# Otter Creek – 2017 Water Quality Summary

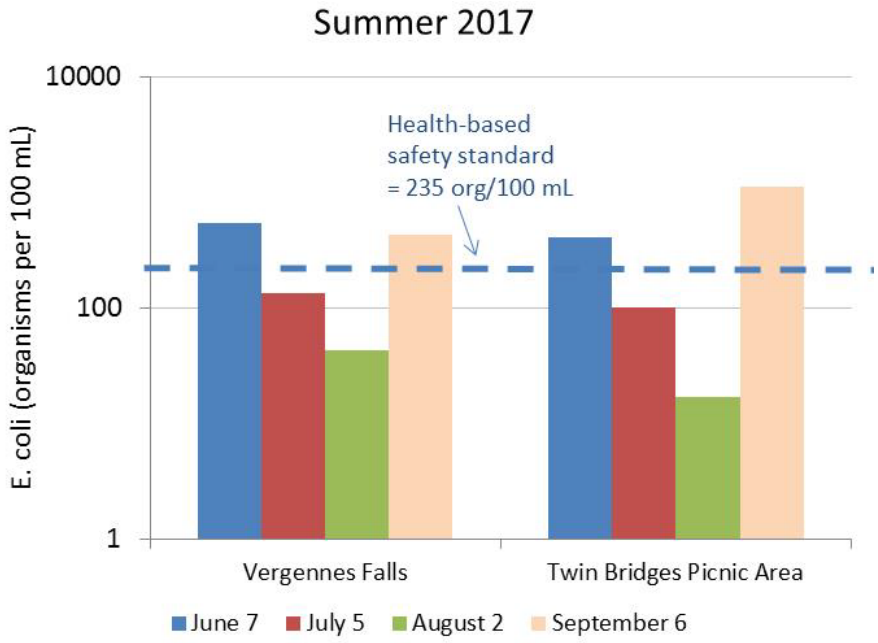
Addison County River Watch Collaborative

| Site | Location | Town |
|---|---|---|
| OTR18 | Twin Bridges Picnic Area | Weybridge |
| OTR7.3 | Vergennes Falls/below outfall | Vergennes |

The Addison County River Watch Collaborative has been monitoring water quality in the lower Otter Creek since 1992. For years 2016 through 2019, the number of sampling locations in this watershed has been reduced to two sentinel stations monitored for long-term trends: OTR18 and OTR7.3.

During 2017, 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, May and July sampling events took place during high flows, either actively rising or declining from recent rainfall and runoff, based on streamflow gaging records from the Otter Creek at Middlebury. The June and September events occurred during moderate-flow conditions, as river stage was rising in response to recent storms. The August sampling date occurred during low flows, with stage slowly declining from recent rainfalls. None of the scheduled sampling events happened to capture 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 sites on the lower Otter Creek ranged from 17 to 1120 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. *E.coli* concentrations exceeded the health-based standard of 235 org/100mL on the

June and September sampling dates at both sentinel stations. The geometric mean of summer sampling results was 222 org/100mL at OTR7.3 and 168 org/100mL at OTR18; both values exceeded the state's geomean standard of 126 organisms/ 100 mL. Otter Creek receives runoff from the Lemon Fair River between stations OTR18 and OTR7.3. *E.coli* concentrations in the Lemon Fair were elevated relative to concentrations in the Otter Creek on the same sample dates. Periodic sewage overflows from Combined Sewer Overflow stations in Rutland may have contributed to elevated *E.coli* levels in the Otter Creek detected on summer sampling dates (https://anrweb.vt.gov/DEC/WWInventory/SewageOverflows.aspx).

**Turbidity** levels at the Otter Creek stations ranged from 3.5 to 46 NTUs for the six spring and summer sample dates. The Vermont state standard of 25 NTUs (for Class B warm-water fisheries) is applicable during baseflow conditions which were not captured during the six sample dates. 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 Otter Creek stations ranged from 27 to 140 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 Otter Creek at Middlebury, flows were above the low median monthly flow on all six sample dates; therefore it would be inappropriate to compare sampling results for high-flow conditions to the instream phosphorus standard. Total phosphorus concentrations were positively correlated to Turbidity levels. Based on past years' monitoring of both dissolved and total phosphorus, the percentage of total phosphorus in the dissolved form decreases as turbidity levels increase during moderate to high flows. This suggests that particulate forms of phosphorus (i.e., sorbed to fine sediments) are predominant during wet-weather, freshet-flow conditions.

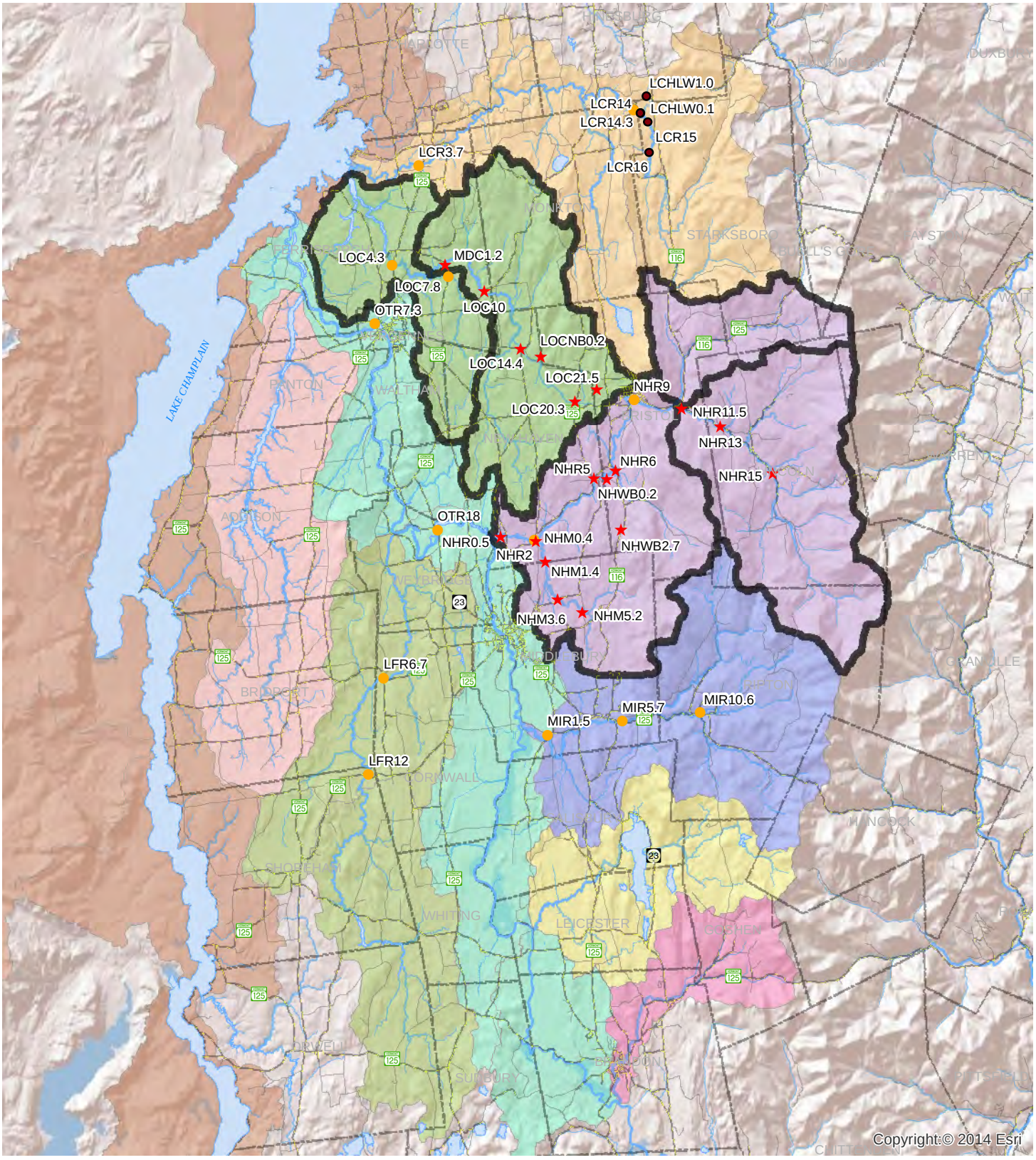
It is possible that sewer releases in Rutland and Vergennes contributed to elevated phosphorus concentrations on April 5 at stations OTR18 (78 ug/L) and OTR7.3 (79 ug/L). In the early days of April, permitted Combined Sewage Overflow stations in Rutland discharged to the East Creek and Otter Creek. In Vergennes, the Wastewater Treatment Facility reported to VT Department of Environmental Conservation on April 6 that the "Macdonough drive pump station was hydraulically overloaded as a result of consistent sustained rain. As a result area homes were spared sewage backing up into basements." Rains occurred from April 4 through April 7, spanning the April 5 sampling event.
https://anrweb.vt.gov/DEC/WWInventory/SewageOverflows.aspx).

**2018**: The Addison County River Watch Collaborative will continue to monitor for *E.coli*, total phosphorus and turbidity at these two sentinel sites on the Otter Creek in 2018. An increased number of parameters and additional monitoring sites will be evaluated when a more intensive monitoring focus rotates back to the Otter Creek for a two-year period beginning in the year 2020.

For more information, the Otter Creek sampling coordinator:
Heidi Willis, 352-4327, redsprings@ myfairpoint.net
Addison County River Watch Collaborative managing director:
Matt Witten, 434-3236, mwitten@gmavt.net
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

Miles 0 2 4 6

N

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.