



<https://doi.org/10.1002/opfl.1450>

Jerry Koukol is communications specialist at WaterOne ([www.waterone.org](http://www.waterone.org)), Lenexa, Kan.

# Source Water Protection

## Kansas Water Partnership Tackles Harmful Algal Blooms

Harmful algal blooms have become an increasing concern in Milford Lake, which supplies drinking water for one-third of Kansas' population. Stakeholders worked with agricultural producers to enact conservation practices to drive long-term improvements in the watershed's health and the lake's water quality. **BY JERRY KOUKOL**

**W**ITH ITS blue skies, golden wheat, and intense sunsets, Kansas is full of vibrant color. The bright green water? Not so great.

On a hot August day on the shores of Milford Lake in north central Kansas, the waves lapping at the sand are a deep emerald hue. A closer look reveals oily film; foamy drifts; and a pungent, foul smell. The nutrient-rich water at this end of the lake is saturated with blue-green

algae, which blooms explosively in Kansas' hot summer conditions.

Harmful algal blooms (HABs)—and the microcystin toxins they produce—are an annual concern in a reservoir that supplies drinking water for one-third of the state's population. Almost every summer for the past 10 years, HAB events have repeatedly shut down major parts of the lake.

However, thanks to a Regional Conservation Partnership Program (RCPP), increased funding and resources are

available to address water quality concerns. The [Milford Lake Watershed RCPP](#) is the largest effort ever undertaken to implement HAB conservation practices. The project includes \$2.8 million from the [Natural Resources Conservation Service](#) (NRCS) and is supported by a coalition of public and private partners hoping to make a difference in Milford Lake's watershed.

### WIDESPREAD IMPACT

Milford is the largest lake in Kansas, spanning almost 16,000 acres before emptying into the Kansas River. The lake is an important recreational asset for the region and is a popular destination for boating, fishing, and camping. Unfortunately, HABs have a far-reaching, profound impact on these activities. During blooms, the smell can be unbearable. Boating becomes hazardous, as watercraft can atomize microcystin and cause serious respiratory issues. HABs can kill wildlife, and fish caught in proximity to the blooms are unsafe to eat. Visitors with pets have to practice extreme vigilance, as toxic algae is often fatal when ingested by dogs and other animals.

Over the years, regional water suppliers have adapted their operations in response to these issues. Water



Enhanced monitoring on the Kansas River gives water utilities advanced warning about toxins originating from reservoirs like Milford Lake.

PHOTOGRAPH: MILFORD WATERSHED RCPP

With harmful algal bloom concerns at Milford Lake growing each year, water providers along the Kansas River recognized the need to address source water quality in a unified collaboration.



utilities partnered with the state to set up enhanced monitoring on the Kansas River, which gives them advanced warning about toxins originating from reservoirs like Milford Lake. The risk that microcystin presents to drinking water systems is taken seriously, and plant operators stand by to take mitigating action when potentially hazardous water is released from these sources and makes its way downstream.

Microcystin is a difficult contaminant to manage in drinking water treatment. In sufficient concentrations, microcystin can cause vomiting, seizures, and respiratory paralysis. Children, dialysis patients, and immunocompromised populations are especially at risk. Boil-water orders can't be used in the event of a contamination incident, as boiling can increase microcystin potency. Utilities throughout the region practice crisis plans for how to respond to potential microcystin drinking water emergencies, including issuing "do not drink/do not use" advisories for all customers. The potential harm to public health is substantial.

With HAB concerns at Milford Lake growing each year, water providers along the Kansas River recognized the need to address source water quality in a unified collaboration.

"It became apparent to us that doing nothing wasn't going to help the problem get better," says Mike Armstrong, general manager of [WaterOne](#), Kansas' largest water utility. "Just dealing with the symptoms isn't a long-term solution. It makes more sense to try to mitigate harmful algal blooms at the source, rather than just putting our resources toward treatment after these contaminants are in the river."

Though the precise causes of Milford Lake's HABs are difficult to conclusively determine, an abundance of phosphorous and nitrogen in the watershed is a primary factor. Milford Lake's 1.25-million-acre watershed is composed almost entirely of land devoted to agricultural production, and any excess nutrients from crop fertilization and livestock operations in the area eventually wash into the creeks and streams feeding the lake. Nutrients

have accumulated in the lake's sediment column for years, storing fuel for future algal blooms to occur.

"There's no point source to this nutrient pollution, so we can't attribute these HABs only to agriculture," says NRCS State Conservationist Karen Woodrich. "But when it comes to water quality, everything leads back to soil health. Keeping soil and nutrients in place in the upland acres is the big-picture strategy to addressing water quality issues in Milford Lake. By equipping agricultural producers with technical knowledge and financial incentives to enact conservation practices on their land, we will see long-term improvements in the health of the watershed and the quality of water that ends up in Milford Lake."

#### PROJECT ORIGINS

The 2018 Farm Bill allowed RCPPs to become stand-alone programs with their own funding. In an RCPP, applicants form partnerships with organizations with common interests and come together to address resource concerns at scale. The

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program leverages US Department of Agriculture funding with a cost-share approach provided by partners who can contribute cash and in-kind support. Through the RCPP, agricultural producers are voluntarily engaged with financial assistance and research-based techniques to improve their operations, resulting in reduced nutrient pollution in Milford Lake's watershed.

At WaterOne, Armstrong first became familiar with the RCPP concept after reading a *Journal AWWA* article (<https://doi.org/10.1002/awwa.1340>) about the Farm Bill while traveling to an out-of-state meeting. By chance, the article's authors, AWWA Energy & Environmental Policy Manager Adam Carpenter and AWWA Executive Director of Governmental Affairs Tracy Meehan, were also at the event. The resulting conversations prompted nominating Milford Lake as a candidate for an RCPP grant, which was approved and signed in late 2018. David White, a former NRCS chief and AWWA consultant, also was instrumental to Milford Lake's application process.

"David had worked closely with drafting the Farm Bill legislation and understood the NRCS criteria for

evaluating RCPP submissions," Armstrong says. "His advice was to recruit the most diverse partnership of stakeholders possible to support the project. He was instrumental in helping us put together a strong application."

### A COOPERATIVE APPROACH

The partner-driven approach to conservation made the RCPP format a good fit for Milford Lake. The [Kansas Water Office](#) (KWO), a state agency, partnered with WaterOne and took a leading role in identifying stakeholders that would sponsor the project. Former KWO Director Tracy Streeter helped organize a diverse coalition of more than 30 partners, including multiple water utilities, insurance agencies, agricultural commodity groups, conservation nonprofit organizations, county conservation districts, and lake-based recreation businesses. Together, the partnership contributed an additional \$2.36 million of cash and in-kind support to the RCPP.

"To see water utilities invest in this project was significant," says Streeter. "So often, when it comes to source water quality issues, there tends to be a lot of finger-pointing going on. It's easy for municipalities to ask regulators to

do something about upstream nonpoint pollution, and it's easy for regulators to come back at them and say that it's actually their water treatment technology that needs to be upgraded. The partnership of an RCPP is an acknowledgment that we're all in this together to try to tackle this issue."

According to Armstrong, the RCPP's "more carrot, less stick" approach was a strategic advantage for WaterOne, which is located 150 miles downriver from Milford Lake in the densely populated Kansas City metropolitan area and by necessity takes a careful approach toward the state's shared water resources.

"Addressing source water quality can be challenging for water providers," Armstrong says. "We've watched as regulatory efforts throughout the Midwest to protect source water have wound up in court, with lawsuits and even retaliatory legislation creating a bitter outcome for all parties involved. For us, cooperatively improving source water quality is a more effective way of addressing the problem."

"There's already enough of an urban-rural divide, especially in Kansas," he adds. "We want to find ways to work together with all the stakeholders in the watershed to solve the problem."

## Those involved in the Milford Lake Watershed RCPP are quick to recommend the program to communities seeking to make a difference in their own regional water quality.

### PRODUCERS SIGN ON

In agriculture-heavy Kansas, having the support and buy-in of the farmers, ranchers, and agricultural producers throughout the watershed was an absolute must for the program's success.

"In other areas of the country, there can be large tracts of public land that can be targeted for source water protection activities by working with just one agency or organization," says Matt Unruh, KWO's chief of policy and communications. "That's not the case in Kansas, with around 98% of the land being privately owned. Making a difference in source water protection in Kansas requires positive collaboration with private landowners, many of whom are involved in agriculture in a number of areas. We do this by demonstrating how conservation practice implementation can improve on-farm profitability while also benefiting the surrounding water resources."

Fortunately, there's no daylight between the RCPP's water quality goals and the agricultural community's interests. Producers are ultimately businesspeople looking to strengthen their bottom line. The same techniques that reduce nutrient pollution in the watershed also help keep nutrients on cropland and improve the efficiency of agricultural operations.

"No farmer wants their investment entering the lake through the watershed," says Streeter. "This project is saying that we want to help upstream producers be successful and keep more nutrients on the field where they can use them."

Producers are also natural conservationists, given their expertise and connection to the land. The agricultural community appreciates the integral role it plays in the environment and has a deep understanding of water quality challenges both upstream and downstream.

"Everyone's after the same goal of clean drinking water, no matter where they are in the watershed," says Woodrich. "It's groundbreaking for

everyone to realize that they have to work together to solve this resource concern. Getting people together on a local level to take on problems that impact them on a day-to-day basis is how you get people motivated to take on conservation."

Now in its second year of funding, the RCPP helps amplify existing conservation resources available to producers. To make the biggest impact, RCPP applications are weighted toward agricultural operations in critical spots within the watershed.

"In just the first year of the RCPP, we were able to obligate half of the program's federal financial resources," says Woodrich. "Producers have been signing applications, and we're reviewing practices that would make the most difference. We're currently obligating contracts and moving dollars out the door and into the hands of landowners."

The funding is a meaningful supplement to other resources allotted to producers for source water protection.

"We receive around \$30 million in general funding for the NRCS's [Environmental Quality Incentives Program](#), but that only funds a portion of the folks who come through our doors," says Woodrich. "The Milford RCPP really provides a boost to target critical areas within the watershed. We're able to approve projects affecting Milford Lake almost on the spot, and that's a huge advantage for the goals of the program."

### A MODEL FOR OTHER COMMUNITIES

Those involved in the Milford Lake Watershed RCPP are quick to recommend the program to communities seeking to make a difference in their own regional water quality.

"I would certainly encourage water utilities to take a look at the advantages that RCPPs can provide," says Unruh. "Working collectively through these partnerships is an effective way to leverage resources from all partners involved with technical and financial assistance available through

NRCS. This provides a great framework to utilize the Farm Bill to move the needle for source water protection."

"Leveraging federal dollars is key to this program," says Armstrong. "There are a lot of resources established by the Farm Bill. The matching fund model is an effective way for communities to stretch their dollar and leverage limited local and state resources toward addressing source water issues."

Additionally, RCPPs are long-term endeavors and can become a platform for future conservation efforts.

"The idea is to demonstrate success with the program and then go on to replicate that success," says Streeter. "There's a huge amount of resources in the Farm Bill. If you've got an innovative solution; a strong, diverse coalition of partners; and leadership committed to steering the project, then you have a strong application for an RCPP. If you bring the NRCS in on day one to develop your RCPP, you'll have laid the groundwork for a successful program."

For RCPP partners, the project creates an opportunity for participating organizations to engage with partners they might not otherwise have the chance to network with.

"We're establishing relationships with different stakeholders outside of our community, and it's going to be easier to take on future problems with these relationships," says Armstrong. "We see that as paying dividends for solving problems down the road."

From WaterOne's perspective, the partnership is a way for the water district to proactively address water quality.

"We're beginning to understand that thinking beyond our service area is necessary for demonstrating utility leadership and responsibility," says Armstrong. "Rather than sitting downstream and complaining about our problems, the RCPP is a way to take on a leadership role and work toward a collaborative solution. It goes a long way toward breaking down the us-versus-them mentality that's so easy to fall into." 