New Haven River – 2018 Water Quality Summary

Addison County River Watch Collaborative

Site	Location	Town
NHR2	Muddy Branch confluence	New Haven
NHR6	Sycamore Park	Bristol
NHR9	South St. Bridge	Bristol
NHR11.5	Bartlett's Falls Pool	Bristol

The Addison County River Watch Collaborative has been monitoring water quality in the New Haven River since 1993. For years 2018 through 2021, the number of sampling locations in this watershed has been reduced to two sentinel stations monitored for long-term trends (NHR2 and NHR9) and two popular recreational sites monitored only for *E.coli* and only in the summer months (NHR6 and NHR11.5).

During 2018, sampling occurred on two spring dates (April 4 and May 2) and four summer dates (June 6, July 11, August 1, and September 5). The year was characterized by near-normal precipitation, overall. April and May sampling events took place during high flow conditions resulting from snowmelt and spring rains, based on records from the USGS streamflow gaging station near Brooksville. The June event occurred during moderate-flow, baseflow conditions where river stage was not changing appreciably, and groundwater levels were relatively high following spring rains. The July, August, and September events coincided with low-flow, baseflow conditions, at or below the Low Median Monthly (LMM) flow.

Samples were tested for *E.coli*, total phosphorus, and turbidity. Turbidity testing was suspended after April due to a mid-season request from the LaRosa Volunteer Monitoring program to reduce analytical costs. *E.coli* was tested only on the summer dates and was the only tested parameter at recreational sites, Sycamore Park and Bartlett's Falls.

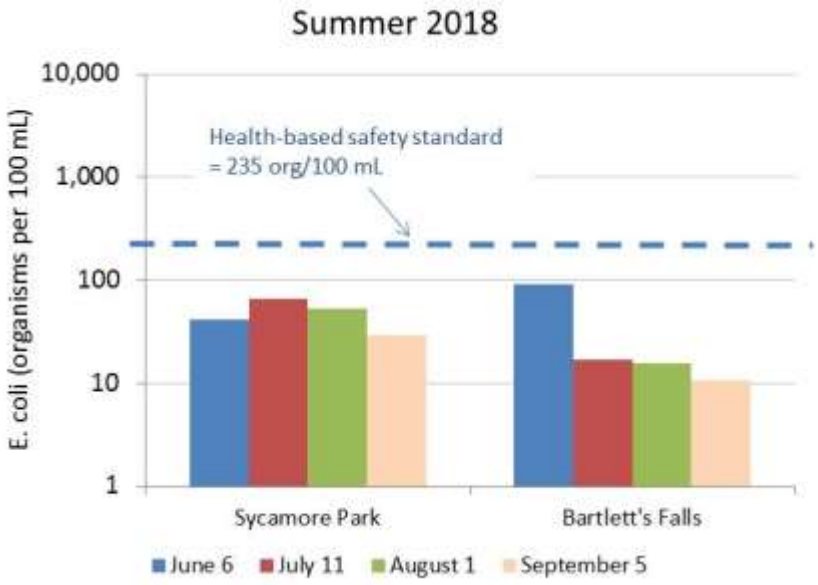

Figure 1. E.coli measured at recreation sites along the New Haven River main stem on four summer dates in 2018.

E.coli counts at the recreational sites ranged from 11 to 91 organisms/ 100 mL. Vermont Department of Health guidance identifies a health-based standard for *E.coli* of 235 organisms/100 mL. *E. coli* counts at

these sites were below this health-based standard on all summer dates (Figure 1). Vermont Water Quality Criteria (October 2016) state that *E.coli* is not to exceed a geometric mean of 126 organisms /100mL obtained over a representative period of 60 days, and no more than 10% of samples should be above 235 organisms/100 mL. The geometric mean of values from each site was well below the geometric mean standard of 126 org/100 mL. Based on historic monitoring of this river, *E.coli* counts can become elevated during high flow conditions following heavy rains or snow melt, and they can also be associated with low-flow conditions and very warm temperatures often encountered in September.

Turbidity levels for the New Haven River sentinel stations, NHR2 and NHR9, were reported at 16 and 1.7 NTUs, respectively, during the April event. The Vermont water quality standard for cold-water fisheries is 10 NTUs. However, this standard is applicable only during dry-weather, baseflow conditions which were not encountered on this sample date. Based on past years' sampling results, turbidity can become elevated at times of increased flow – during a summer thunderstorm, or during spring runoff conditions.

Phosphorus levels at New Haven River sentinel stations ranged from <5 to 69 µg/L. The instream phosphorus criterion of 27 µg/L for warm-water medium gradient wadeable stream ecotypes in Class B waters is applicable at LMM flow during the months of June through October. Our July, August and September events took place when flows in the river were below the LMM. The mean phosphorus concentrations for these three summer sampling dates (11 and 6.2 µg/L) were below the instream nutrient standard of 27 µg/L at both sentinel stations (NH2 and NHR9, respectively).

2019: The Addison County River Watch Collaborative will continue to monitor for *E.coli* and total phosphorus at two sentinel stations, NHR2 and NHR9, and for *E.coli* at the two recreational sites, NHR11.5 and NHR6, on the New Haven River in 2019. Look for regular postings of *E.coli* results at kiosks located at Sycamore Park and Eagle Park, and on *Front Porch Forum*.

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