 260 | cfu/100mL | SM 9222D | discharge |
| 9/13/2005 | ST01SCR002D | 11:05 | John | Fecal Coliforms | 360 | cfu/100mL | SM 9222D | main stream, downstream from the discharge |
| 9/13/2005 | water taken directly from | 10:35 | Masaya | Fecal Coliforms | 1,800 | cfu/100mL | SM 9222D | no sample for Mo County |

| Date | Fecal coliform (cfu/100ml) |
|------------|----------------------------|
| 6/14/2005 | 3100 |
| 8/2/2005 | 5500 |
| 8/16/2005 | 4100 |
| 8/23/2005 | 9400 |
| 9/13/2005 | 1800 |
| 10/18/2005 | 1300 |
| 10/26/2005 | 2000 |

Results of AWS testing at SC5 in 2005



During the September 13, 2005 joint testing by the AWS and DEP, the carcass of a dead cat was found just in front of the stormwater pipe outfall. This was the only test date it was present. The sample 002A was contaminated from the carcass. The water from the pipe outfall was not contaminated from the carcass and showed the result of 1,800 cfu/100ml, which was low compared to the consistently high number observed in 2004 (20,000 cfu/100ml, mean value).

AWS did further follow up testing for fecal coliform on October 18 and 26, 2005. Though the level was still high, it decreased dramatically from the amount detected in 2004. Moreover, the flow amount became almost zero during sunny days. The Anacostia Watershed Society representative judged the bacteria load (concentration*flow amount) as an assimilable level to Sligo Creek and closed this case.