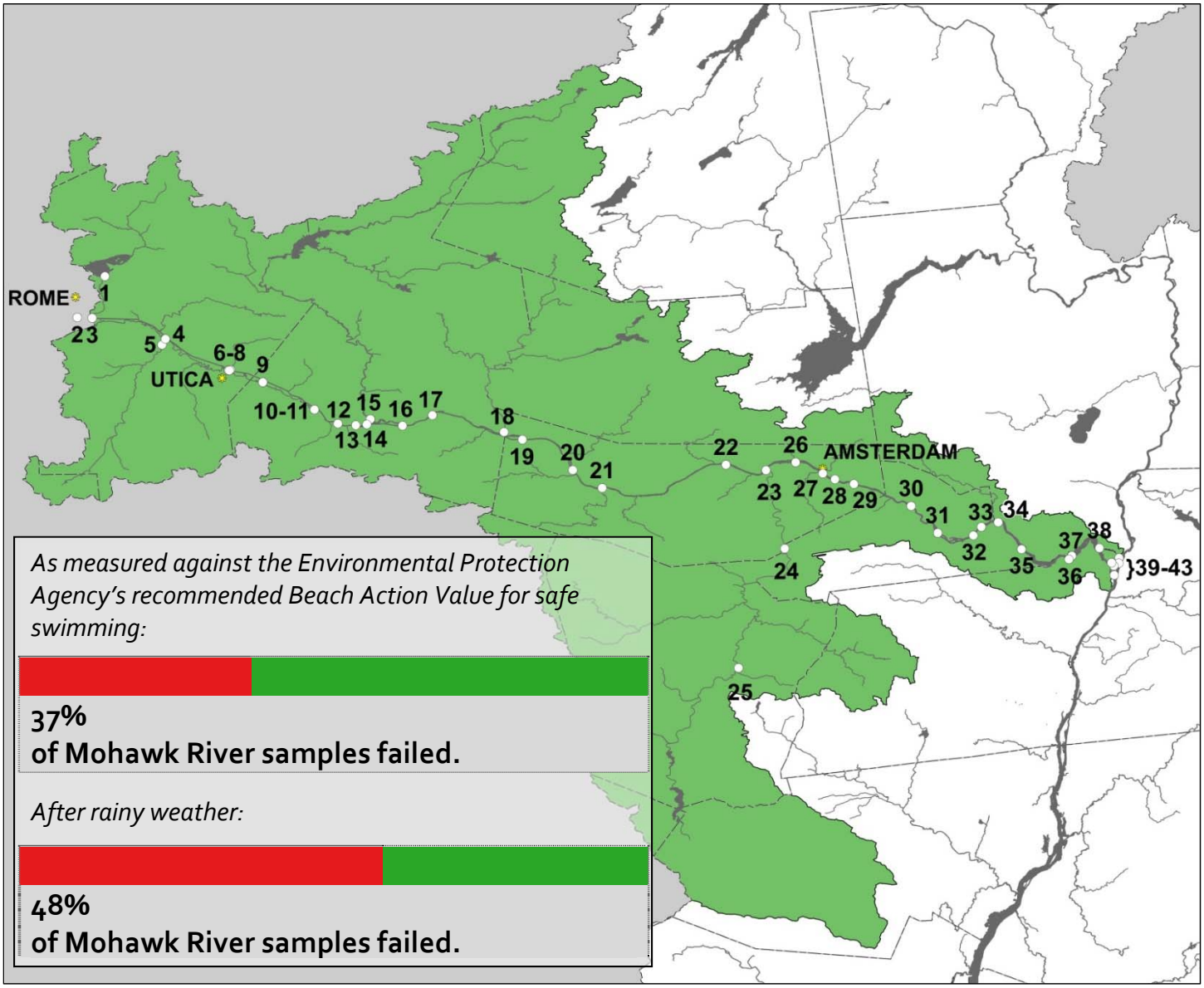
RIVERKEEPER
NY's clean water advocate

COMMUNITY WATER QUALITY MONITORING RESULTS

MOHAWK RIVER
2015-2016



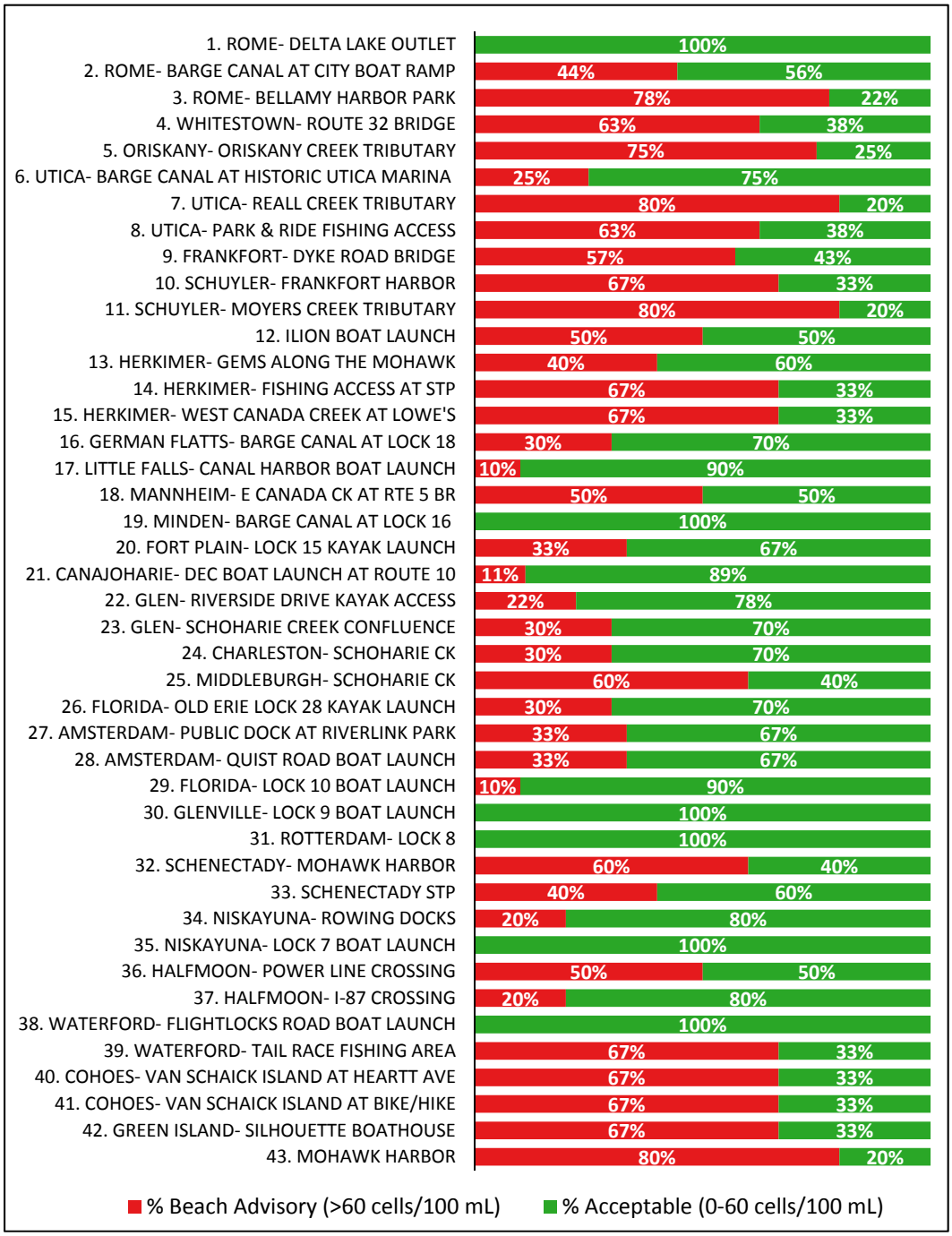
WATERSHED SHAPSHOT

Riverkeeper and SUNY Cobleskill have tested the Mohawk River for the fecal-indicator bacteria *Enterococcus* ("Entero") since 2015. Sources of fecal contamination may include sewage infrastructure failures, sewer overflows, inadequate sewage treatment, septic system failures, agricultural runoff, urban runoff, and wildlife. Samples were collected monthly (May to October) at 43 locations. A total of 336 samples have been analyzed. This water quality monitoring study is designed to learn about broad trends. The data can help inform choices about recreation in the river, but cannot predict future water quality at any particular time and place. To see all the results visit www.riverkeeper.org/water-quality/citizen-data/mohawk-river.

DAY-TO-DAY WATER QUALITY

Riverkeeper assesses water quality using the EPA's science-based 2012 Recreational Water Quality Criteria, which define recommended concentrations of Entero per 100 ml of water ("Entero count") 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.

PERCENTAGE OF MOHAWK RIVER SAMPLES EXCEEDING EPA'S BEACH ACTION VALUE, 2015-2016



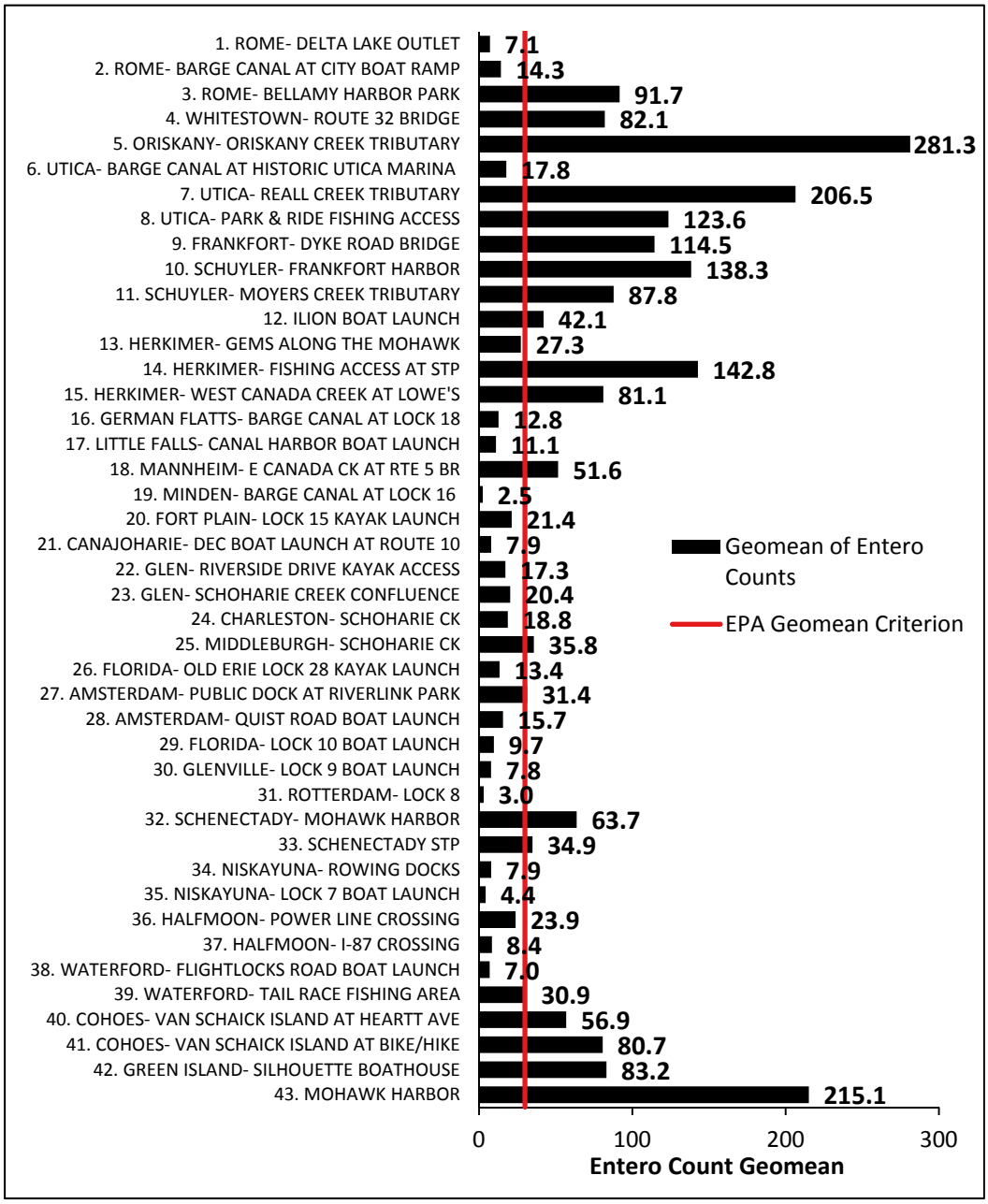
WHAT DO THESE RESULTS MEAN?

Comparing sample results to the BAV gives information about day-to-day water quality. 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. Our Mohawk samples showed that water quality was highly variable from site to site in the Mohawk watershed. From Rome to Herkimer, and at the river's mouth, water quality was unsafe for swimming most of the times we sampled. The reach from Glen to Amsterdam was another area where failures of the EPA threshold were fairly common in our samples.

WATER QUALITY OVER TIME

The Geometric Mean (GM) describes the maximum allowable average Entero 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 chronic contamination, the GM, a weighted average, should not exceed 30. EPA recommends weekly sampling. Over time, monthly sampling should reveal similar information. If a site's GM exceeds 30, steps should be taken to reduce contamination.

GEOMETRIC MEANS AT MOHAWK RIVER SAMPLING LOCATIONS, 2015-2016



WHAT DO THESE RESULTS MEAN?

The GM informs us about the severity of contamination at a particular site. The long-term average water quality at Mohawk River sampling sites followed a pattern similar to the day-to-day water quality, with poor water quality near the upper watershed and the mouth, and much better water quality in between. At some access points, like locks 10, 9 and 7, samples rarely exceeded the BAV (p. 2) and the GMs (this page) were low, meaning that fecal contamination was infrequent and not severe. At other locations, like Ilion, Lock 15, and Riverlink Park, measures must be taken to identify and eliminate contamination sources to reduce risk to people entering the water.

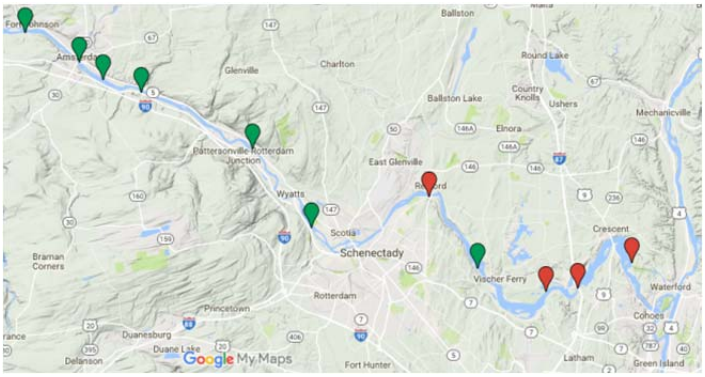
HOW DOES STORMWATER AFFECT WATER QUALITY?

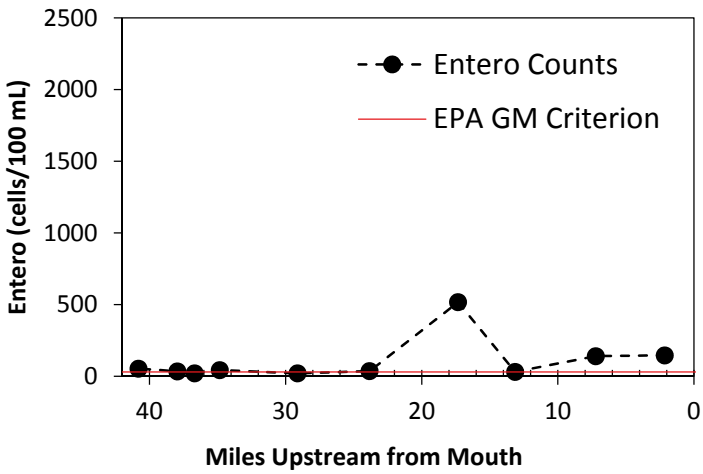
In combined sewer systems, heavy rains trigger releases of untreated sewage directly into waterways. Even in systems where stormwater and wastewater are separated, leaks and cross-connections allow stormwater to enter the wastewater system. The increased flows cause infrastructure failures during heavy rains. Stormwater runoff from streets, feedlots and farms, and areas with failed septic systems can also deliver fecal contamination to streams. The effects of these wet weather inputs can be more widespread, and more severe, than broken sewer pipes.

WHAT'S WORSE FOR WATER QUALITY: A 500,000 GALLON SEWAGE LEAK, OR A RAINSTORM?

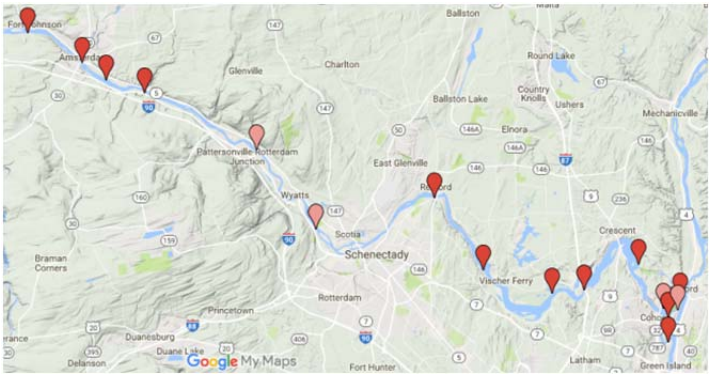
A broken pipe in the City of Amsterdam, reported July 25, spilled 500,000 gallons of raw sewage into the North Chuctanunda Creek. SUNY Cobleskill sampled on July 29, as the leak continued. On July 30 the broken pipe was bypassed and the leak stopped. Over the next three days, 3.3 inches of rain fell in Amsterdam and 3.9 inches in Albany. SUNY Cobleskill sampled again August 2.

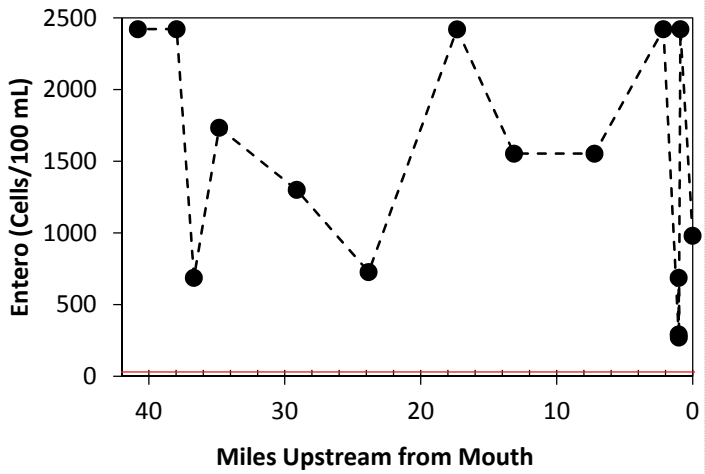
On July 29, 4 of 11 samples taken exceeded the BAV. The GM (weighted average) of those samples was 57 cells/100 mL.





On August 2, all 16 samples taken exceeded the BAV. The GM (weighted average) of those samples was 1180 cells/100 mL.

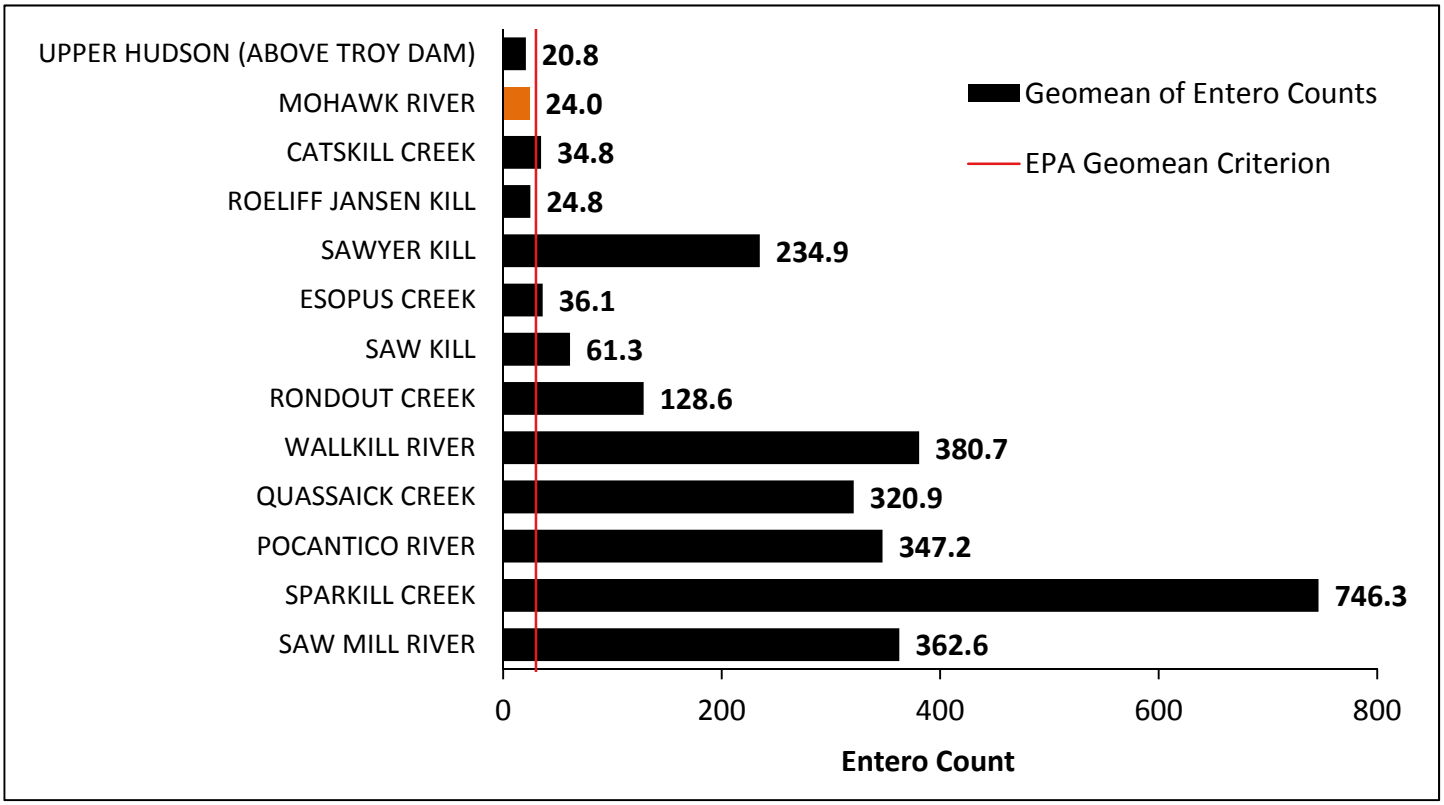




HOW DOES THE MOHAWK COMPARE WITH OTHER HUDSON TRIBUTARIES?

Overall, our sampling data show that water quality in tributaries is worse than in the Hudson River Estuary, making tributaries contamination sources to the Hudson. Average water quality varies among tributaries. 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 Beczak.

When comparing among all watersheds sampled, the Mohawk River ranks:

2nd	best	3rd
best in terms of	in terms of	best in terms of
Overall GM	**Dry Weather GM**	**Rain Response**

WHAT DO THESE RESULTS MEAN?

Based on a relatively small set of samples, the Mohawk River has one of the lowest overall levels of contamination (as measured by the weighted average of samples, the GM) that Riverkeeper and partners have measured. Many sites meet EPA's GM criterion for long-term water quality (see figure on page 3). However, the upper watershed and mouth have markedly poorer water quality. Where contamination is present in dry weather, sources should be identified; and overall, actions to reduce combined sewer overflows and stormwater runoff should be long-term priorities.

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, with more listings yet to be released. These updates will give affected municipalities more competitive standing for when applying for federal and state water quality improvement grants. Our 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's water quality sampling program relies on scores of 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 spread the word. Reach out to your local municipality, or work with your CAC or watershed group. Riverkeeper has resources for support, but we need your help!

NEXT STEPS FOR RIVERKEEPER

In 2016, Riverkeeper sampled or supported 16 tributary and shoreline sampling projects, in addition to our longstanding Hudson River Estuary monitoring project. With our organizational partners, we sampled 411 locations over 795 river miles, from Lake Tear of the Clouds to NY Harbor. In addition to Entero, we and our partners measured experimental wastewater tracers (sucralose and caffeine); micropollutants; and parameters related to wastewater pollution, like nutrients and dissolved oxygen. In 2017, Riverkeeper will continue working with our network to monitor water quality in even more streams, and will collaborate with researchers and regulators on several Entero source tracking projects. This work is made possible by many funders, including the New York State Environmental Protection Fund through the Mohawk River Basin Program of NYSDEC.

For more information visit www.riverkeeper.org/water-quality/citizen-data