


Agropur violates its nitrates pollution permit

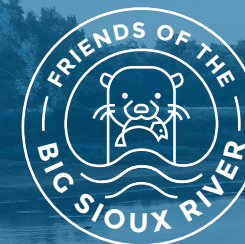
Agropur, the cheese maker with an expanded facility near Lake Norden, was granted a permit by South Dakota's Department of Environment and Natural Resources (DENR) allowing the company to discharge pollution into the Big Sioux River. FBSR and public water suppliers who utilize the Big Sioux River and its associated aquifer for drinking water originally petitioned DENR to enforce a nitrate limit of 10 ppm for Agropur's wastewater discharge permit. Ten ppm is a safety standard for drinking water, and that's twice as high as some research suggests. DENR set a higher limit of 18 ppm (nitrates) for Agropur. It has been revealed that Agropur violated its permit during its first months of operation. This is unacceptable. Agropur's pollution is not the only problematic nitrate discharge on the Big Sioux River. Smithfield Foods and the Sioux Falls wastewater plant are expanding their discharges, and indications are that DENR will issue new discharge permits for each at 50 (nitrates) ppm. Add to these issues the rising nitrate pollution caused by farmers using synthetic fertilizers (nitrates). Challenges facing clean water advocates are mounting. The Big Sioux River does not have an unlimited capacity to assimilate whatever pollution we dump into it. The solution to pollution is not dilution. 



P.O. Box 2341
Sioux Falls, SD 57101

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THE OTTER

Newsletter of Friends of the Big Sioux River Summer, 2019

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Unnatural Data

- Because of climate change, Americans have seen a 20 percent increase in heavy rainfall events during the past fifty years. Floodplains will grow 40 to 45 percent over the next century, putting more people and property in harm's way.
- Forty percent of the world's 11,000 bird species are in decline, and one in eight bird species is now threatened with extinction. When was the last time you heard or saw a meadowlark, formerly a common prairie bird?
- Forty percent of North America's freshwater wildlife species are at risk of extinction.
- The U.S. Geological Survey sampled waterways in 38 states, including South Dakota, and found glyphosate—a pesticide also known as Roundup—in the majority of rivers and streams tested. Glyphosate has been linked to cancer and other serious diseases.
- Nitrate pollution of U.S. drinking water may cause up to 12,594 cases of cancer a year, according to a new study by the Environmental Working Group.
- Lots of rain. Lots. The one year timeframe stretching from May, 2018 to April, 2019 was declared in May, 2019 to be the wettest 12-month period since weather records have been kept in the United States. That record was revised when ongoing data revealed that the wettest 12-month period on record is from July 2018 to June 2019. Wanna bet that this record will continue to roll forward?
- In 2019, the "dead zone" at the mouth of the Mississippi River in the Gulf of Mexico measures some 8,700 square miles, larger than the size of Massachusetts. Nitrogen runoff from farm fields in the Midwest that have been subjected to synthetic fertilizer applications are the primary culprit. This "dead zone" is the largest of numerous dead zones now found in coastal areas of the United States.
- Unfortunately, fertilizer run-off washing down the Mississippi River is likely causing more than a "dead zone" in the Gulf of Mexico. Toxic algae blooms along the gulf's shoreline in Mississippi are prompting record beach closures in that state this summer.

BIG SIOUX RIVER ARCHIVES



Photo courtesy of Sioux City Public Museum

What may be the largest fish ever caught in the Big Sioux River is shown in this photo. Weighing in at an unofficial 102 pounds, this blue catfish was caught in the southern reaches of the river in 1909. South Dakota's largest "official" catfish was also a blue, and it was captured on the Big Sioux River in 2012, near Akron, Iowa. That fish weighed 99 pounds, 4 ounces, and was hooked during a tournament sponsored by the Big Sioux Catfish League. Catfish have long been a valued catch from the Big Sioux, including attracting commercial-minded "fishermen". According to a 1908 newspaper report, several men residing near Akron, Iowa conducted an illegal seining operation on the Big Sioux before local authorities halted their harvest. Law enforcement raided property in rural Akron and seized one net (22 feet by 330 feet). They also discovered a large tank in an outbuilding that was supplied with a flow of freshwater. That tank contained 664 live catfish that had been taken from the Big Sioux. The fish ranged in size from one to ten pounds. As of 2019, South Dakota does not allow seining for game fish in the state's rivers, and Iowa prohibits commercial fishing and net-fishing for catfish on the Big Sioux River.



Big Sioux River, Sioux Falls, SD

Photo courtesy of Marianne Larsen

I have always been a big advocate of tap water-not because I think it harmless but because the idea of purchasing water extracted from some remote watershed and then hauled halfway round the world bothers me. Drinking bottled water relieves people of their concern about ecological threats to the river they live by or to the basins of groundwater they live over. It's the same kind of thinking that leads some to the complacent conclusion that if things on earth get bad enough, well, we'll just blast off to a space station somewhere else.

Sandra Steingraber, Environmental author and activist

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A vital public service Water sampling provided by FBSR

It was mid-June, and rainfall in southeast South Dakota had momentarily subsided. Big Sioux River floodplains were submerged, and flows swelling the river's channel roared relentlessly as they surged through the quartzite cataracts of Falls Park.

Dana Loseke was driving from Sioux Falls to Dell Rapids to take a water sample from the Big Sioux. It was one of a half-dozen stops he would make during the day. Loseke, a retired executive from Dean Foods, is spending his retirement advocating for the environment, especially the Big Sioux River. He serves as chair of Friends of the Big Sioux River, and he's also the organization's chief collector of water samples.

Loseke steered his car to near a former public beach on the Big Sioux in Dell Rapids. Instead of sand, however, he encountered a sticky, muddy shoreline, and he was forced to find the least troublesome access to the river. It soon became clear that water sampling must be meticulously conducted. After collecting river water, Loseke poured it into three separate, small containers. Each sample measures about 200 milliliters. He handled the containers carefully as he attached a pre-prepared label to each one. Then, he placed the containers in a sturdy cooler.

"We sample 15 sites along the river, its tributaries and at several area lakes," Loseke explained. This sampling, he added, is performed weekly at some sites, and bi-weekly at others. Loseke drives a circuit to collect these samples every Monday and Tuesday, from mid-May to mid-September. He volunteers his time to perform this important task, though a recent grant from the Patagonia outdoors company covers most of his transportation costs.

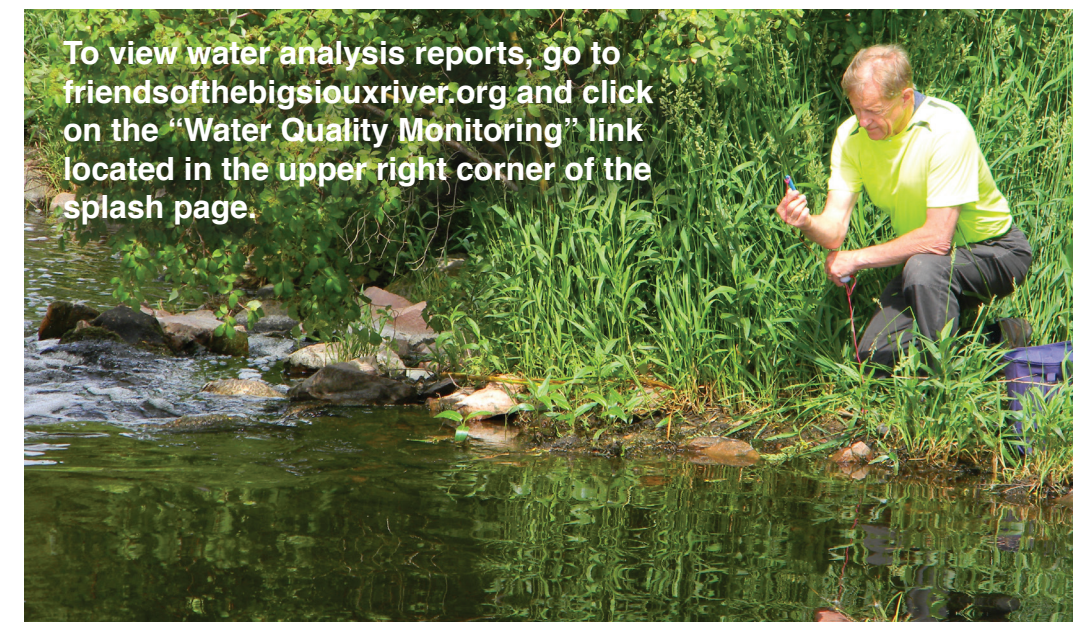
FBSR has undertaken this water sampling project because understanding the contents of river flows is critical to understanding the health of the river. Providing this service has become a centerpiece in the organization's campaign to restore and protect the river's water quality. It must also be pointed out that if FBSR did not devote resources to this project the data that is generated would not exist. Without such foundational information, there would be no way to gauge problems, improvements and needs. Results of water sampling analysis are posted on the organization's website.

FBSR's sampling program measures three critical pollution sources: Nitrates, Total Suspended Solids (TSS) and E. coli. Monitoring these sources helps protect drinking water and other uses.

Common sources of E. coli include wastewater treatment plants, septic systems, animal waste, and storm water runoff from cities and towns. The presence of fecal coliform bacteria in aquatic

(Continued on page 2)

To view water analysis reports, go to friendsofthebigsiouxriver.org and click on the "Water Quality Monitoring" link located in the upper right corner of the splash page.



Dana Loseke, FBSR chair, takes a water sample from the "Dewey Gevik" wetlands and the inlet feeding Wall Lake.

environments indicates that the water has been contaminated with the fecal material of man or other animals.

Another common contaminant is nitrate. A widespread source of nitrate pollution is synthetic nitrogen fertilizers used in row crop agriculture. Nitrates can migrate with the aid of rainfall runoff over or through soil and into surface or underground water. High levels of nitrates in drinking water have been linked to a variety of health issues, including cancer, Parkinson's disease, and Alzheimer's. A safety level for nitrates in water has been established at 10 MG/L (milligrams per liter), but South Dakota standards for wildlife safety are set at a more lenient 50 MG/L, a level that needs to be strengthened. Nitrate pollution also damages the ecological health in a large area of the Gulf of Mexico and in other water bodies where rivers draining farm ground contribute flows.

Loseke views nitrate pollution as a looming major issue on the Big Sioux River. "Based on my sampling and on other research," he explained, "a worrisome trend is the rise in nitrate levels throughout the river's watershed. The rise accompanies increasing use of tile drainage, particularly where those systems outlet directly into waterways. I'm also worried because we're not seeing consequential efforts or initiatives by the City of Sioux Falls, Smithfield Foods or South Dakota's DENR to address this increasingly significant issue."

Total Suspended Solids (TSS), another worrisome contaminant, can include a wide variety of material, such as silt, decaying plant and animal matter, industrial wastes, and sewage. High TSS levels decrease water clarity and can interfere with water chemistry and photosynthesis processes.

After taking samples in Dell Rapids, Loseke drove south, aiming for a site on Skunk Creek, one of the Big Sioux's largest tributaries. A few miles north of Sioux Falls Loseke stopped near a narrow bridge and from the bridge deck lowered a bucket into the stream.

Following the stop at Skunk Creek Loseke headed west to Wall Lake, to collect samples on the western side of this popular, 207-acre lake.

From Wall Lake, Loseke drove to the Sioux Falls airport where the samples he'd collected that day—all of them packed securely inside the cooler—were presented to an air service hauling a variety of freight to state government offices in Pierre. Once in Pierre, the samples would be delivered to the state's lab, where a chemical analysis on each would be performed.

The expense for providing this water monitoring service is considerable. Using volunteers—mostly Loseke—Friends of the Big Sioux River will spend about \$10,000 to monitor 15-18 sites for 15 weeks. These are the expenses related to lab costs.

Loseke explained the overarching value of FBSR's water sampling program. "DENR does not have the personnel to test all the rivers, streams and lakes in the state. The safety of these waters can vary from year to year and even weekly based on rainfall, runoff, and human activity. The more locations sampled and the higher frequency of sampling provides data citizens can use to request corrective actions. Unless citizens call attention to problems and to enforcement of clean water standards, no action will be taken."

In addition to his concerns about rising nitrate levels, Loseke noted two other distressing observations related to water quality and citizen stewardship.

One condition is the amount of trash Loseke sees near bridges and popular fishing spots. "It's disgraceful," he asserted, "to see how much garbage anglers and citizens leave behind."

Another concern relates to wildlife and wildlife habitat. "I've discovered a lack of frogs along lakes and waterways," he explained. "During two years of water sampling I've seen only two leopard frogs." Loseke blames water pollution for the scarcity of these once common reptiles.

To address these and many other water-related problems, including rising nitrate levels, we must make informed decisions about how we use the land that drains into the river and its tributaries. Rural and urban residents need to be mindful about their impacts to the environment, and they must become practitioners of stewardship. Improved, healthier water quality in the Big Sioux begins with baseline information generated by a meaningful water sampling campaign. If that information reveals threats to human and ecological health, appropriate actions must be taken.

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River Quiz

Can you identify this Big Sioux River location?

See page 3 for the answer.



Editor's Pulpit Plastic Bags & The Environment

Lightweight plastic bags lodged in shoreline trees and bushes after high flows on the Big Sioux River and its tributaries reveal a distressing situation. We have a plastics problem, and that problem not only ruins scenery, it poses health threats to living things and to our river.

As many as 100 billion lightweight plastic bags are discarded each year in the United States. Consumers acquire them at the rate of 60,000 bags every 5 seconds.

They have become our most common form of liter. These flimsy bags easily blow about, and are carried by rivers and streams, spreading harm and trouble. Even when delivered to a landfill, they are problematic. They take up to one thousand years to completely degrade, and they have contaminated the food chain.

Microplastics have been found in foods and drinks, in tap water, and in seafood. Researchers have found plastics in human feces.

Creating plastic bags is a worrisome, toxic process. Eight to ten percent of our annual global oil supply is used to manufacture these bags. It requires 22 gallons of water to produce one pound of plastic bags. Bisphenol-A (BPA) is a chemical compound used to manufacture plastic bags. BPA causes a myriad of health problems, and it pollutes water resources.

Consider this poignant excerpt from FBSR's digital (online) newsletter, published in June 2019, and written by FBSR's outreach coordinator, Cheyenne Marco.

"The shores of the Big Sioux River serve as a testament to this sad state of affairs. Emerging with the flora and fauna is a collection of human waste. The receding floodwaters reveal a staggering collection of plastics—cups, bottles, bags, and more. Styrofoam beads and plastic films suffocate the plants and animals we share our world with. Our shorelines, reminiscent of a landfill, provide a snapshot of South Dakotans in the 21st century, highlighting our habits and—perhaps more importantly—our priorities. Our indelible bags and bottles are a tribute to a species who continues to invent solutions to problems we didn't have, to trade the beautiful world we have for a dirty world of convenience. We are a culture of alchemists, conspiring to turn the gold we've been given into ash."

If you spent time along the river in the weeks following last spring's flooding, you know exactly what Dr. Marco is talking about.

The number of animals and birds dying from ingesting plastic is uncountable and immense. Wildlife also become entangled in plastic bags, causing injury or death.

A prominent Sioux Falls recycler announced that it will no longer accept lightweight plastic bags. If you relied on being able to recycle these bags as one reason why you could accept them from local merchants, you have now lost that excuse. Figure out alternative ways to carry what you purchase. Bring your own bags. Use your own hands. Break the plastic bag habit.



Photo courtesy of Michael O'Hara

Employee Profiles

Talented staff bolsters committed volunteers

As Friends of the Big Sioux River grows and our commitment to restore healthy flows to the Big Sioux River intensifies, we understand that we need more than generous volunteers to help our cause.

Although volunteers and members will continue to provide invaluable energy as we pursue our work, the value and contributions of talented employees will dramatically improve our efforts to fulfill our mission. We are fortunate to have attracted exceptional individuals to our organization.



Travis Entenman of Sioux Falls has been hired to serve as the organization's managing director, including overseeing development, fund-raising, membership recruitment and outreach.

Entenman served as a member of our board of directors for two years before accepting this new, important position. We are grateful he has agreed to perform many vital tasks in a part-time capacity. Travis also works in digital marketing at KeyMedia Solutions, in Sioux Falls.

"Friends of the Big Sioux River is an organization dedicated to the betterment of our community by members of that same community, and that is part of what drew me to want to help," Entenman explained. "Being able to dedicate a portion of my time to help clean a vital piece of our environment, the Big Sioux River, gives me immense joy."

Entenman's desire to work with FBSR reflects his feelings about nature. "Nature has been central to my life," he said. "My first five years were spent playing on 16 acres in a northern Idaho forest. This was a time for a wild, young imagination to roam free. At six, I moved to the heart of the northern plains in South Dakota and discovered new aspects of nature. Instead of thick forests and mountain streams, there were rolling grasslands and roaming cows. My environment changed, but my need to be part of it did not."

Those experiences inspired a realization. "Growing up in these environments has left me with a deep desire to sustain them," he said. "The idea of future generations not having these experiences imparts a sense of responsibility to minimize the impacts of human activities. This drives my desire to conserve our native prairies and clean our watersheds while educating the community on the importance of leaving the earth better than we found it, and not letting some status quo based on poor stewardship continue. We only have one earth and we are its stewards." To add intellectual depth to his feelings about the natural environment, Entenman earned a master's degree in Environmental Law and Policy from Vermont Law School. He and his wife live in Sioux Falls.

FBSR has also retained the services of Cheyenne Marco as outreach coordinator. If you have read the organization's digital newsletter and examined our website, you have benefited from her skills. Marco has worked with the organization for four years—starting shortly after our founding, and her duties focus on her abilities as a writer and communications professional. Among her contributions will be writing the organization's digital newsletter, brochures, fundraising communications, and website articles. She is the founding editor and current managing editor for Friends of the Big Sioux River Monthly, the organization's digital newsletter. In 2018, she established the interactive water quality monitoring map featured on the FBSR website.



Marco earned a Ph.D. in English from the University of South Dakota, and her doctoral dissertation examined the interplay between personal experience, agriculture, and environmentalism. Her writing has appeared in numerous publications, and in 2017 she won the Western Literature Association's Frederick Manfred Award for Creative Writing for her non-fiction piece "Water Signs."

Marco's work for FBSR will be part-time. She also serves as a Lecturer of English at the University of South Dakota. She and her husband live in Vermillion, South Dakota.

"I am incredibly grateful to be a member of the FBSR team," said Marco. "I was raised on a farm in southwestern Minnesota, and my parents frequently took me camping. During these camping trips, I fell in love with water. I am most at peace on the water. As someone who enjoys lakes and rivers, I have seen firsthand the degradation of our water sources. While growing up, I watched waters grow green during summer. I played in the drain tile outlets that led directly into lakes. Without passion, forward-thinking, and hard work, we will squander away our natural resources, and generations to come will fail to have the opportunities I had to enjoy the great outdoors—and they will be poorer for it. I hope that my work protects these precious resources. For every person I educate about the perils of our water, for every person whose actions I influence, I feel immensely proud of my work, and I look forward to continuing to fight for clean, safe, and abundant waters."

Inspired by nature and also by their comprehension that all of us need and deserve clean, healthy water and waterways, Cheyenne Marco and Travis Entenman are determined to help FBSR fulfill our ambition to make the Big Sioux "swimmable by 2025." Their commitment to our cause is admirable and contagious.



River Quiz Answer

Pictured is where the Rock River -largest tributary of the Big Sioux River- enters the Big Sioux. The Rock flows into the Big Sioux discreetly, from the Iowa side, and it is hardly visible in this photo taken from the South Dakota shoreline. The river's mouth is just beyond a slight jut of vegetation that separates the two rivers. The Rock's headwaters are in southwestern Minnesota, and it flows southward through northwest Iowa before emptying into the Big Sioux River some 16 miles east of Beresford, SD. Though only 144 miles long, this river drains a watershed that covers more than one million square acres. The portion of the Rock's watershed that lies in Minnesota is the largest of only four watersheds in that state that drain into the Missouri River basin. Iowa, home to a significant share of the Rock's length and watershed, recognizes the Rock as an impaired river. Water sampling shows that Rock River flows contribute nitrates and other agricultural pollutants to the Big Sioux River.