



SUBSCRIBER EXCLUSIVE

KILLING THE CHESAPEAKE

This 'dead creek' runs orange with acid mine discharge, poisoning the Susquehanna



acidic discharges.

Mike Argento, York Daily Record

Published 11:10 PM EST Feb. 2, 2021 | **Updated 9:01 AM EST Feb. 10, 2021**

This USA Today Network special report explores solutions to deep threats that flow through New York, Pennsylvania and Maryland as the Susquehanna River feeds the Chesapeake Bay — with life and death.

A Monday morning, cool for the last day of August, found Eric Skrivseth and Eric Rosengrant hiking through a marsh on a game preserve near Houtzdale, a small town in north-central Pennsylvania best known as home of the state's maximum-security penitentiary.

They'd left Skrivseth's pickup parked on a gravel road on the grounds of the Warriors Mark hunt club and began the half-mile or so hike through tall grass and cattails to what is known as MC Fore, the designation for a discharge from a deep mine that closed generations ago.

They were spending this Monday scouting locations to update testing of water quality being led by the Moshannon Watershed Association, a newly formed coalition of conservation and environmental groups seeking to rekindle interest in saving the Moshannon, a creek that is virtually dead from acidic and metallic discharges from long-abandoned coal mines. The data currently available is more than a decade old.

"It's right up here," Rosengrant called out.

Testing mine discharge from the headwaters of the Susquehanna River (1:53)



Eric Skrivseth and Eric Rosengrant test mine discharge in creeks that feed the Susquehanna River.

PAUL KUEHNEL, YORK DAILY RECORD

And there it was. It looked like an open wound in the earth, bleeding orange-red water into the marsh, creating a small stream that flowed toward the Moshannon about four miles downstream from its headwaters.

Skrivseth knelt by the discharge and lowered an instrument into the flow to measure its acidity and the metallic content that dyes the water to the color of tomato soup.

He called out the pH level — 6.3, which is slightly more acidic than milk — and the conductivity, which measures the metallic content.

“That’s pretty good,” Rosengrant said. The property owner had taken steps to treat the water upstream — lining another discharge with limestone and spreading what appeared to be lime on the ground, allowing it to seep into the groundwater and reduce the acidity of the water.

“Some water may look nasty,” Rosengrant said, “but it could be pretty clean.”

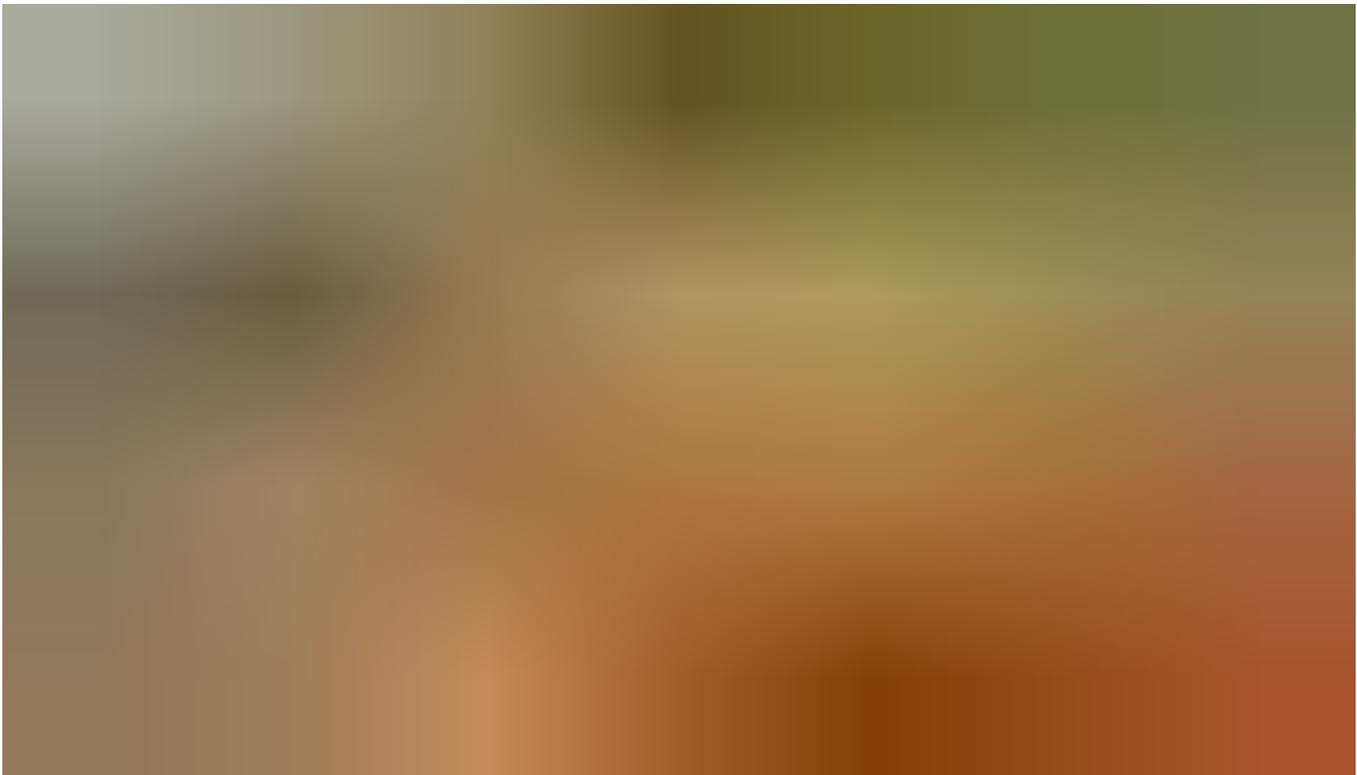
Whatever the owner was doing, he said, “it’s working.”

Advertisement

The Red Moshannon

For all the efforts to restore the Moshannon watershed, it remains, in best terms, compromised, and in worst terms, dead. The Moshannon Creek, from its headwaters 54 miles before its confluence with the West Branch of the Susquehanna, is plagued with the acidic discharges from the mining that led to prosperity in the region that straddles the border between Centre and Clearfield counties.

The creek forms the border between the two counties, flowing through verdant mountains to its terminus at the river. It is known as “the Red Moshannon,” a pejorative for the rust color of the water. (There is also a tributary known as “the Black Moshannon,” which joins the “Red” where state Route 53 crosses the creek and is apparently unaffected by discharges from the now-abandoned coal mines.)



Eric Skrivseth, a retired railroad worker, tests mine discharge as it runs from a reclaimed field on private property in the Moshannon Creek watershed on...

[Show caption](#) ▼

PAUL KUEHNEL, YORK DAILY RECORD

The stream is the site for a canoe and kayak race billed as the Red Moshannon Downriver race, held

It is jarring, seeing the unnaturally red water flowing through a mountainous green valley populated by brilliant forests that have covered the countryside since before the founding of this state and country — a sign of human intervention in a wilderness that previously had been doing just fine on its own.



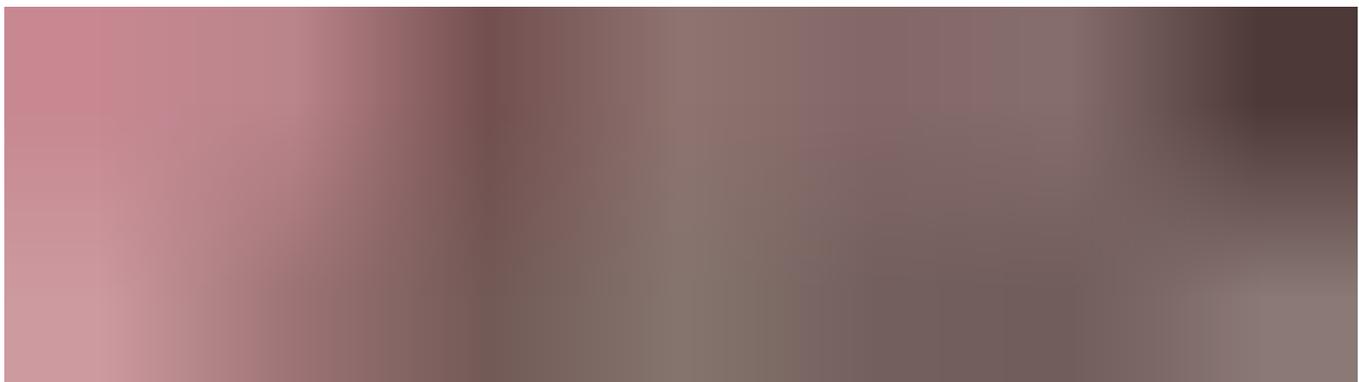
Saving a lake, at some expense

Cold Stream runs through the middle of Philipsburg, a dam creating a small, seven-acre lake on the eastern side of the small town, site of a town park just off Route 322 as you drive into town from State College.

The dam was built in the late 1800s for the logging industry, one of the dominant industries in the region — until coal became king. In the winter, the lake provided the town with ice for ice boxes, before the advent of refrigeration. It was partially rebuilt in 1936, after flooding stressed the integrity of the dam.

It was a popular recreational attraction in the small town on the border of Centre and Clearfield counties, about a half-hour drive northwest of State College and Penn State. The one-acre park included a beach, and many residents have fond memories of swimming there.

Swimming was prohibited in the 1980s as the water quality of the lake dropped, filling with the brackish red water that flowed from long-closed coal mines, a legacy of the times when dozens of mines dotted the countryside around town.





Eric Skrivseth and Eric Rosengrant study a topographical map of streams that were marked in the past as tainted with mine discharge. The red lines...

[Show caption](#) ▼

PAUL KUEHNEL, YORK DAILY RECORD

In 2009, the state Department of Environmental Protection found problems with the dam; its integrity was compromised by years of neglect. The state ordered the town to rebuild it or remove it.

The town spent more than \$2 million rebuilding the dam, a project that was completed in 2017. Part of the project was restoration of what's called a "diversion ditch," a man-made stream cut around the lake in the late 1960s, diverting water from Cold Stream a couple of miles upstream of the dam and returning it just a few yards below the dam's spillway. It was called, back then, Project Scarlift, part of a massive assessment of how mine discharge was affecting the watershed.

It worked. Below the diversion, the stream is clear and trout thrive in the stream, locals said.

But it seems to have been a Band-Aid. The water flowing from the diversion ditch is the color of tomato soup, the legacy of the mining industry that built the town. That water flows a mile and a half downstream to the Moshannon Creek, a tributary to the Susquehanna River and, as the state Department of Environmental Protection found a few years back, one of the main contributors to the poisoning of the west branch of the Susquehanna.

In other words, the diversion saved the lake, but contributes to the death of the river.

Killing the river

When he was growing up near Lock Haven, Geoff Smith said, you could always tell people who weren't from there. You'd see them fishing in the Susquehanna's west branch near town. The locals knew there weren't any fish in that part of the river. That part of the river was dead, killed by acidic mine discharges.

In the past couple of decades, though, the fish have come back, mostly thanks to mitigation efforts to treat the hundreds of mine discharges in the watershed and restore that part of the river as a habitable habitat for fish. Since the late 1990s, Smith said, fish censuses have shown increasing populations of fish.



[View | 14 Photos](#)

Photos: See where mine water discharges into the Susquehanna River

See where mine water discharges into the Susquehanna River near Phillipsburg, Pa.

However, mine discharge is still an issue. A DEP survey of tributaries to the west branch showed that the Moshannon was, by far, the single largest contributor of acidic mine drainage into the river, Rosengrant said.

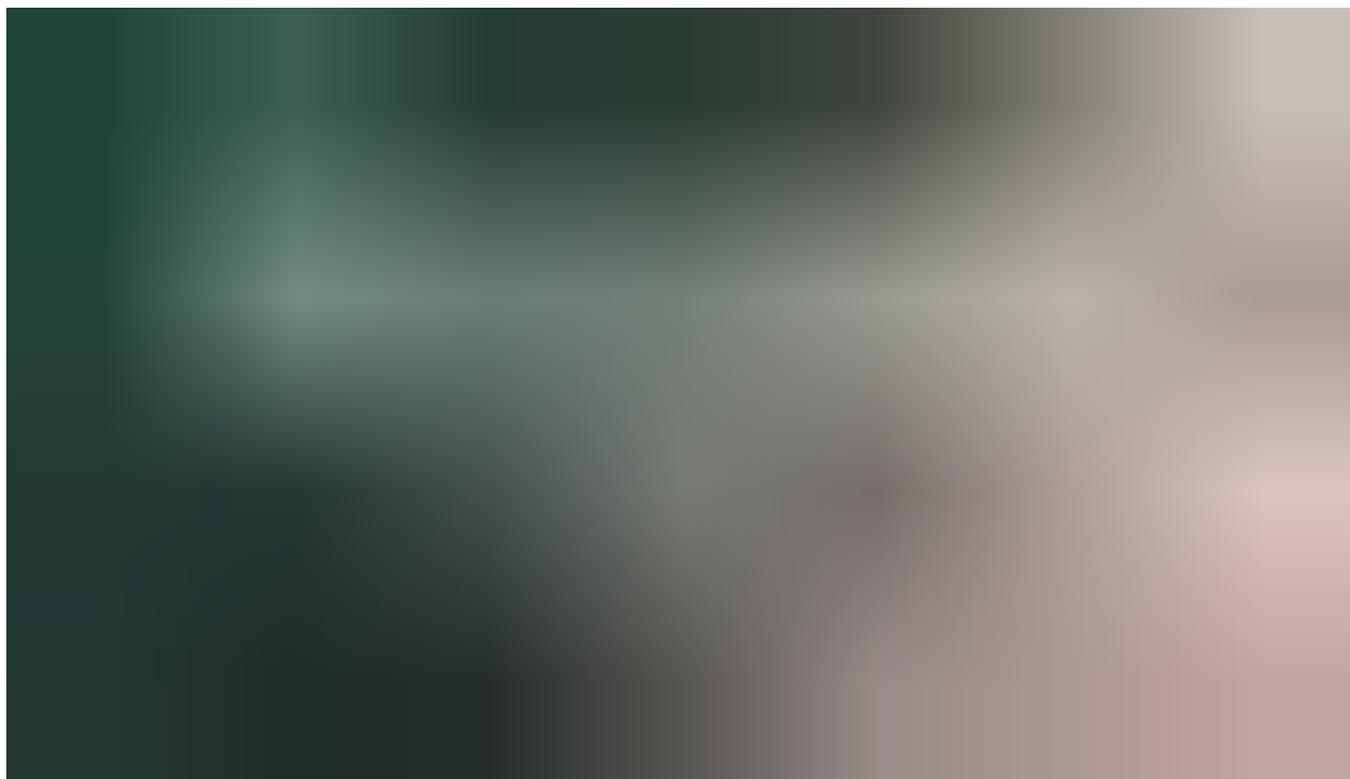
The survey was repeated two years ago, he said, but the results haven't yet been compiled. Usually, completing such a study takes two years, and it was believed the report would come out this year. But, Rosengrant said, it's been delayed because of the COVID pandemic.



When coal was king

Coal mining began shortly after the War of 1812, near Snowshoe at the northern tip of the 274-square-mile Moshannon Creek watershed, and in the middle of the 19th century became a dominant industry in the region. Hundreds of mines — both deep mines and strip mines — popped up, the coal feeding the steel mills in Pittsburgh. Other mines that provided the hard clay that was then formed into high-temperature resistant brick for steel mines also flourished.

When the steel industry declined, so did coal and the mining industry that had built the communities in the region.



A meter that tests pH and conductivity, an indicator of metallic content, and a GPS are tools used to test water and mark exact locations of mine discharge testing.

PAUL KUEHNEL, YORK DAILY RECORD

Many of the mines that had been operating for decades shut down and were abandoned, leaving the

surface mines filled with water, creating man-made lakes, though those bodies of water sustained no life.

Eric Skrivseth wrote a comprehensive plan to evaluate the watershed as part of his master's degree studies in geological information science. In that paper, he wrote that the chemistry is complicated. Iron pyrite dissolved in the water that flows from the old mines reacts with oxygen and water to create sulfuric acid. That acid dissolves metals that exist in the creek beds of the Moshannon watershed to unleash other metals into the creek, including manganese and aluminum. Aluminum is of particular concern since its toxicity to flora and fauna is exponentially greater than other metals. If wildlife and native plants are killed off, the stream, and the river downstream, is unable to filter out toxins that have severe detrimental effects on the health of the watershed.

york daily record

Get news and insights sent to your inbox. Sign up for email newsletters.

Sign up

And it's not just the watershed that's at risk.

"A lot of people get their drinking water from the river and this watershed," Skrivseth said.

It's not just about saving fish, he said. It's about preserving the health of human beings. Fish and aquatic plants are just the canary in the coal mine, so to speak.

In simplistic terms, Skrivseth said, "everything is connected."

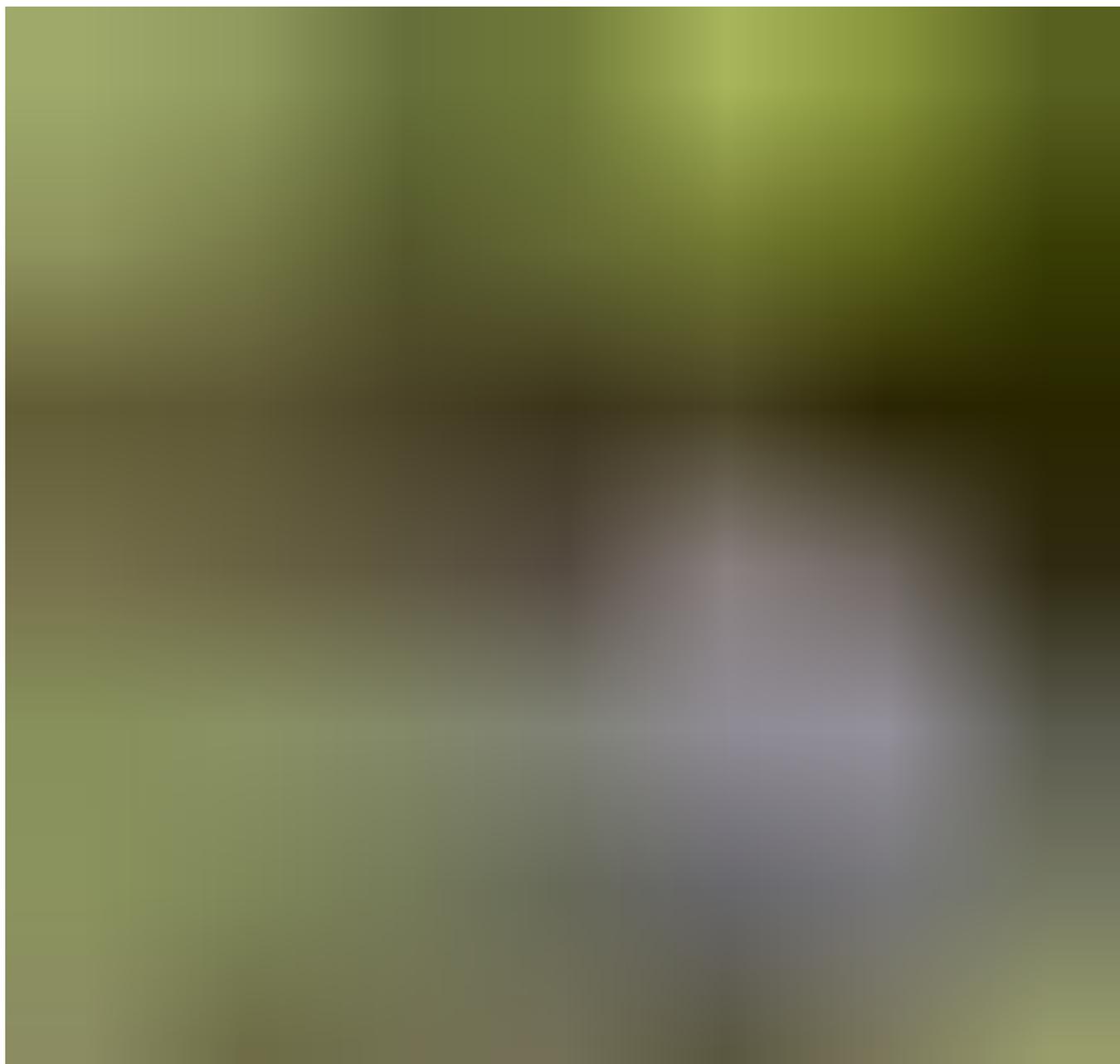
Advertisement



Eric Rosengrant grew up in coal country. He’s originally from Kingston in the Wyoming Valley, near Wilkes-Barre in northeastern Pennsylvania — anthracite country. His family had roots in the coal industry; his grandfather worked in the mines and his father worked his way out of the mines to establish a coal distribution business.

When he growing up in the '70s, he recalled, he’d play in the streams around town — streams flowing with mine drainage crisscrossed the valley — and it didn’t take long for him to wonder, “Why aren’t there any fish in here? Why aren’t there frogs in here? Where did they go?”

He said, “I was 10 years old; I couldn’t understand it.”





Eric Skrivseth, a retired railroad worker, tests mine discharge downstream after it was treated with limestone and holding ponds on August 30, 2020. In this...

[Show caption](#) ▼

PAUL KUEHNEL, YORK DAILY RECORD

He wanted to understand it, and perhaps do something about it, so when he went to college — Penn State — he studied environmental science. When he graduated in 1984, he went to work for the state Department of Environmental Protection, first as a wastewater treatment plant inspector and since 1989 as a water quality specialist working on mine discharges.

Every day, when he'd drive to work, he would cross the Moshannon. "You couldn't miss it," he said. A healthy creek is not the shade of tomato soup. Strangely, the water can sustain some wildlife. "Beavers love it," Rosengrant said. "We have a lot of orange beavers around here."

He helped establish treatment systems at the sources of some of the worst mine drainage. There are two types of systems — a passive one that uses lime beds to neutralize the acid in the water and holding ponds to allow the metals to settle and an active treatment plant, which operates similarly to a sewage treatment plant. Active systems are more expensive and require staff to operate them, he said. Passive systems require periodic maintenance.

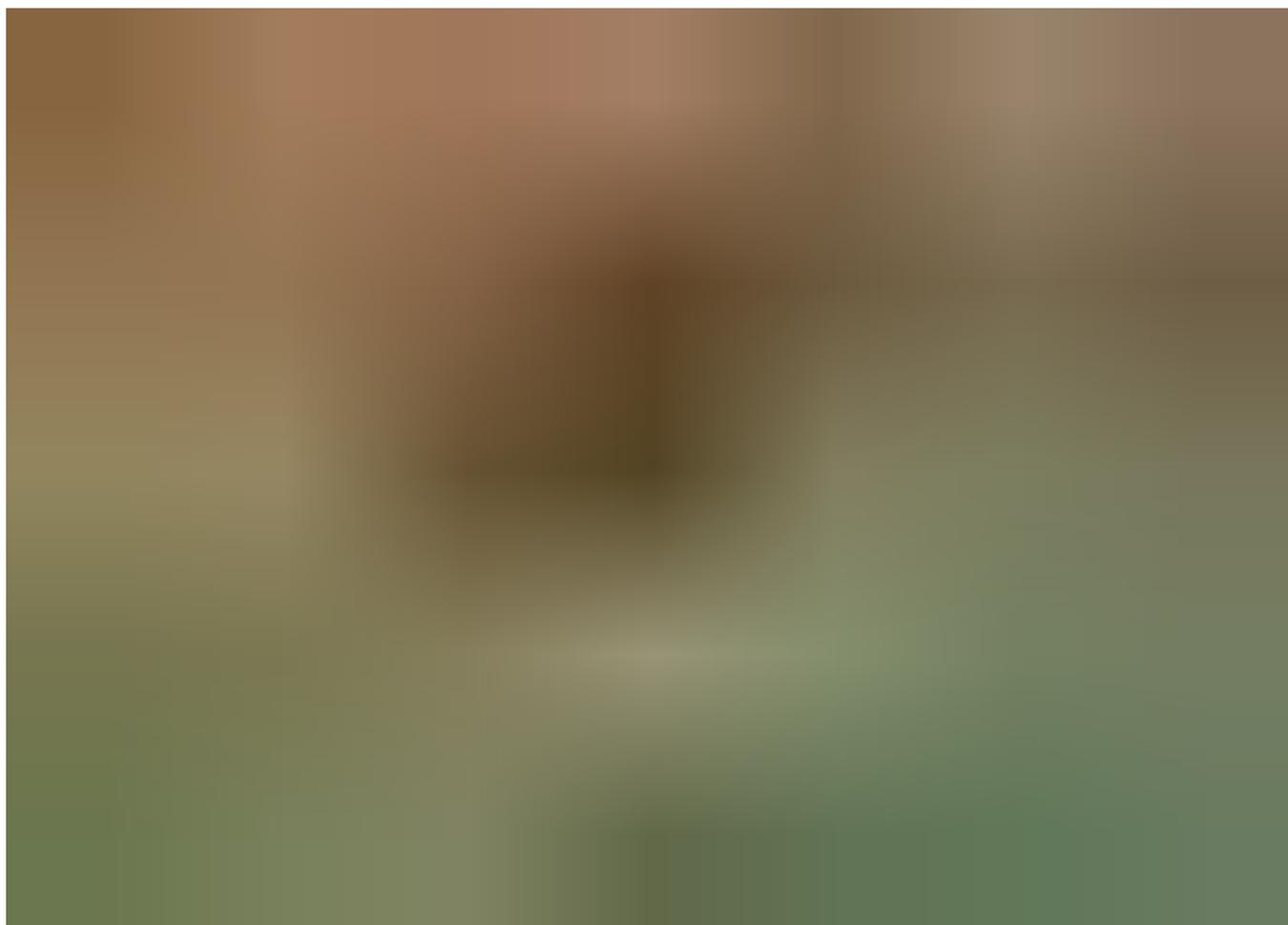
He retired recently and was looking for something to do. And that brought him to the Moshannon Creek Watershed Association.

"All of the streams (affected by mine discharge) have reasons for advocacy," he said. "The Moshannon Creek has never really had that."

There had been previous failed attempts to advocate for the health of the creek. An effort led by a local chapter of Trout Unlimited fell apart, as did the Moshannon Creek Watershed Coalition, in

part of it had to do with clashing personalities, and the inability of the coalition to convince landowners to permit installation of treatment systems. You would think it would be an easy sell, offering a treatment plant gratis that would improve the water quality on their land. But it turned out to be harder than you'd think. "Some landowners didn't want roads built on their property, and others didn't want government inspectors coming onto their property," Skrivseth said. "With others, it just came down to personalities, you know, 'I don't like you.'"

The Moshannon Creek Watershed Association — not to be confused with the watershed coalition — was formed just last fall, bringing together volunteers, the local chapter of Trout Unlimited and environmental scientists. The group has taken over operation and maintenance of six treatment plants in the watershed, some facilities that hadn't been maintained in years.



Wild flowers bloom above a mine discharge diversion trench with its reddish water.

PAUL KUEHNEL, YORK DAILY RECORD

On the grounds of Warriors Mark, Rosengrant and Skrivseth came across a makeshift treatment

the white powder is paper mulch from a paper mill near Tyrone, added to the thin topsoil atop what had formerly been a strip mine to boost the soil and increase vegetation, the owner said. It also has the effect of increasing the alkalinity of the soil, which helps decrease the acidity of the groundwater and mine discharge.)

The discharge flowed into a holding pond, the water still bearing an orange tint, but the pH was improved and less acidic than at the mouth of the discharge.

They wondered where the water went. “Downhill, I suppose,” Rosengrant said, leading a hike through thick forest and marshy undergrowth. Past a copse of trees and undergrowth was a second holding pond. The water appeared clearer and a quick test indicated that it was fairly clean, not as acidic as upstream and containing significantly fewer metallic compounds.

“Whatever this guy is doing is working,” Rosengrant said.

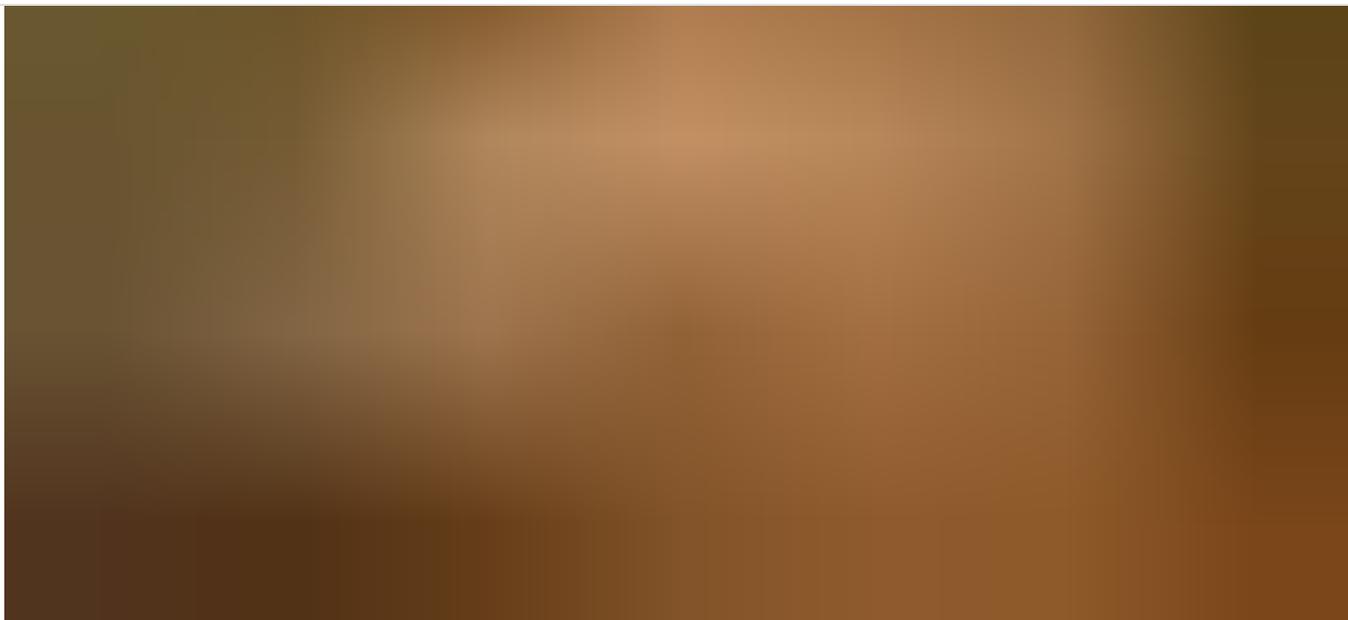


Orange goo

“This guy” is Eric Gilliland.

Gilliland grew up about 20 miles away on a dairy farm in Warriors Mark Township, just west of State College, hunting and fishing. “I always had a love of the outdoors,” he said. It was seemingly genetic. His grandfathers hunted, as did the rest of his family. His grandfather was an outdoors writer for the Pittsburgh Press.

After a stint in the Army, Gilliland went to Penn State, earning a degree in agricultural economics. Upon his graduation, his father told him that if he didn’t want to milk cows the rest of his life, “you need to do something you enjoy doing.”



An old weir that was used to measure the flow rate of a stream from a reclaimed field. Water flow is measured by the rate...

[Show caption](#) ▼

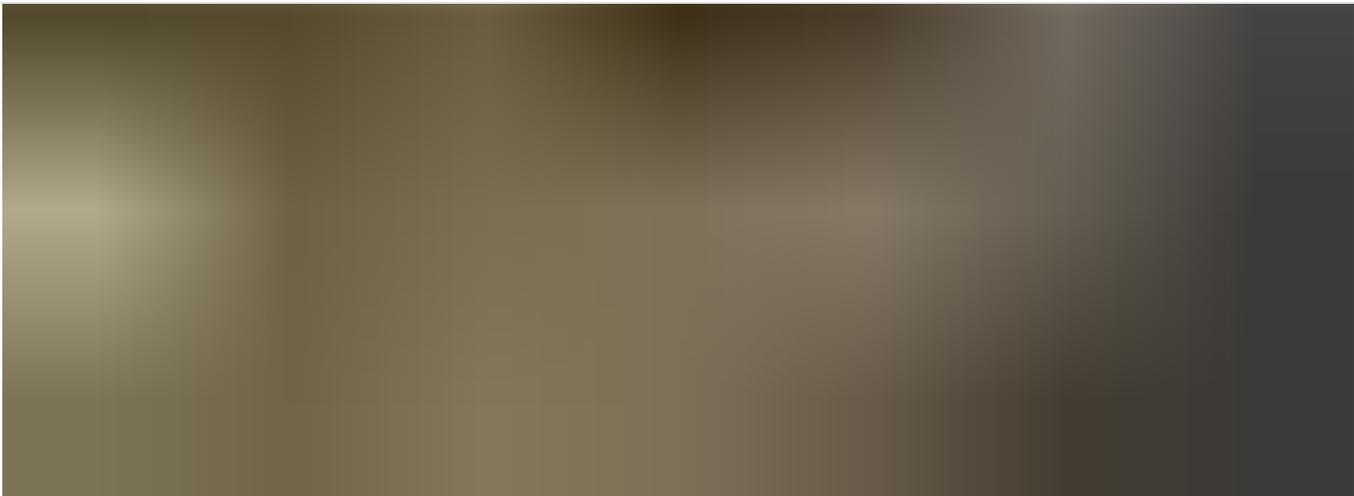
PAUL KUEHNEL, YORK DAILY RECORD

He loved the outdoors and hunting and fishing, so he leased some land from his father and started a hunt club and kennel, breeding and raising hunting dogs. As State College expanded into the countryside, he had to find another location for his club. He found it in 2002 in neighboring Clearfield County, 1,400 acres of wooded, marshy land along the Moshannon Creek. He added another 1,300 acres to the east, in Centre County, his land straddling the creek.

He knew about the mining discharges on the land — about two-thirds of his land in Clearfield County consisted of recovered strip mines — and he set about fixing it. He was familiar with mine drainage in creeks and streams in that part of the state. “When I was a kid,” Gilliland, now 53, said, “there were a lot of streams up here that weren’t very good. A lot of people would say you can’t go fishing up there because the streams were ruined by the mines.” The water, he recalled, was a rusty orange, some streams containing what he described as “orange goo.”

“My thinking was it was bad, but it wasn’t anything that couldn’t be remedied,” he said.





Eric Skrivseth points to a diversionary creek created to bring mine discharge two miles downstream from a recreation area in Philipsburg, Pa. Sept. 30, 2020.

PAUL KUEHNEL, YORK DAILY RECORD

The limestone sluice and one of the holding ponds existed when he bought the land. He built a second holding pond, to allow more iron and other compounds to settle out of the water before it is discharged into a marsh that then flows into the Moshannon. The swamp, he said, filters the water, and by the time it reaches the creek, it is clean.

The stream harbors native trout now, and the insects that the fish feed upon. It has come back to life.

“It’s not only better for our business,” Gilliand said, “but better for everything. It’s better for the fish. It’s better for the ducks. It’s better for people who live downstream. People like to see clean water. And as a matter of aesthetics, it’s not orange.

“If this can be fixed,” and he has demonstrated that it can be, he said, “that would be fantastic.”

Reporter/columnist Mike Argento has been a York Daily Record staffer since 1982. Reach him at 717-771-2046 or at mike@ydr.com.

I hike rails deep into a cold hollow crease of the Kittatinny Ridge

- "Dead Water Deities" written and performed by poet Michael Garrigan



Listen to the full audio

MORE IN THIS SERIES

PA's polluted Susquehanna River is poisoning the bay. What can be done

Read more

Pennsylvania is failing tl Bay — here's how that a

Read more

Advertisement

[Help](#) · [Terms of Service](#) · [Your California Privacy Rights/Privacy Policy](#) · [Privacy Policy](#) ·
[Site Map](#) · [Accessibility](#) · [Our Ethical Principles](#) · **[Cookies Settings](#)**



© Copyright Gannett 2021