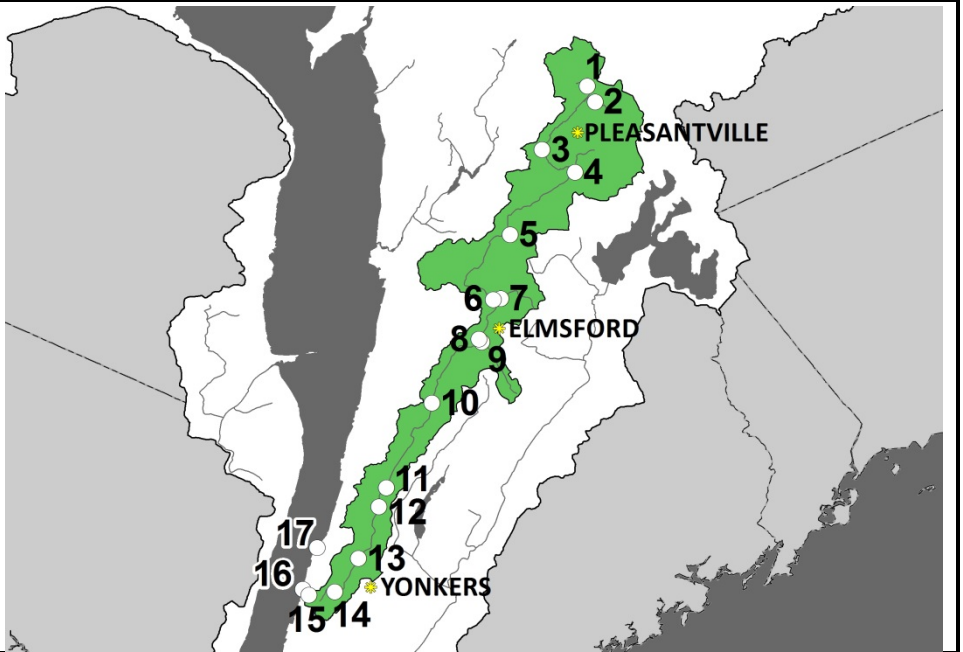




Sarah Lawrence College  
Center for the Urban River at Beczak

## COMMUNITY WATER QUALITY MONITORING RESULTS

**SAW MILL RIVER  
2015-2016**



### OVERVIEW

Riverkeeper and partners have been testing the Hudson River and its tributaries for the fecal-indicator bacteria *Enterococcus* (“Enterococcus”) since 2006. In 2015, Riverkeeper and The Sarah Lawrence Center for the Urban River at Beczak (CURB) began testing the Saw Mill River. The project built on monitoring started in 2011 by the Yonkers Paddling and Rowing Club (YPRC) in partnership with the New York City Water Trail Association and The River Project, which was modeled on Riverkeeper’s ongoing monitoring projects. It also built on a comprehensive study done by Groundwork Hudson Valley from 2008-12.

A total of 323 samples have been collected twice monthly (July-Oct 2015; May-Oct 2016) by YPRC, Saw Mill River Coalition, and local residents, and processed by CURB. Sources of fecal contamination may include sewage infrastructure failures, sewer overflows, inadequate sewage treatment, septic system failures, agricultural runoff, urban runoff, and wildlife. This study is designed to learn about broad trends. The data can help inform choices about recreation, but cannot predict future water quality at any particular time and place. To see all the results visit [riverkeeper.org/water-quality/citizen-data/saw-mill-river](http://riverkeeper.org/water-quality/citizen-data/saw-mill-river).

### WATERSHED SNAPSHOT

*These results are for non-tidal sites only.*

*As measured against the Environmental Protection Agency’s recommended Beach Action Value criterion for safe swimming:*



**89%**  
of Saw Mill River samples failed.

*After rainy weather:*



**95%**  
of Saw Mill River samples failed.

*As measured against the EPA’s recommended geometric mean (a weighted average) criterion for safe swimming:*

EPA GM threshold	Saw Mill River GM
<b>30</b> cells/100 mL	<b>362.6</b> cells/100 mL

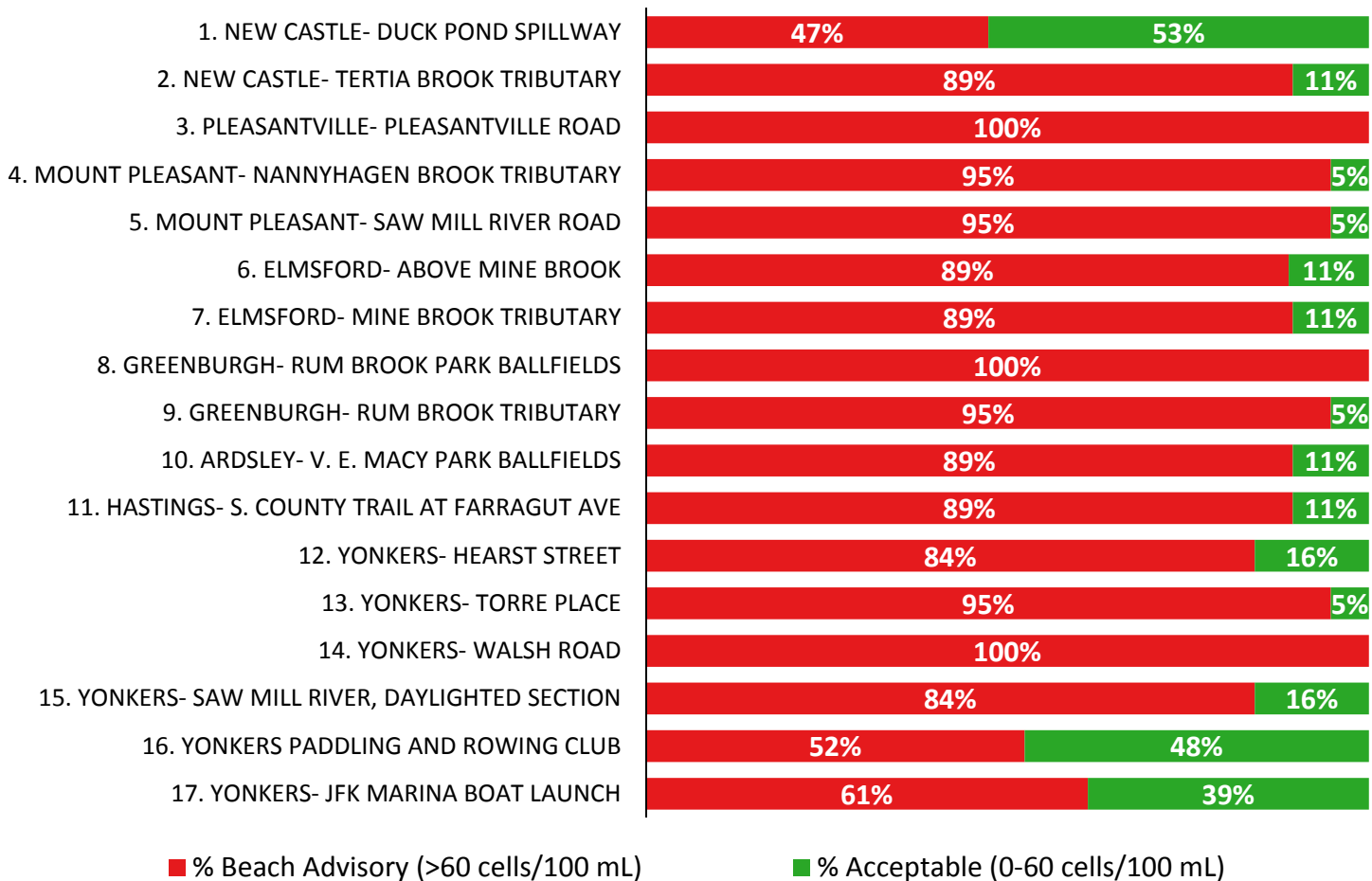
3 Best Sites	3 Worst Sites
<ul style="list-style-type: none"> <li>New Castle- Duck Pond spillway (#1)</li> <li>Ardsley- V.E. Macy Park (#10)</li> <li>Yonkers- Hearst St (#12)</li> </ul>	<ul style="list-style-type: none"> <li>Pleasantville- Pleasantville Rd (#3)</li> <li>Yonkers- Walsh Rd (#14)</li> <li>Greenburgh- Rum Brook tributary (#9)</li> </ul>

DAY-TO-DAY WATER QUALITY

Riverkeeper and CURB assess water quality using the EPA’s science-based 2012 Recreational Water Quality Criteria, which define recommended amounts of Entero per 100 ml of water (“Entero counts”) consistent with “primary contact recreation.” This includes swimming, bathing, water play by children and other activities where ingestion of water or full immersion of the body is likely.

In this figure, the red bar shows the percentage of samples at each sampling site that have exceeded an Entero count of 60, the EPA-recommended Beach Action Value. Above this level, the EPA recommends public notification, and possible temporary beach closure.

PERCENTAGE OF SAW MILL RIVER SAMPLES EXCEEDING EPA’S BEACH ACTION VALUE, 2015-2016



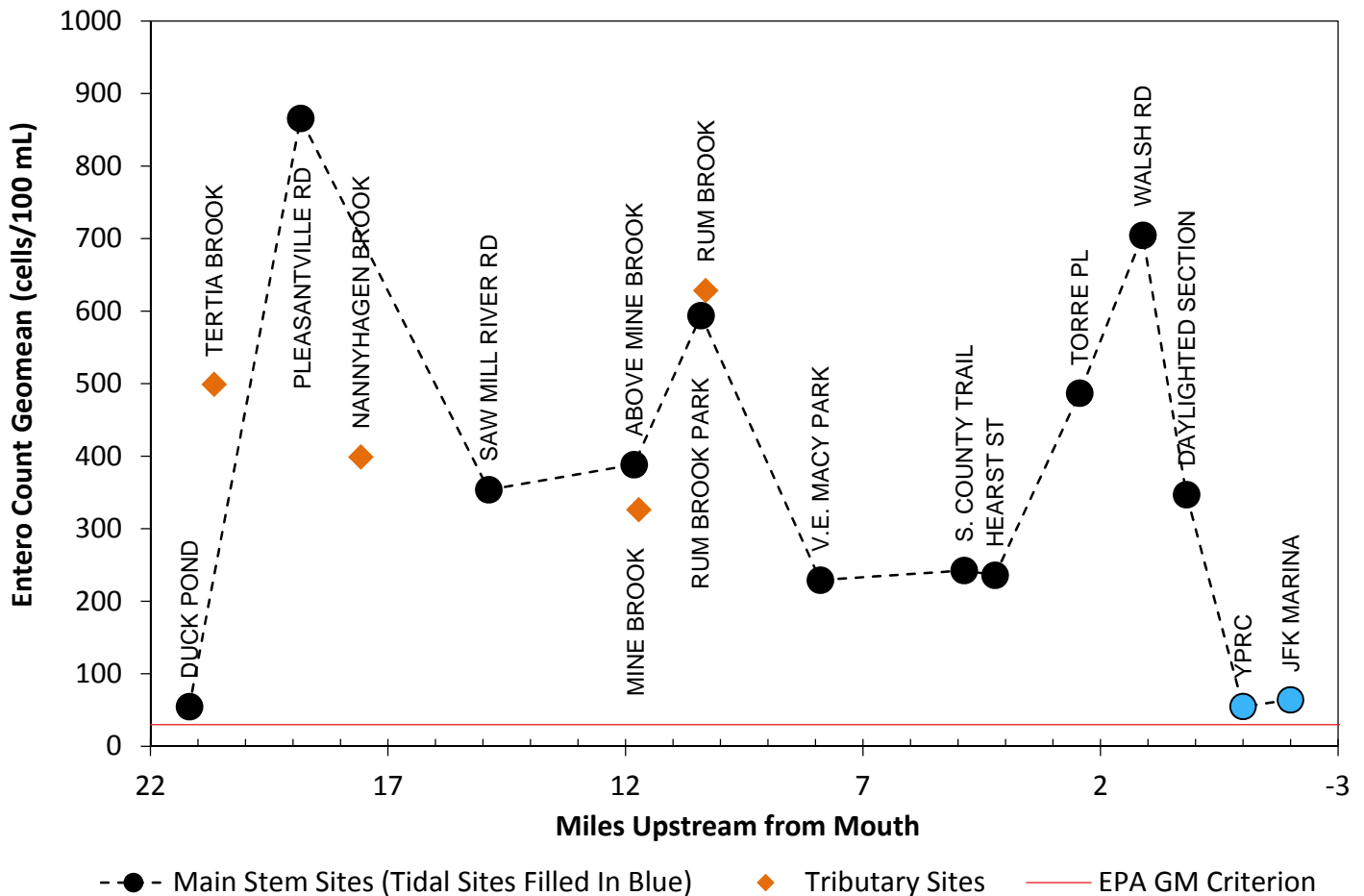
WHAT DO THESE RESULTS MEAN?

*Comparing sample results to the BAV gives information about day-to-day water quality. Nearly all the times we sampled, at nearly all locations, water quality was unsuitable for swimming and other primary contact. The sites near the headwaters of the Saw Mill had better water quality.*

WATER QUALITY OVER TIME

The Geometric Mean (GM) describes the maximum allowable average Enterococci count to protect swimmers' health, as measured over time at any given location. Water at a site with a high GM has a high average level of contamination. To avoid exposure to contamination, the GM, a weighted average, should not exceed 30. EPA recommends weekly sampling. Over time, less frequent sampling should reveal similar information. If a site's GM exceeds 30, steps should be taken to reduce contamination.

GEOMETRIC MEANS AT SAW MILL RIVER SAMPLING LOCATIONS, 2015-2016



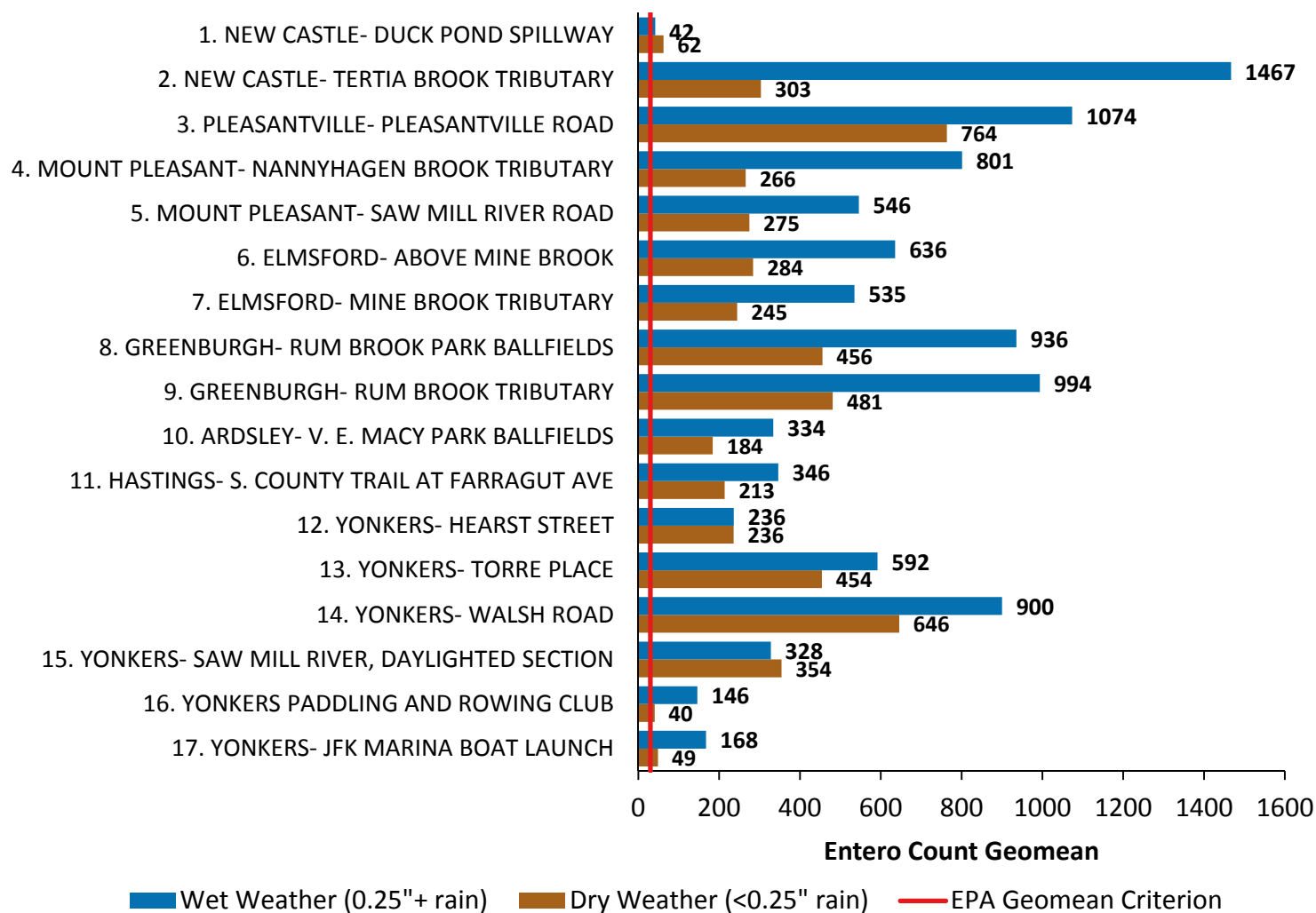
WHAT DO THESE RESULTS MEAN?

The BAV (page 2) shows that contamination very often occurs in the Saw Mill River, and the GM (this figure) gives us more information about the degree of contamination. The average water quality in the Saw Mill River varied from site to site, and it did not reach an acceptable level at any location in the watershed. The average water quality at most Saw Mill River sampling sites was at least ten times greater than EPA's recommended threshold.

## HOW DOES STORMWATER AFFECT WATER QUALITY?

In combined sewer systems, heavy rains trigger releases of untreated sewage directly into waterways. Even in systems where stormwater and wastewater are separated by design, leaks and cross-connections cause stormwater to infiltrate into the wastewater system. The increased flows lead to infrastructure failures during rainy weather. Stormwater runoff from streets, feedlots, farms, and failed septic systems can also deliver fecal contamination to streams. This figure shows Entero GMs after dry (less than 0.25 inches of rain in the 4 days leading up to sampling) and rainy weather (0.25 inches or more).

### GEOMETRIC MEANS IN SAW MILL RIVER DURING WET AND DRY WEATHER, 2015-2016



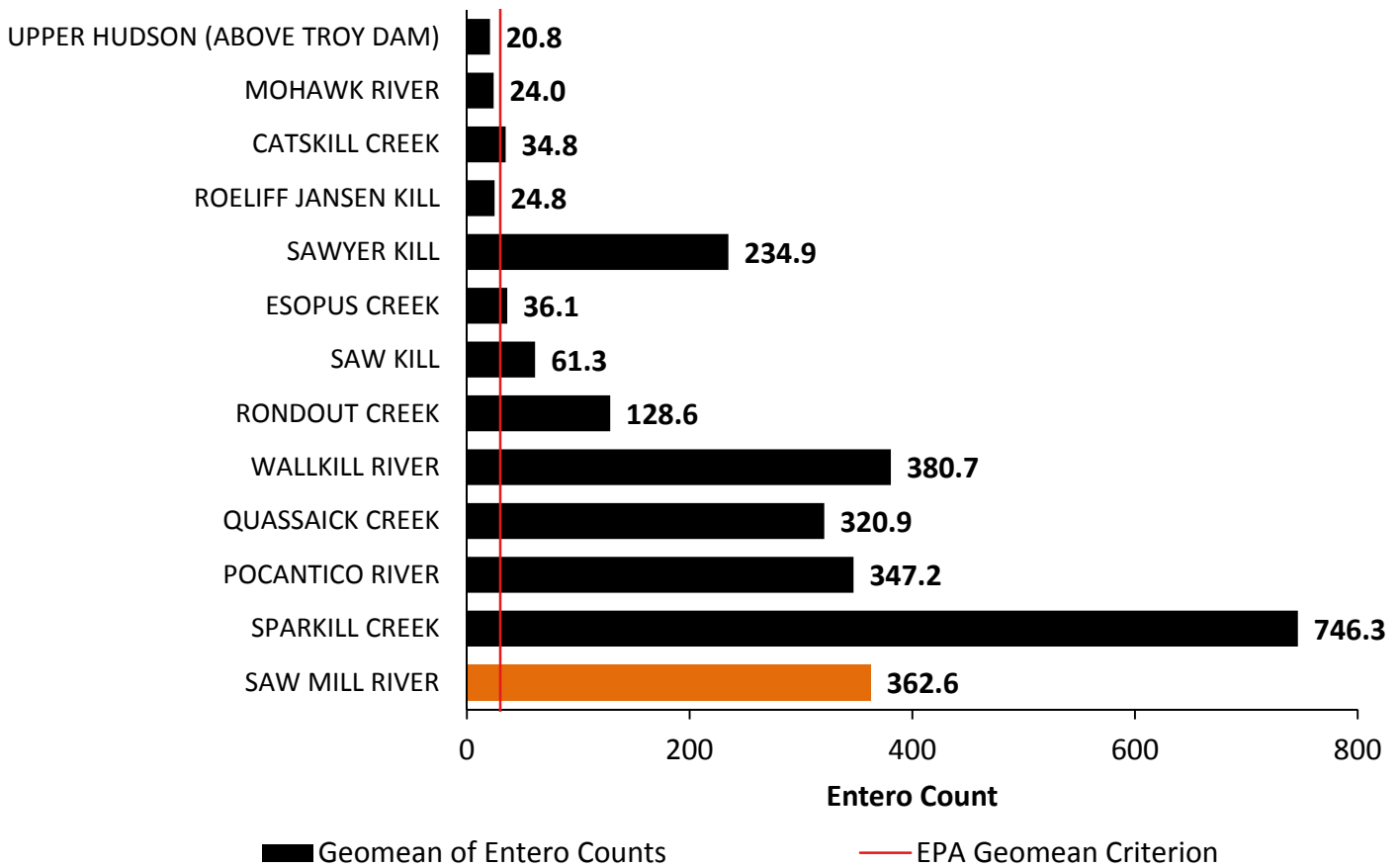
### WHAT DO THESE RESULTS MEAN?

*Entero counts increased at most sites after rain, indicating that storm water runoff is carrying fecal contamination. The increase was more extreme at some sites than at others. Reducing stormwater-related contamination would improve overall water quality, particularly in these areas.*

HOW DOES THE SAW MILL COMPARE WITH OTHER HUDSON TRIBUTARIES?

Overall, our sampling data shows that water quality in tributaries is worse than in the Hudson River Estuary, and that tributaries are contamination sources to the Hudson. Average water quality varies among tributary watersheds. The figure below shows the Geometric Mean (weighted long-term average) of all sample results for all non-tidal sites within each watershed studied to date. Date ranges vary.

GEOMETRIC MEANS OF ALL NON-TIDAL SITES IN ALL TRIBUTARIES SAMPLED, 2010-2016



All samples were processed by Riverkeeper except as follows. Mohawk River and Upper Hudson samples processed by SUNY Cobleskill and Riverkeeper. Roeliff Jansen Kill and Saw Kill samples processed by Bard Water Lab. Quassaick Creek samples processed by EnviroTest. Pocantico River (2016), Sparkill Creek (2016), and Saw Mill River samples processed by The Sarah Lawrence College Center for the Urban River at Bezzak.

**When comparing among all watersheds sampled, the Saw Mill River ranks:**

- 3<sup>rd</sup>** worst in terms of **Overall GM**
- 2<sup>nd</sup>** worst in terms of **Dry Weather GM**
- 6<sup>th</sup>** worst in terms of **Rain Response**

## WHAT DO THESE RESULTS MEAN?

*The Saw Mill River's overall level of contamination (as measured by the weighted average of samples, the GM) is among the worst that Riverkeeper and partners have measured. Contamination frequency and severity is comparable to other densely populated watersheds where we have sampled. Where contamination is present in dry weather, sources should be identified; and overall, actions to reduce stormwater runoff should be a long-term priority.*

## COMMUNITY SCIENCE HAS IMPACT

In 2015, Riverkeeper submitted community monitoring data to the NYS DEC, to ensure that it factored into the state's water quality assessment and regulation. These data will help DEC determine where to target its routine monitoring of diverse water quality parameters, set to take place in the Hudson Valley in 2017-2018.

The community science data also resulted in new listings of fecal contamination in the statewide water quality inventory, and more yet to be released. These listings will give affected municipalities more competitive standing for when applying for federal and state water quality improvement grants. Riverkeeper's data and advocacy contributed to the establishment of the NY Water Grants program, which has allocated \$400 million for community infrastructure grants available since 2015.

## WHAT YOU CAN DO

Riverkeeper and CURB rely on many samplers to collect water samples, but the data is only a starting point. Documenting problems is the first step, but solutions require many people working locally. You can organize stream walks, test water flowing from outfalls, contact those responsible for our infrastructure and land use, and spread the word. Reach out to your local municipality, or work with your CAC/ECC or watershed group. We have resources to support you, but we need your help!

## NEXT STEPS

In 2016, Riverkeeper executed or supported 16 sampling projects, in addition to our longstanding Hudson River Estuary monitoring. With our organizational partners, we sampled from Lake Tear of the Clouds to NY Harbor. In addition to Entero, we and our partners measured wastewater tracers; micropollutants; nutrients; and dissolved oxygen. In 2017, our network will monitor water quality in additional streams, and collaborate with researchers and regulators on several Entero source tracking projects. This work is made possible by funders including the NYS Environmental Protection Fund through the Hudson River Estuary Program of NYSDEC, and in the Saw Mill, the Westchester Community Foundation and EPA Urban Waters Small Grant Program. The EPA grant will also launch a Lower Hudson Urban Rivers Collaborative, to join together the Saw Mill, Bronx River, Pocantico River, and Sparkill Creek communities through collaborative training, sampling, and outreach events.

*For more information visit [www.riverkeeper.org/water-quality/citizen-data](http://www.riverkeeper.org/water-quality/citizen-data)*