Middlebury River – 2017 Water Quality Summary

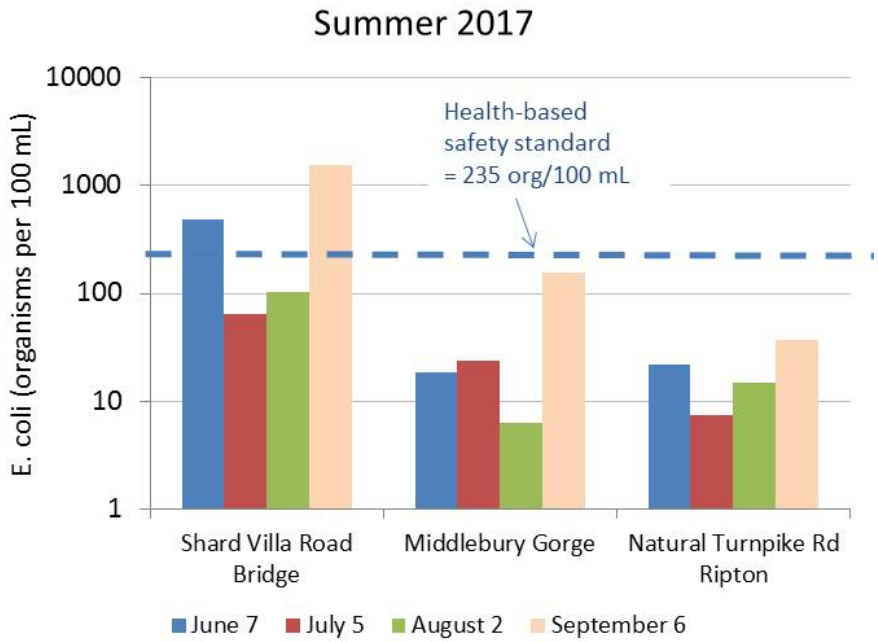
Addison County River Watch Collaborative

Site	Location	Town
MIR1.5	Shard Villa Rd. Bridge	Middlebury
MIR5.7	Midd. Gorge @ Rte 125 Bridge	Middlebury
MIR10.6	Natural Turnpike Road	Ripton

The Addison County River Watch Collaborative has been monitoring water quality in the Middlebury River since 1993. For years 2016 through 2019, the number of sampling locations in this watershed has been reduced to three sentinel stations monitored for long-term trends: MIR1.5, MIR5.7, and MIR10.6.

During 2017, sentinel sampling occurred on two spring dates (April 5 and May 3) and four summer dates (June 7, July 5, August 2, and September 6). The year was characterized by a wetter-than-normal spring and early summer, followed by a drier-than-normal fall. April through July and September sampling events took place during high flows, either actively rising or declining from recent rainfall and runoff, based on streamflow gaging records from the nearby USGS streamflow gage on the New Haven River. The August event occurred during low flows, representative of baseflow conditions (i.e., relatively stable flow stage, not significantly rising or falling in response to a rainfall event).

Samples were tested for *E.coli*, total phosphorus, and turbidity; *E.coli* was tested only on the summer dates.



E.coli counts at Middlebury River sites ranged from 6.3 to 1553 organisms/ 100 mL. 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. Samples obtained from the Shard Villa Road Bridge site contained *E. coli* in excess of the 235 org/100 mL health-based standard during the June and September events. The geometric mean of

values from this site exceeded the geometric mean standard of 126 org/100 mL. At the popular Middlebury Gorge swimming site (MIR5.7), *E.coli* values were below the health-based standard on all sample dates.

Based on previous years' monitoring results that include additional sites, *E.coli* counts show an increasing trend with distance downstream from the Middlebury Gorge. Developed and agricultural land uses dominate the river corridor in this lower end of the Middlebury River.

Turbidity levels in the Middlebury River during 2017 were relatively low, ranging from 0.2 to 42 NTUs. The Vermont state standard of 10 NTUs (for Class B cold-water fisheries) is applicable during dry-weather, baseflow conditions which were relevant to only the August sample date. Detected concentrations were below the standard at all three sentinel sites on this 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 – especially in the lower reaches of the river below the Route 7 bridge. A slight increasing trend in turbidity with distance downstream is generally observed during all flow conditions. Turbidity can occur as a result of high suspended sediments in the water (during moderate to high flows) and as a result of algae during low-flow conditions.

Phosphorus was detected at relatively low levels during the six spring and summer sampling dates of 2017. Concentrations ranged from 7.3 to 133 µg/L. The instream phosphorus criterion of 27 µg/L for warm-water medium gradient (WWMG) wadeable stream ecotypes in Class B waters is applicable at low median monthly flow during June through October. Based on gaging records from the nearby New Haven River, flows in the Middlebury River were slightly above the low median monthly flow on the August sample date only. Total phosphorus concentrations were below the instream phosphorus criterion on this date at each site, ranging from 7.3 to 20 ug/L. Past years' sampling results, which include additional sites, show an increasing trend in phosphorus concentrations with distance downstream from the Middlebury Gorge.

2018: The Addison County River Watch Collaborative will continue to monitor for *E.coli*, total phosphorus and turbidity at these three sentinel sites on the Middlebury River in 2018. An increased number of parameters and additional monitoring sites will be evaluated when a more intensive monitoring focus rotates back to the Middlebury River for a two-year period beginning in the year 2020. Look for regular postings of *E.coli* results at new signposts installed at the Middlebury Gorge and at the parking area off Three Mile Bridge Road.

For more information, contact the Middlebury River sampling coordinator:
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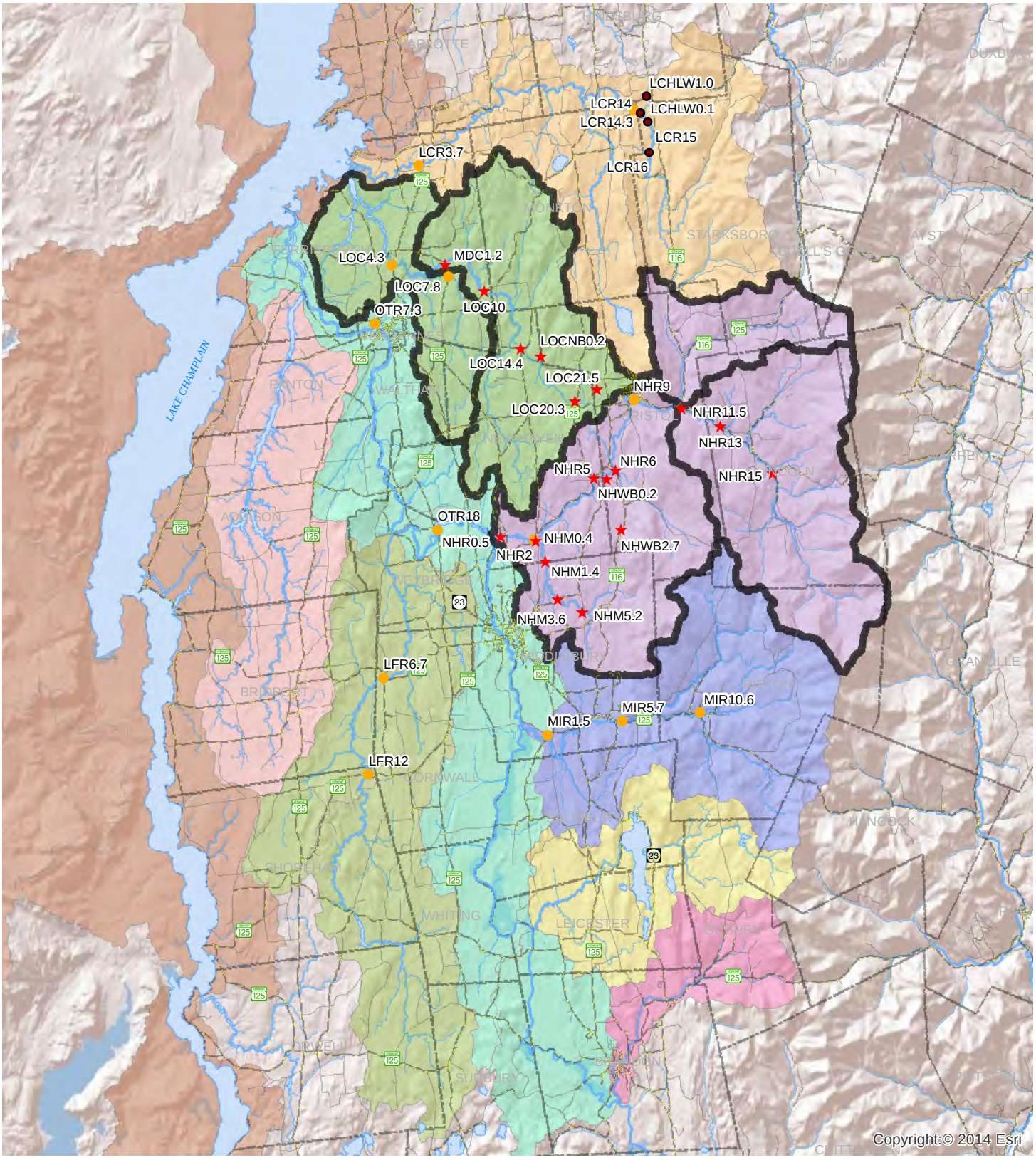
or visit our web page at: www.acrpc.org/acrwc

Addison County River Watch Collaborative

Water Quality Monitoring Sites by Watershed, 2017



★ Rotational Site
● Sentinel Site
● Special Project Site (E.coli monitoring)

Rotational Basins 2017
- Little Otter Creek
- New Haven River

Roads
- Pavement
- Gravel

- Lake Champlain Direct
- Lewis Creek
- Little Otter Creek
- Otter Creek
- New Haven River
- Dead Creek
- Lemon Fair River
- Leicester River
- Middlebury River
- Neshobe River

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Addison County REGIONAL PLANNING COMMISSION

ACRPC 3/2016

The **Addison County River Watch Collaborative** is a citizen organization that monitors and assesses the condition and use of our local rivers over the long term, raises public awareness of the values and functions of our watersheds, and cultivates partnerships that support water quality stewardship.