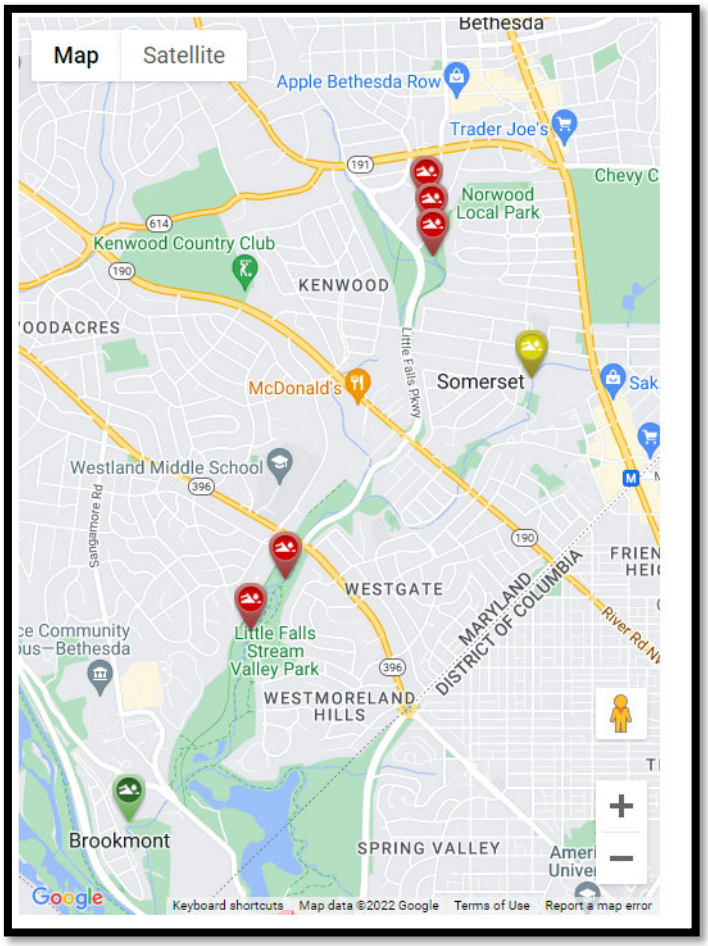
LITTLE FALLS WATERSHED ALLIANCE

EDUCATION - ACTION - STEWARDSHIP

2022 Water Quality Report
September 2022

Overview

Little Falls Watershed Alliance (LFWA) volunteers collected water quality samples weekly on Wednesday mornings in the Little Falls watershed basin from June 1 to September 14. The samples were analyzed for Fecal bacteria (i.e., *E-Coli*) by Anacostia River Keepers (ARK). Volunteers also measured pH, and air and water temperatures (°C) when the samples were collected.



Seven locations were sampled- three in Willett Branch and four in Little Falls Branch. The site locations and IDs on the Willett Branch were above the Bethesda pool (WBA), at Hillandale (WB1), and above Morgan Drive (WB3). The site locations and IDs on the Little Falls Branch were at Somerset Pool (LFB1), below Massachusetts Avenue (LFB2), at the first Pedestrian Bridge (LFB3), and at Brookmont (LFB4).

WBA and WB3 were newly added site this year, upstream and downstream of WB1, respectively. Labeling skipped to WB3 as WB2 existed from previous sampling years.

In the last month of sampling, Willard Park (WP) was sampled in anticipation of a dog park being constructed nearby.

Summary

The water quality in Little Falls Watershed does not meet D.C. or MD recommended standards for recreational water use, even for human contact on an infrequent basis. During the sampling period, rainfall was monitored in the 72 hours leading up to sample collections. There appears no obvious correlation between rainfall and bacteria level, with bacteria level instead relying on

downstream flow. Willett Branch, having historically high levels, continued the trend this year and was the potential cause of frequent downstream site failure. WBA was diluted to 10% each week to read larger bacteria levels than the 2419.2 test limit.

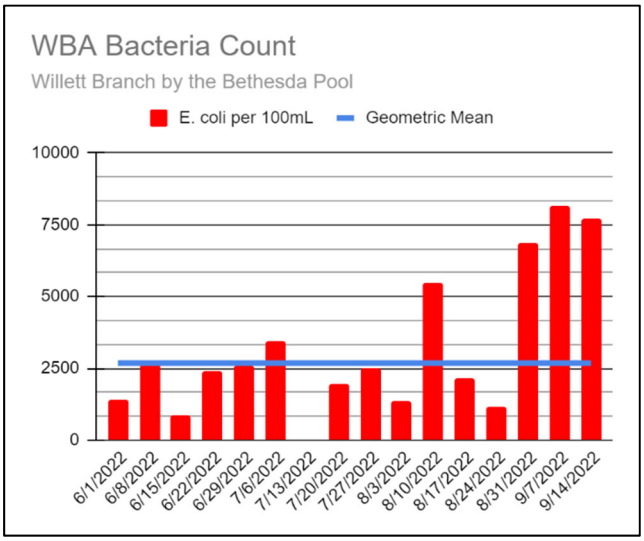
E. coli levels were measured by ARK using the EPA approved Colilert test, which records bacteria levels in Most Probably Number/100 mL (MPN). For communication purposes, *E. coli* numbers were rounded to the nearest whole number, as the test relies on statistical factors often resulting in decimals.

LFWA also collected water samples for DNA qPCR results from the lab at Jonah Ventures. Human markers were extremely high, further indicating fecal bacteria from humans.

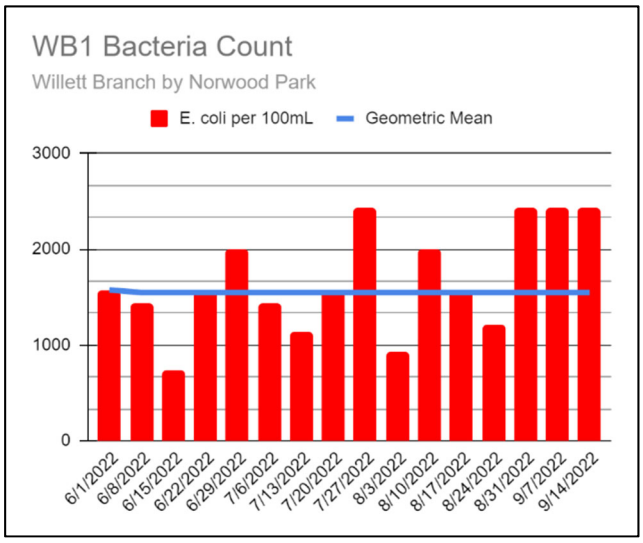
Little Falls Watershed Alliance also began working with the Washington Suburban Sanitary Commission (WSSC) in mid-August to find and fix the source of the high bacteria levels, as it may indicate a broken sewer line flushing wastewater into the Branches. Currently, WSSC and LFWA are working on sampling more locations around the watershed to determine a course of action.

Single-Sample Results

Single-sample tests refer to individual tests per location each week. Fecal bacteria levels routinely exceeded the single-sample standard of 410 MPN/100 ml. (i.e., red) in all locations. As shown in this chart, the highest counts were consistently found in the Willett Branch (WBA), which failed to meet the standard in all 16 weekly samples. Please note the high y-axis scale from 0 to 10,000 when viewing the chart. Levels at WB1 and WB3 were lower, but still exceeded 410 MPN/100 ml. every week.



As illustrated in the charts on the next page, the main stem of the branch, LFB2 and LFB3 saw consistently high levels, but was still lower than the upstream sites at Willett Branch. Counts were lowest at sample locations LFB1 in Somerset. The most downstream site in Brookmont, LFB4, was typically low as well, indicating bacteria levels originated upstream and were flushed out through LFB2 and LFB3 and dissipated the further downstream they went. Levels at some sites were below single-sample standard on a few occasions (i.e., green bars), but still exceeded the single-sample standard of 125 MPN/100 ml. for recreational use.


WB1 Bacteria Count
Willett Branch by Norwood Park
E. coli per 100mL
Geometric Mean
3000
2000
1000
0
6/1/2022
6/8/2022
6/15/2022
6/22/2022
6/29/2022
7/6/2022
7/13/2022
7/20/2022
7/27/2022
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8/10/2022
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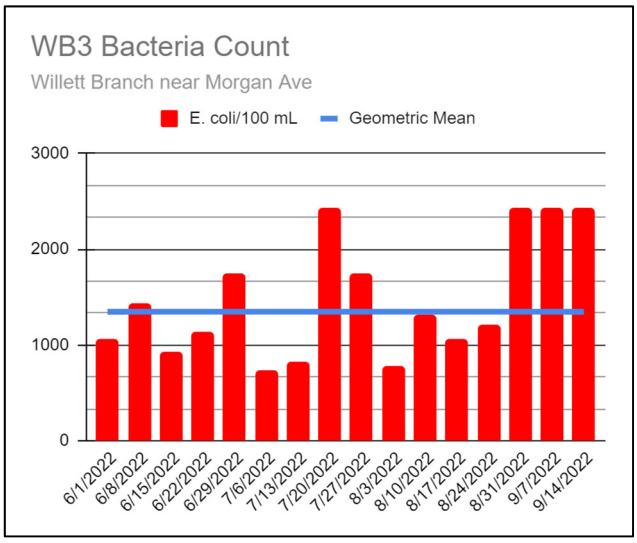
8/31/2022
9/7/2022
9/14/2022


WB3 Bacteria Count
Willett Branch near Morgan Ave
E. coli/100 mL
Geometric Mean
3000
2000
1000
0
6/1/2022
6/8/2022
6/15/2022
6/22/2022
6/29/2022
7/6/2022
7/13/2022
7/20/2022
7/27/2022
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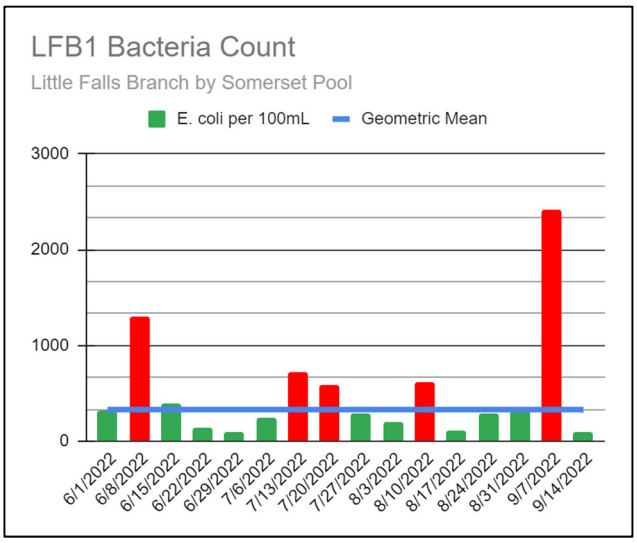
8/31/2022
9/7/2022
9/14/2022


LFB1 Bacteria Count
Little Falls Branch by Somerset Pool
E. coli per 100mL
Geometric Mean
3000
2000
1000
0
6/1/2022
6/8/2022
6/15/2022
6/22/2022
6/29/2022
7/6/2022
7/13/2022
7/20/2022
7/27/2022
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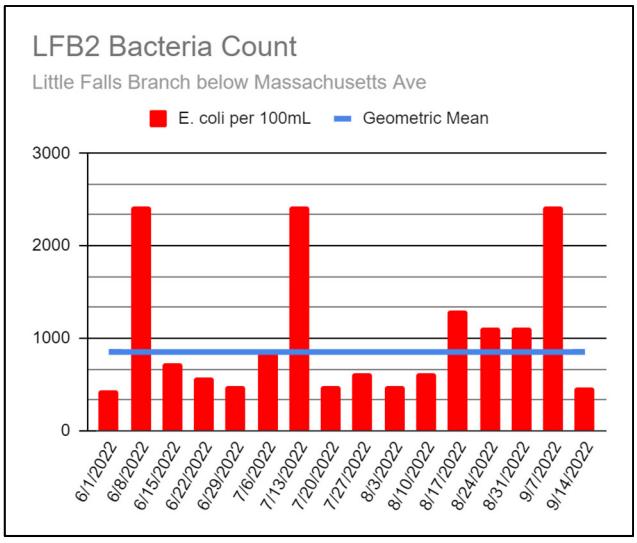
8/24/2022
8/31/2022
9/7/2022
9/14/2022


LFB2 Bacteria Count
Little Falls Branch below Massachusetts Ave
E. coli per 100mL
Geometric Mean
3000
2000
1000
0
6/1/2022
6/8/2022
6/15/2022
6/22/2022
6/29/2022
7/6/2022
7/13/2022
7/20/2022
7/27/2022
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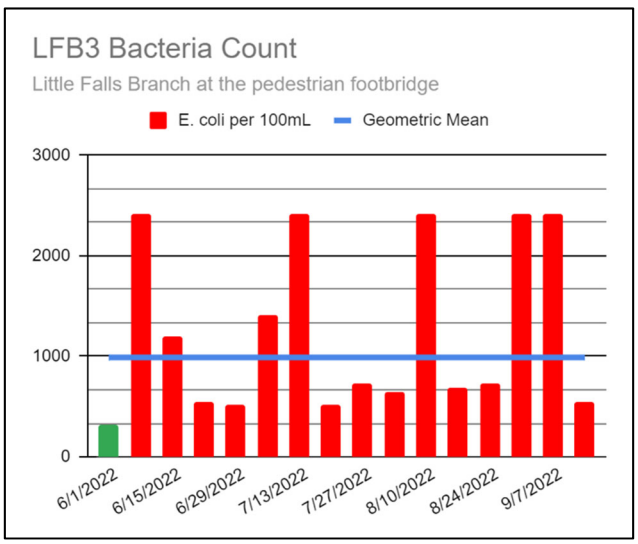
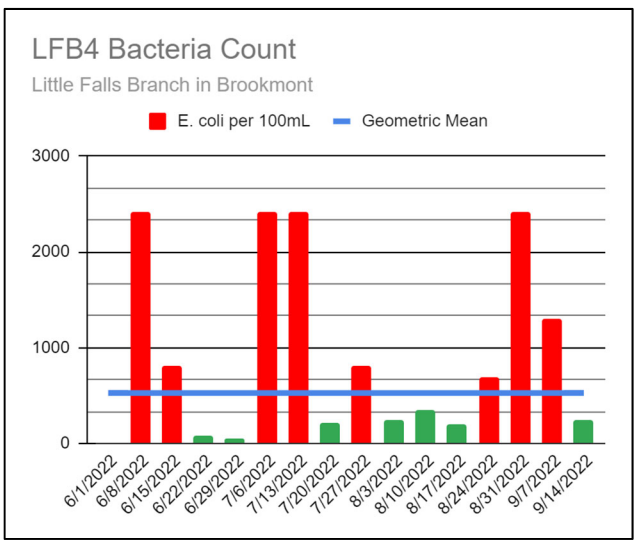
8/24/2022
8/31/2022
9/7/2022
9/14/2022


LFB3 Bacteria Count
Little Falls Branch at the pedestrian footbridge
E. coli per 100mL
Geometric Mean
3000
2000
1000
0
6/1/2022
6/15/2022
6/29/2022
7/13/2022
7/27/2022
8/10/2022
8/24/2022
9/7/2022


LFB4 Bacteria Count
Little Falls Branch in Brookmont
E. coli per 100mL
Geometric Mean
3000
2000
1000
0
6/1/2022
6/8/2022
6/15/2022
6/22/2022
6/29/2022
7/6/2022
7/13/2022
7/20/2022
7/27/2022
8/3/2022
8/10/2022
8/17/2022
8/24/2022
8/31/2022
9/7/2022
9/14/2022

Geometric Mean Results

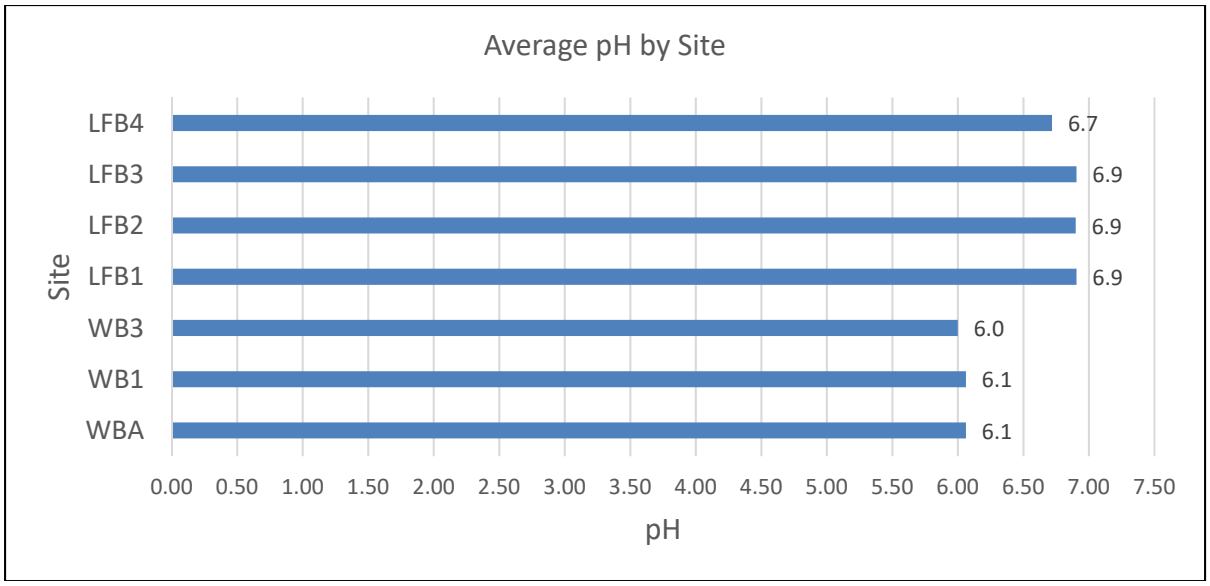
Geometric mean refers to the water safety trend over 90 days. According to the Maryland Department of the Environment water quality standards for Class 1 waters, a stream is suitable for recreational use if the geometric mean of all *E. Coli* samples taken over a 90-day period does not exceed 125 MPN per 100 ml. while 10% of samples taken do not exceed the statistical threshold value of 410 MPN per 100 ml.

In the table below, the geometric mean and percent of samples exceeding the threshold is shown with the location descriptions for each Station ID. Counts for samples that exceeded the limits of the test methodology (>2420 MPN/100 ml.) were included in calculation as 2420. As a result, the geometric mean is likely to be higher than reported. The only site to pass based on geometric mean was the Little Falls Branch in Somerset (FB1), marking it safe for human contact and recreational play.

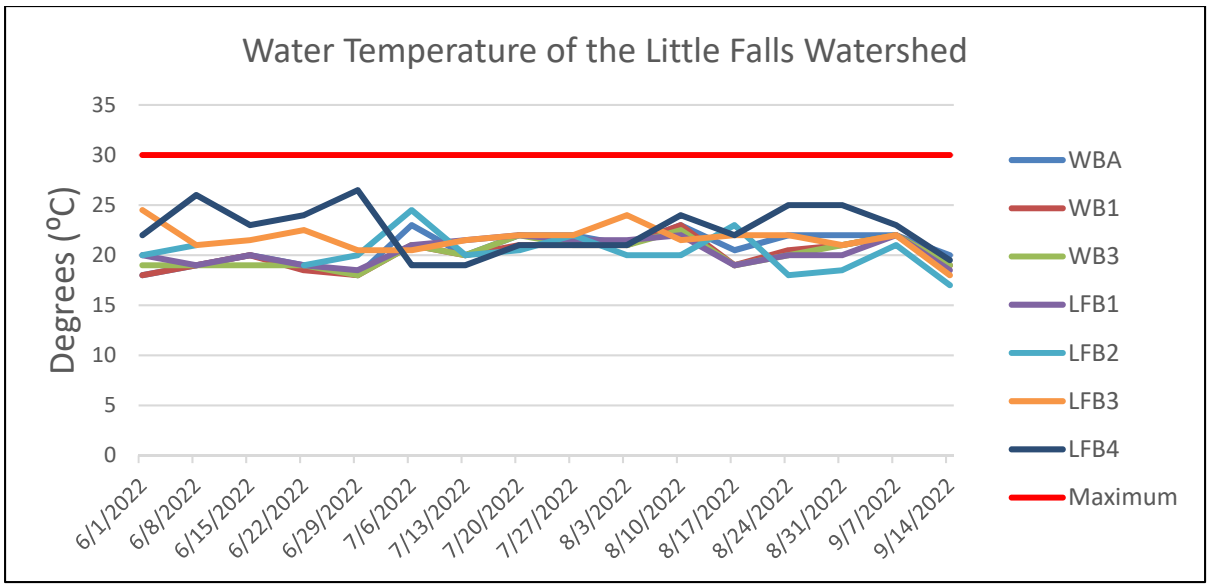
Station Location	**Station ID**	**Geometric Mean***	**Percent Exceeding Threshold (>410 MPN/100mL)**
Willet Branch above Bethesda Pool	WBA	2686	100%
Willet Branch at Hillandale	WB1	1574	100%
Willet Branch above Morgan Dr.	WB3	1347	100%
Little Falls at Somerset Pool	LFB1	330	28%
Little Falls Branch below Massachusetts Avenue	LFB2	850	100%
Little Falls Branch at first Pedestrian Bridge	LFB3	989	89%
Little Falls Branch at Brookmont	LFB4	526	44%

Results: pH and Temperature

Normal pH values for Class I waters should not be less than 6.5 or greater than 8.5. As illustrated in the figure below, average pH values were slightly acidic and below the recommended value at 3 of the 5 locations.

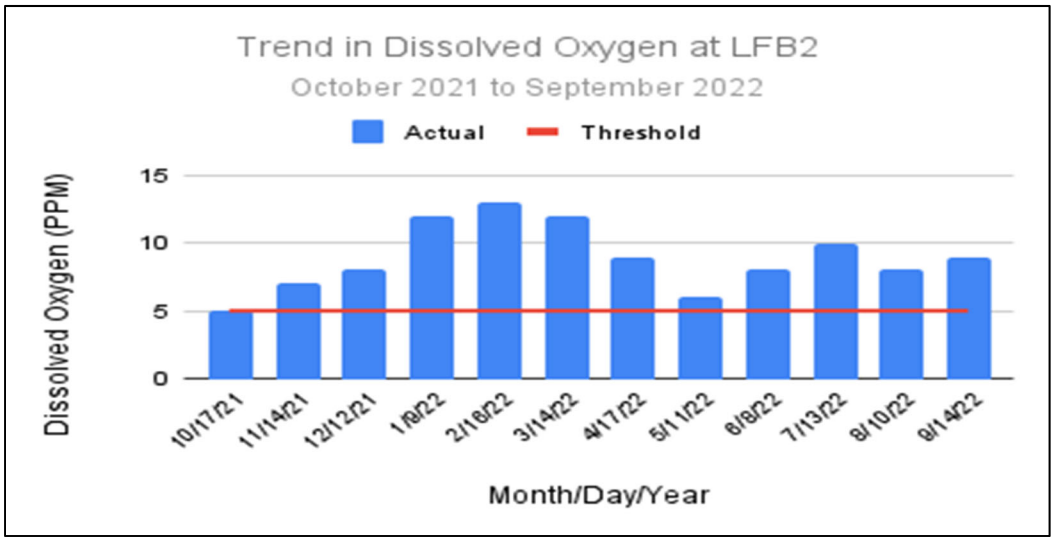


The maximum temperature outside the mixing zone for Class I waters should not exceed 90°F(32°C) or the ambient temperature of the surface waters, whichever is greater. As shown in the figure below, water temperatures never exceeded the threshold.



Seasonal Trend (LFB2)

Dissolved oxygen (DO) is naturally found in the water and is used by zooplankton and fish to breathe. A concentration of 5 to 10 parts per million (PPM) is a healthy level for streams in the Little Falls Watershed. DO and air/water temperature were measured monthly at LFB2 from October 2021 to September 2022. As shown in the figure below, DO exceeded 5 PPM in every sample and was generally higher in the winter months when the water temperature was lower due to less biological activity.



As expected, air and water temperatures ranged from 2 to 28 Degrees C and remained below the 30 Degree threshold as shown in the figure below. The air temperature was slightly lower than the water temperature on one occasion during the month of February.