FRIENDS OF THE BIG SIOUX RIVER

THE OTTER

Newsletter of Friends of the Big Sioux River Summer 2021

Remedy Brewing's Recipe for a Cleaner Big Sioux River

The connection between brewing a tasty beer and needing quality water to do so is inescapable.

"We get our water through the City of Sioux Falls," said Matt Hastad, CEO and co-founder of Remedy Brewing in Sioux Falls. "I get a daily water report from the city, and we closely watch water quality data."

Remedy's water comes from the Big Sioux aquifer, and it is pumped through a well field north of Sioux Falls and into the city's treatment system. Nearly half of Sioux Falls' population receives its domestic water from this same source. There is now a study investigating the river's relationship to this valuable underground resource. Scientists suspect the relationship is intimate and that the river plays a significant role in recharging the aquifer. The study will also help determine how swiftly pollution in the river migrates into the aquifer. That is a topic that concerns Hastad.

Last spring, Friends of the Big Sioux River (FBSR) formed a friendly partnership with Hastad and Remedy to produce a limited batch of what they titled Big Sioux Brew as part of an effort to raise awareness about the need to address pollution issues in the Big Sioux River. FBSR titled and designed the label for the new brew. The water used to create the special beer came directly from the river, near the 26th Street canoe launch in Sioux Falls, and was purified via Reverse Osmosis technology. After a widespread river shoreline clean-up on a Saturday morning, Remedy hosted FBSR volunteers to enjoy the beer named in honor of the river.

"We couldn't have been happier at the reaction to Big Sioux Brew," said Hastad. "It was understandable that some folks were surprised we'd do what we did, but it was a good beer. We created 120 gallons, and it sold out in a week."

Hastad originally came to Sioux Falls in 2004 to attend Augustana University. He'd grown up on a grain farm near Madison, Minnesota where his father was a fulltime farmer and his mother worked for state government to monitor and protect water quality in the region's watershed. Those experiences made him sensitive to water issues, particularly water issues related to agriculture. It was during his time at Augustana that Hastad discovered craft beer and home brewing.

Matt Hastad, CEO and co-founder of Remedy Brewing Co.

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Remedy Brewing's Recipe for a Cleaner Big Sioux River *(Continued from page 1)*

Immediately after graduating from Augustana with a business administration degree, he relocated to Russia and Norway for a two-year educational program emphasizing energy and sustainability. Then he began a six-year odyssey of jobs in Minneapolis and Sioux Falls in the banking, health care and service sectors.

"While I was in Minneapolis, my friends and I went to a variety of breweries," Hastad recalled, "and I discovered there were none in Sioux Falls."

Hastad and a couple friends put together a business plan and began pitching investors and lenders to start a brewery. By 2016 they had lined up the necessary capital and Remedy opened its doors on July 21, 2017. By that time three other breweries had started in the city.

Hastad and his partners carefully focused on their products. Business was brisk, and Remedy became a popular destination for socializing and drinking good beer.

As he continues to search for and examine new beer recipes, Hastad pays close attention to the source of Remedy's water. "Obviously, our industry relies on water," he noted. "And brewing not only uses lots of water but it causes pollution. Most craft brewers are very watchful about reducing their carbon footprint. We are constantly trying to reduce waste and become more efficient."

Hastad has strong feelings about Sioux Falls, a community he marvels at and promotes. "Look at how this city works to beautify the Big Sioux River," he exclaimed. "It is a prominent feature of the downtown. There are walkways and sculpture. Throughout the community there are greenways and bike paths. But we haven't fixed the water quality issues yet. That's a tougher subject."

Hastad believes that agricultural practices and land use preferences are major and mostly unaddressed factors influencing water quality in the Big Sioux. Drawing from his background on a farm and from paying attention to the work his mother performed, he suggests that clean water advocates and governments need to engage farmers on their level to find progress. "How can we improve farming practices," he asks. "Farmers don't want to damage the land or water, but many are pursuing practices we might call conventional. Those practices need to improve. Much farm pollution is unregulated, and that's different than the permits followed by municipal utilities and processing plants like Smithfield. That is one big reason we have a degraded river."

Community spirit and pride is exceptional in Sioux Falls, observed Hastad. "We need to bring that spirit to the river," he said. "We know there is a problem. We need to ask: how can we fix that problem? Right now, people say the river is dirty, but the conversation ends there. Farmers and all citizens are part of the same community. We look at each other as neighbors and treat each other well. We must start looking at the river as a neighbor."

River Quiz

Can you identify this Big Sioux River location?

See page 3 for the answer.

Acknowledging A History of Degradation

Robert Kelly Schneiders' principal contributions to the arena of environmental history have been his in-depth investigations and assessments of Missouri River development. In numerous articles, reports and two books he explains the unfortunate reality that development and manipulation of the Missouri has been short-sighted, ecologically catastrophic and unsustainable. On his website, eco IN THE KNOW, Schneiders shifts his attention to the Big Sioux River. It is revealing reading.

Schneiders opens his report with this statement: "What follows is a brief overview of how the Big Sioux went from a clear, biologically-diverse, prairie river to one from the most hydrologically erratic, polluted and ecologically compromised rivers in the United States."

Schneiders continues, "The pre-settlement Big Sioux ran clear from its head to its mouth. The reason for the river's clarity had a lot to do with the vegetation growing across [the river's] drainage basin, especially the prairie grass known as big bluestem."

Much of Schneiders' analysis emphasizes the way land in the Big Sioux watershed has been used, and how changes regarding those uses has impacted tributaries and the main stem of the Big Sioux. He documents those changes with data and focuses on one Iowa country -Sioux County, located between Sioux Falls and Sioux City- to illustrate and underscore the fact that pervasive changes in land use accompanied and significantly contributed to river degradation.

Flooding, especially severe flooding along the Big Sioux, hardly existed before row crop agriculture came to dominate the landscape. But then wetlands were drained, prairie was destroyed, and ever-increasing tracts of land were planted to shallow-rooted, annual crops. Without wetlands absorbing runoff and deep-rooted perennial grasses and forbs holding soils in place, runoff into the river dramatically increased, and at a fast pace, overwhelming tributaries and the main channel with eroded soils. This reduced carrying capacity and mantled the channel's sandy bottom with mud. That led to persistent flooding.

Big Sioux River shoreline near Beresford, SD
Row crop farming across the river basin has dramatically altered many aspects of the Big Sioux River.

Schneiders says that before significant land use changes swept through the river's watershed, the river's shoreline was dotted by beaches and was grassy and gradual. Now the river's shoreline frequently features steep, abrupt cut-banks and sticky, silty deposits at river's edge. The river's altered hydrology has degraded aesthetics, water quality and ecology.

Schneiders' report also describes the checkered history of the U.S. Army Corps of Engineers and the river, including a 1960 plan to channelize the lower Big Sioux, destroying the river's character to address the rising problem of flooding. Local and national outdoor groups and two Iowa governors successfully led the charge opposing the channelization plan. Later, in 1969, the Corps proposed a series of dams across the river, including a massive structure near Flandreau. Early environmentalists helped stop that misguided blueprint.

Schneiders makes no recommendations for fixing the river, but his explanations regarding river problems associated with land use are worth noting as we work to repair the river and transform it into a waterway that reflects public spirit and pride.

River Quiz Answer

In May 1843, the pilot of a Missouri River steamboat named the Omega sought shelter from an approaching thunderstorm. To protect his boat, crew and the passengers on board he steered the vessel into the Big Sioux River and off the open, broader-watered Missouri. A passenger on that boat was John James Audubon, the ornithologist and artist. Audubon penned a description of the Big Sioux: "[We] have entered the mouth of the Big Sioux River, where we are fastened for the night," he wrote. "This is a clear stream and abounds in fish." Pictured is Grape Vine Bend, circa 1900, near where the Omega found sanctuary from violent weather. The boat in the photo is an excursion vessel named the Minnehaha. It was owned and operated by the Sioux City Boat Club and made regular trips on the lower river. Audubon was not the only one to report on the river's clarity during the 1800's and early decades of the 20th century. He was not the only one to comment on large populations of varying fish species, including many species no longer found in the river that are sight-feeders, meaning they relied on clear water to find prey. Those descriptions help us understand the extent of change to the river and its landscape. At and near Grape Vine Bend, until the mid-1920s, Sioux Citians lounged on beaches and swam in the refreshing water of the Big Sioux River. Large pleasure boats like the Minnehaha easily moved on the river's channel.

Information provided by Tom Munson, Sioux City Public Museum, and Robert Kelley Schneiders.
Photo provided by Sioux City Public Museum

[The Big Sioux River is a] "stream of clear, swift-running water meandering across an immense prairie…"

Joseph Nicollet, cartographer and explorer of the USA's Northern Plains region, July 1838

Managing Director's Report

By Travis Entenman

Partnerships are essential to the work we do and are a cornerstone of our organization. It is useful and productive to leverage the resources different organizations possess to protect air, land and water. Partnerships can help develop and advocate for policy, enhance fundraising successes, provide increased land and water protection projects, and grow awareness and education on how all environments are interlinked and affect agriculture, economic development, habitat stability and climate change.

An example of a productive partnership is our relationship with Northern Prairies Land Trust (NPLT). We work with NPLT to advance land and water conservation and to promote a conservation ethic. NPLT is committed to the proposition that private lands can be managed in a way that achieves the goals of private landowners while simultaneously serving the public need to conserve natural resources and sustain rural and agricultural communities. We agree with this philosophy.

Another partnership example: We teamed up with Remedy Brewing in Sioux Falls to brew a special beer for Earth Day using Big Sioux River surface water. We pumped over 300 gallons of surface water to make 120 gallons of clean, drinkable water perfect for brewing a tasty Kolsch. By using beer as the subject, we educated the community on how we were able to brew a beer using surface water and what it took to make the water safe.

The staff, directors, and volunteers of Friends of the Big Sioux River value the partnerships we have established that unite and deploy people from all walks of life in our community, including in government and the private sector who share a stake in the improvement of the Big Sioux River. Community involvement is critical to achieving this vision, and FBSR seeks win-win solutions through strong partnerships and coalitions.

Like us director@friendsofthebigsiouxriver.org

Personnel Update

Mike Scott has resigned from the board of directors after four years of service. Mike's enthusiasm for our cause was evident during Riverfest.

Ross Wright, Sioux Falls, has joined the board of directors. A native of Pierre, Ross also serves as a board member of the Northern Prairies Land Trust and he is a partner with the law firm of Lynn, Jackson, Shultz & Lebrun.

Dan Frasier, Sioux Falls, is the newest member of our board of directors. Dan, a chartered financial analyst (CFA), is the regional managing director at Principal Financial Group in Sioux Falls. A Watertown native, Dan has worked with national conservation organizations, and writes and photographs as a freelancer, specializing in flyfishing.

Farewell, Dana Loseke

The founder and former chairperson of Friends of the Big Sioux River, Dana Loseke, has retired from the board of directors. Dana started the organization in 2015 after volunteer work at Blood Run/Good Earth State Park exposed him to the river's beauty and its pollution issues. A Nebraska native, Dana came to Sioux Falls in 1991. He spent 40 years in the food and dairy processing industry, including serving as general manager of Dean Foods in Sioux Falls. His committed service and leadership has been indispensable to Friends of the Big Sioux River.

Unnatural Data

Wild and Scenic Big Sioux

Created in 1968, the National Wild and Scenic Rivers System preserves stretches of free-flowing rivers possessing outstanding natural, cultural and recreational values. Designation to the system safeguards the character of these rivers, while recognizing the potential for appropriate development. 12,000 miles of rivers are now designated as part of the system. If that seems like a lot, consider this: In the United States there are over 250,000 rivers, totaling about 3,500,000 miles of channel. South Dakota has about 9,500 miles of rivers, and 93 miles -the Missouri River National Recreation River, in the southeast part of the state- have been designated under the national rivers system. An inventory of potential additions to the system is called the Nationwide Rivers Inventory (NRI). This list includes more than 3,200 free-flowing river segments from around the country that retain significant natural or cultural values. A 23-mile segment of the Big Sioux River that stretches from the Dells of the Big Sioux to the I-90 bridge just north of Sioux Falls, is part of this inventory.

The Dells of the Big Sioux River, near Dell Rapids, SD
Photo courtesy of Greg Latza

Water Problems in Des Moines

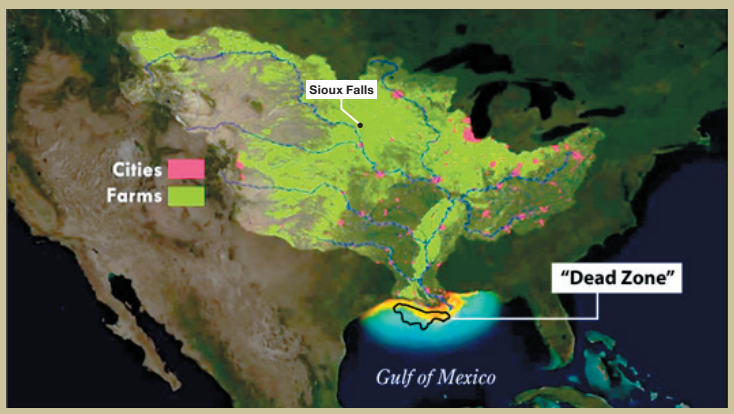
In 2020, Des Moines, Iowa was unable to use the Des Moines River for 110 days to supply citizens with water because large amounts of toxic algae polluted the river. That issue, coupled with high levels of nitrates in the river, has forced Des Moines' water utility to invest many millions of dollars to treat water and find additional sources of potable water. "If you look at the total load of nutrients, if you look at the cyanobacteria blooms in Saylorville Reservoir and the microcystin concentrations at our intake in the last two years, they're shocking," said Ted Corrigan, CEO of Des Moines water utility. According to scientists, blue-green algae fed by fertilizer and manure runoff are the main source of the toxins in Iowa rivers. These foul-smelling toxins can cause skin rashes, intestinal problems, and in severe cases, liver damage. The toxins can quickly kill dogs and other animals that drink the contaminated water.

Parched Places

South Dakota and the Big Sioux basin aren't the only places suffering from drought and remarkably hot weather that is attributed to climate change. Nearly 89 percent of nine western states are in some form of drought. A recent South Dakota report indicated that 94 percent of the state is affected by drought. Ground water levels in the Big Sioux Basin and Skunk Creek Basin north of Sioux Falls are at their lowest levels for this time of year in 17 years of record-keeping. During June 2021, typically a high flow month, Big Sioux discharge into the Missouri River ranged between 950 and 1200 Cubic Feet per Second (CFS). In 2018, the overall annual daily average for discharge into the Missouri River was 5703 CFS.

Hypoxia Update

Pollution from the Big Sioux River and its watershed is carried into the Missouri River and by the Missouri into the Mississippi, before ultimately settling into the Gulf of Mexico. The large quantity of pollution that accumulates from runoff in the Mississippi River basin has created a so-called dead zone, or hypoxia zone, an area of low to no oxygen that can kill fish and other marine life. Scientists predict this summer's dead zone will be approximately 4,880 square miles, a bit smaller than the state of Connecticut. This area is smaller than the five-year-average of 5,400 square miles, though more than double the long-term goal (target is 1,900 square miles) set by the Gulf of Mexico Hypoxia Task Force. According to one hypoxia researcher, "Each year, the forecasts are reported to be bigger or smaller than some long-term average, when in fact the long-term average is not acceptable. Large reductions are called for in the federal-state action plans that have been in place for almost 20 years. Clearly, something different needs to be done in the watershed to actually reduce the nutrient loads and reduce the size of the dead zone."



Sources of nitrates causing a dead zone.
Map created by NOAA

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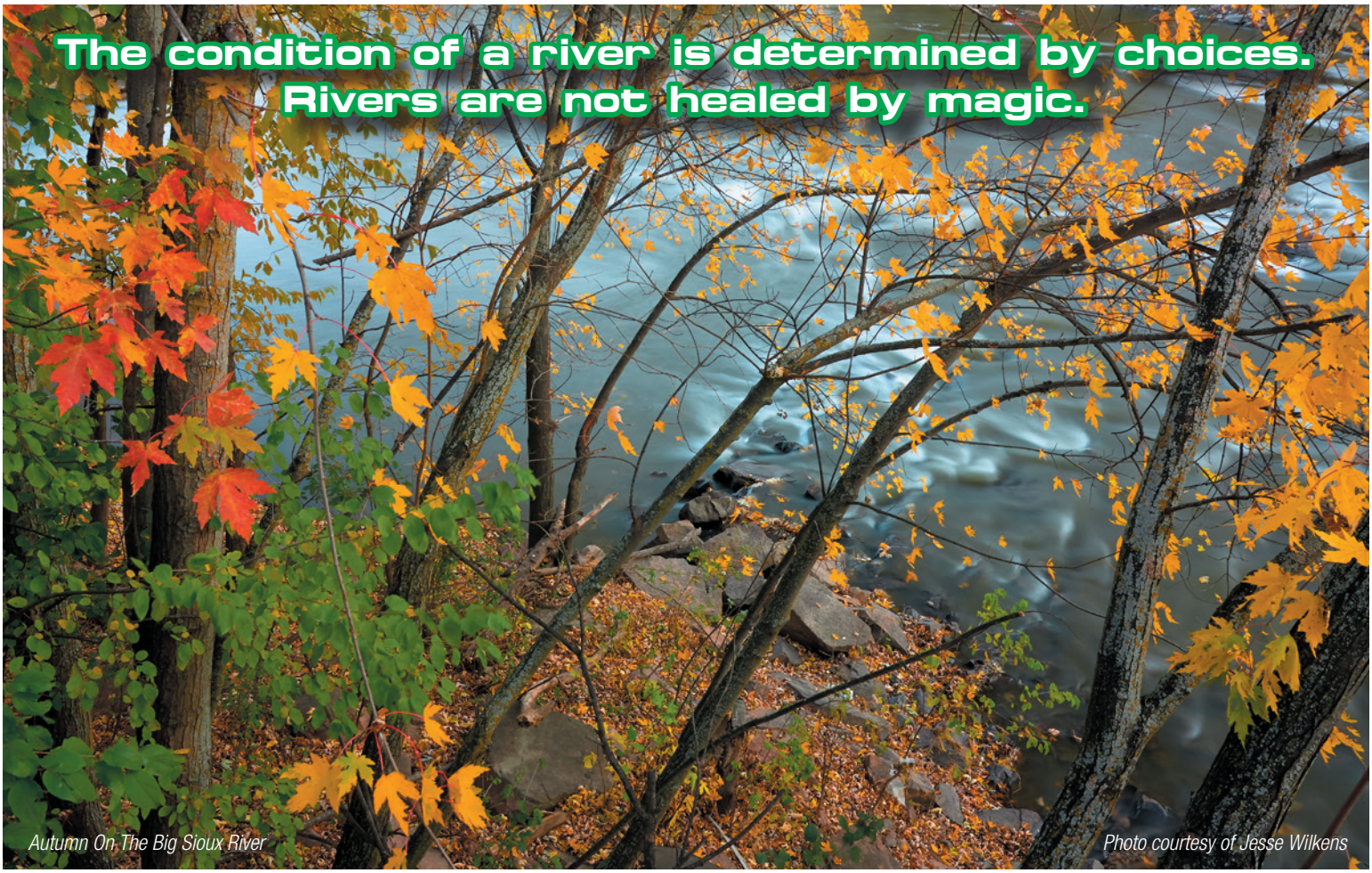

Autumn On The Big Sioux River *Photo courtesy of Jesse Wilkens*

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