



# BIG SIOUX RIVER ADVOCATE

## Sioux Falls' domestic water needs

### One of many reasons why Big Sioux River water quality matters

In 2017 the City of Sioux Falls supplied its residents and businesses with approximately 7.7 billion gallons of treated water. Average daily use during 2017 was about 21 million gallons, though summertime use -spiked upward by lawn watering- reached 45 million gallons-per-day.

Of those 7.7 billion gallons, about 53 percent was purchased by the City of Sioux Falls from the Lewis and Clark Regional Water System, a regional network that derives its water by pumping from a shoreline aquifer along the Missouri River, near Vermillion, SD. The water supply emanating from that well field is distributed north to Sioux Falls and Madison, SD, and will eventually serve far-flung communities such as Worthington, MN and Sheldon IA. Some \$550 million has already been spent on Lewis and Clark, and another \$190 million is needed to finish the authorized project. Ultimately, some 300,000 people in a wide area will use Lewis and Clark water. The system is being built to ultimately provide about 60 million gallons of water per day to Sioux Falls and 19 other members of the Lewis and Clark system.

Sioux Falls now procures about 17 million gallons of water per day from Lewis and Clark, and the city will one day be able to claim up to 28 million gallons per day through that system.

Most of Sioux Falls situated west of I-29 receives its water from the Lewis and Clark system. Central Sioux Falls, mainly that section of the city surrounded by interstate highways, is supplied by groundwater pumped from the Big Sioux aquifer, and to a smaller extent by water taken directly from the Big Sioux River. Total contribution by the Big Sioux aquifer to Sioux Falls water needs is about 41 percent. The Big Sioux River directly contributes about one percent of the water consumed by the city.

An additional source -a well field tapping an aquifer associated with Middle Skunk Creek, and located north of Sioux Falls- provides Sioux Falls with about four percent of its water.

So, the Lewis and Clark system and the Big Sioux aquifer presently provide approximately 94 percent of Sioux Falls' needs.

While it appears that the Big Sioux River is unimportant to Sioux Falls water needs, hydrology experts understand that the Big Sioux aquifer is physically connected to the Big Sioux River, not only feeding the aquifer, but also influencing the character of water in the underground formation. If Big Sioux River flows are meagre, the aquifer dwindles. If the Big Sioux River carries pollution, that pollution finds its way into the Big Sioux aquifer.

City of Sioux Falls' forecasts indicate the city's population will grow to about 221,000 by the year 2025, and will reach 270,000 by 2035. The need for additional water amplifies the importance of the Big Sioux aquifer. Conservative growth conditions estimate the city will need about 64 million gallons of water per day in 2025, and more than 80 million gallons of water per day by 2030.

The Lewis and Clark system will offer some capacity to supplement the city's future needs, but that system's potential contributions -as evidenced by its 28 million gallons-per-day threshold for Sioux Falls- are limited, and at least some of the city's future water supply must come from other sources, including the Big Sioux aquifer and its replenishment resource, the Big Sioux River.

The undeniable reality is that the city of Sioux Falls and the area surrounding Sioux Falls needs ample, healthy, clean water in the Big Sioux River to help sustain its long-term growth and preserve its standing as an exemplary and vibrant community.

That's one reason Friends of the Big Sioux River is focused on improving water quality in the river as a primary mission. That's why we raise money to monitor water quality. That's why we testify about industrial projects and other matters that can impair the river's water. That's why we foster discussion about how best to use and manage the river, and how best to rehabilitate the river and protect its flows.



# FBSR board member profile



Photo by Abby Bischoff

## Michelle Hentschel, Bicyclist, Angler and our Treasurer Extraordinaire

Though we're a relatively new non-profit organization, Friends of the Big Sioux River has a reasonably complicated budget and financial statements. We regularly receive membership checks, donations and grants from a variety of generous sources. We also spend money on an assortment of meaningful projects like water testing, river mapping, educational campaigns, and on the part-time salary for our one dedicated and talented employee.

Keeping track of it all requires diligence and a systematic eye for detail. Handling this vital chore is Michelle Hentschel, a CPA and financial executive who has served as a FBSR board member and as our skilled yet volunteer treasurer since this organization's inception a little more than three years ago.

Raised in rural South Dakota, the daughter of a farmer, Michelle learned about conservation and stewardship at an early age.

"My dad is outdoorsy," she explained. "He'd take me fishing when I was a little girl, and when we were outdoors I watched him pick up snagged or abandoned fishing line and litter. That made an impression on me."

Michelle's father was also conscientious about how he treated wetlands. "He was very careful with wetlands, preserving them and protecting them," she recalled. That also made an impression on her. "I've always liked being around water, whether swimming, fishing or in a boat or kayak," she added.

After graduating high school in Clear Lake, South Dakota Michelle earned an accounting degree from the University of South Dakota. Then it was off to Bozeman, Montana for four years before enrolling in and completing the M.B.A. program at Gonzaga University in Spokane, Washington.

For 12 years Michelle, her husband and their young family lived in Spokane, where Michelle worked for an energy utility, and most of her time there was spent in the utility's energy trading division. In 2011 she and her family decided to return to South Dakota when she landed a position with Raven Industries as a senior financial analyst. She moved to Sanford Health Plan to work as a financial auditor in 2015, and earlier this year she began duties as the Chief Financial Officer (CFO) for EmBe, the Sioux Falls-based organization that empowers and enriches the lives of women and families. It's apparent the new position suits her well. While talking with a visitor in her office in downtown Sioux Falls she excitedly extolled the virtues of EmBe while she described her joy at working for the organization.

When living in Spokane Michelle began biking to and from work. "It was a seven and a half mile trip each way," she reported, and bicycling became a defining activity in her life. Michelle learned to ride in many different types of weather, a characteristic she brought with her when she returned to South Dakota. On all but the nastiest days, she commutes on her bike to work in downtown Sioux Falls from her Brandon home. She's what you'd call a hard core rider. "I ride for health reasons, environmental reasons, and because it makes me happy," she declared. "And I try to be a good advocate for all bicyclists, obeying the rules of the road and smiling at drivers and pedestrians." She admitted that she also grins when she passes each gas station, and frowns when she sees rubbish along roadways.

At the conclusion of each FBSR monthly board meeting we watch Michelle don her helmet and mount her bicycle, ready to head home after a long day. Our treasurer keeps our books as fit as she keeps herself.



## River Quiz

Can you identify this Big Sioux River location?  
See page 3 for the answer.



Photo by Greg Meyers, North Sioux City, SD



Photo by Marianne Larsen

## Editor's Pulpit *By Peter Carrels*

**Improving the Big Sioux River's water quality: The greatest challenge we face.**

Peer into the blending bands of color diffused through Marianne Larsen's superb photograph of the Big Sioux River and pretend a water's character is revealed. Imagine the hues and tints represent content, with elements of hydrogen and oxygen mingling with minerals and matter. What would we see in the water that we don't recognize now?

What exactly is clean, healthy water? How could an unpolluted Big Sioux River enhance our community and quality of life?

Residents of this region proudly cite data reflecting growth and progress. There are more and more people moving here. More businesses. More recreational and cultural amenities. More opportunities for work and play. We've carved out a thriving, successful community—the entire Siouxland region, really. But how sustainable is it all? How have we impacted and altered essential natural resources like water and soil to get to this point? Can we do better? How can we do better?

The most challenging decisions and endeavors related to rehabilitating a river are those aimed at improving water quality. Cleanup projects to remove trash from the channel, establishing shoreline buffers, creating parks, preserving riverside woods and greenspace, building biking—hiking trails, and general, overall beautification are important and laudatory projects, but are far less contentious to undertake than water quality endeavors because they provoke less conflict between opposing interests. For example, the primary impediment to constructing a monumental sculpture in downtown Sioux Falls that uses the

river as its backdrop is collecting donations. It is generally viewed as a progressive addition to the city's riverscape. Who would oppose art or walkways beside the waterway? Who would oppose the kayak trail, or the amphitheater near the falls, or the creation of Good Earth State Park? These projects derive considerable benefit because of their proximity to the river, and they have all been pursued with strong community momentum. And they are worthwhile projects, to be sure.

But the heaviest “lift” regarding improving our relationship to the river relates to cleaning up the river's flows. Who is going to work toward improving water quality and reducing pollution in the river? Who will work to reduce nitrates in the river? Who will protect the river from harmful industrial effluent, sediment, chemicals and sanitary waste? Who will lead this effort? This work promises to be daunting because it inherently impacts someone's economic opportunities or someone's desire to behave as they've always behaved. Change for the better isn't always easy or immediately popular. Rehabilitating the Big Sioux River so its flows are clean and healthy will require commitment and courage.

Friends of the Big Sioux River is and will continue to be engaged in such a rehabilitation campaign, and we need and welcome more involvement from the community to be successful.

A river is more than scenery. A river is more than a prop for aesthetic or recreational improvements. A river is more than a setting for pretty pictures. A healthy river retains its natural dynamics, including flow patterns, water quality and ecological bounty. A healthy river and a healthy community are closely linked. A polluted river is an exploited river, a wasted river, a waterway that is less a river and more a drainage outlet for destructive, unhealthy, and unsustainable customs, behaviors and practices.

We now have an exciting opportunity regarding the Big Sioux River. We can set our standards and expectations high, and challenge ourselves to create profitable, meaningful businesses and rewarding lifestyles while simultaneously respecting aquifers, lakes, streams and rivers. It can happen in the Big Sioux River watershed. We can establish a respectful relationship toward our river that is a new paradigm, a new norm for co-existing with a river.

We can confront and solve rather than withdraw from the challenges of improving water quality in the Big Sioux River, and at some future time when we can actually claim that flows in the river are not polluted it will be among our most significant accomplishments. The contents of the river will be as pleasing as so many of the picturesque photos taken of the river.

## River Quiz Answer

*A short distance north of Sioux City, Iowa, the Big Sioux River flows into the Missouri River, 420 miles downstream from the Big Sioux's source near Summit, South Dakota. In the photo on page 2, the mouth of the Big Sioux River is visible adjacent to South Dakota's narrowing, most southeasterly jut of land between the Big Sioux and Missouri rivers. Also visible in the photo is Interstate Highway 29, to the right of the Big Sioux River. The Lewis and Clark expedition reached this confluence on August 21, 1804, after 100 days of arduous*

*upstream travel on the Missouri River. Writing in their journals, the explorers noted they passed by the “Seouex river” on the starboard side, and they mentioned the Seouex was navigable until a significant set of falls consisting of “2 large and som small pitches.” Two days after passing by the mouth of the Big Sioux River, several miles west of what is now Elk Point, South Dakota, the expedition sighted its first herd of buffalo, and one of the animals was shot and killed, producing two full barrels of salted meat.*



# FBSR Agropur testimony



Friends of the Big Sioux River continues to monitor river water, identify threats to the river, and advocate for appropriate measures that allow current and future residents of river communities to benefit from the river in positive ways. Below is the letter we submitted to South Dakota's Department of Environment and Natural Resources (DENR) expressing our concerns about a new and large source of pollution that will diminish water quality in the Big Sioux River. Agropur has proposed tripling capacity at its Lake Norden, South Dakota cheese and whey manufacturing facility. Two million gallons of wastewater per day would be conveyed via a 14-mile pipeline to a discharge point on the river near Estelline, South Dakota. The Lake Norden plant is one of 39 facilities located across North America that are operated by Agropur Cooperative, an Appleton, Wisconsin-based cooperative.

May 8, 2018

Tina McFarling, South Dakota Department of Environment & Natural Resources, Surface Water Quality Program

## Dear Ms. McFarling:

We are writing to you on behalf of members of Friends of the Big Sioux River with regard to the Draft Surface Water Discharge Permit which will enable Agropur, Inc. to discharge treated waste water from its cheese processing plant into the Big Sioux River. We feel this permit undermines the work and investments made by cities, counties, government agencies, the DENR, and taxpayers in preventing further degradation of this vital fresh water resource. Our concerns are as follows:

### Excessive nitrate levels – Agropur states nitrates will reach concentrations of 37 mg/L.

- This is almost 75% of the nitrate level currently allowed for Designated Use (9) Fish & Wildlife Propagation, Recreation and Stock Watering set at 50 mg/L. This type of discharge would make a significant negative impact on the water quality in the Big Sioux River.
- These high concentrations of nitrates do not diminish downstream quickly. According to water quality data compiled through the EDWDD, the nitrate levels downstream from high nitrate discharge facilities such as the Watertown and Sioux Falls wastewater treatment plants, nitrate levels remain high thus impacting a large portion of the watershed.
- During low flow times at the USGS station at Castlewood the stream flow rate is 1.85 CFS, which equates to 1.2 million gallons per day. The 2.0 million Agropur gallons per day would be over 60% of the stream flow in low flow months! This concentration of nitrates and other chemical sanitizers used by dairy plants would severely impact seasonal water quality for all current uses.
- Public water systems in the Big Sioux River obtain their water from shallow aquifers which may be located next to the Big Sioux River and streams. Many of the wells the public water systems use have higher levels of nitrates. Due to the fact that these aquifers are located close to the Big Sioux River, the public water systems will blend lower nitrate river water with high nitrate aquifer water to lower their nitrate level in the drinking water they supply to less than the 10 mg/L required by law in South Dakota. With increased nitrates from the Agropur plant, this would prevent these systems from providing safe drinking water without considerable taxpayer investments to remove nitrates.
- Due to increased agricultural drainage practices, nitrate levels in waterways such as the Big Sioux are increasing. The DENR has no authority to limit this activity. Thus it is important to take what action the DENR can take to prevent further degradation from a point source by limiting the nitrate discharge from a point source such as Agropur.
- Our largest city in South Dakota has invested millions of dollars along with funding from the state and federal governments to try to reduce the pollution in the Big Sioux. By issuing this permit with no nitrate limits, you enable Agropur to externalize its pollution costs onto taxpayers, and waste the dollars already invested to restore water quality. This can be prevented by more stringent guidelines for nitrates by the DENR.

### Big Sioux River Limitations

The Big Sioux River is impaired due to non-point source pollution which is not regulated. This lack of regulations has resulted in a river exceeding TSS levels, e-coli safety levels, and has rising nitrates from fertilizer runoff. The condition of the Big Sioux River is evidence that the watershed does not have an unlimited capability to absorb more degradation.

The permit may be within current designated use guidelines, however, the facts laid out above plainly indicate that the upper Big Sioux River should be treated as a domestic water supply, with the nitrate level lowered to 10 mg/L. This would protect current public water systems and the people who drink the water from these systems.

In the not-to-distant future, the city of Sioux Falls will again be utilizing the Big Sioux River for drinking water. Preventing any future harmful effects for drinking water is the responsibility of all of the stakeholders in the Big Sioux River Watershed. Most importantly it is the responsibility of the DENR to lead with responsible regulation to protect the health of eastern South Dakota citizens by protecting our water. As you know, prevention is more effective and much less expensive.

If you wish to discuss any of these issues further, please feel free to contact me.

Sincerely, Dana Loseke, Chairperson, Friends of the Big Sioux River

# Save the Date 9-13-18

## FBSR co-sponsors visit by Pulitzer Prize-winning writer to discuss farm pollution in rivers

Pulitzer prize-winning editorial writer Art Cullen will visit Sioux Falls on Thursday September 13th to discuss issues related to water pollution caused by agriculture. He will speak at 7 p.m. at Mikkelson Auditorium in the Froiland Science Complex on the Augustana campus. The Science Complex is at the corner of 33rd Street and Grange Avenue.

His presentation, titled “A River Runs Toxic: A Warning From Iowa,” promises to be relevant to agriculture as it is practiced in South Dakota, as well as how farming practices impact the Big Sioux River. It is co-sponsored by Friends of the Big Sioux River and Augustana University’s Center for Western Studies. Cullen, co-owner of the Storm Lake (Iowa) Times, has written extensively about nitrates and agricultural pollution in Iowa rivers and lakes. He was awarded the 2017 Pulitzer Prize for Editorial Writing for a series of in-depth editorials about a lawsuit filed by the drinking water authority serving Des Moines, Iowa against three agricultural drainage districts located in the same watershed as Des

Moines. Drinking water proponents claimed farmers in upstream portions of the watershed flowing into the Raccoon River that serves Des Moines were causing dangerous water pollution that must be better controlled and regulated.

Cullen has concluded that farm-caused water pollution –particularly nitrates pollution- is seriously impacting many Iowa communities, and that business interests profiting from the sale of seed, fertilizers and other chemicals control farming methodologies in states like Iowa, and that these interests must play a more responsible and active role in the protection of public health and natural resources.

Cullen’s upcoming book, titled Storm Lake: A Chronicle of Change, Resilience, and Hope from a Heartland Newspaper will be published October 2 by Viking, an imprint of Penguin Random House.

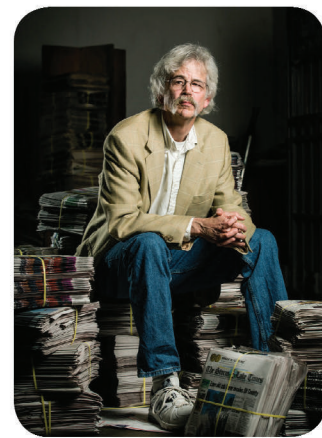


Photo of Art Cullen by Mark Brown, University of St. Thomas

## BIG SIOUX RIVER ARCHIVES



Immersion baptisms (left of photo) were administered by at least one Sioux Falls church at a location in the Big Sioux River near north Kiwanis Street in the early 20th century.



In the early 20th century Sioux Falls residents and visitors swam in the Big Sioux River and socialized at a beach along the river at Sherman Park.

In 1915 the Sioux Falls Board of Park Supervisors highlighted its desire to “save the Big Sioux River within the city limits.” They proclaimed: “We propose to prevent the dumping of refuse into the river... we hope to transform [the river] into an attractive place.” The supervisors suggested a riverside parkway throughout the city, emphasizing the river’s woodlands, and canoeing and fishing opportunities. They also described the futility of maintaining a swimming beach on the river at Sherman Park, an endeavor made challenging, they wrote, by the lack of sand. The quality of the river’s water for swimming was not mentioned as a liability. That era’s citizens weren’t thinking about the river’s water quality. It wasn’t until passage of the Clean Water Act in 1972 that a penetrating look at water quality began happening. As a society we’re still trying to more fully embrace the importance of protecting river flows.

Images provided by The Siouxland Heritage Museums, Sioux Falls, South Dakota

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Join us at  
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make friends with your river



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**FBSR appreciates  
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this newsletter.**



## Event Calendar

**August 18** 6 pm - 11 pm Riverfest (along the river, between 8th & 6th streets in downtown Sioux Falls)

**Sept. 5 -7** South Dakota Soil Health Coalition sponsors soil health school, Hartford, SD

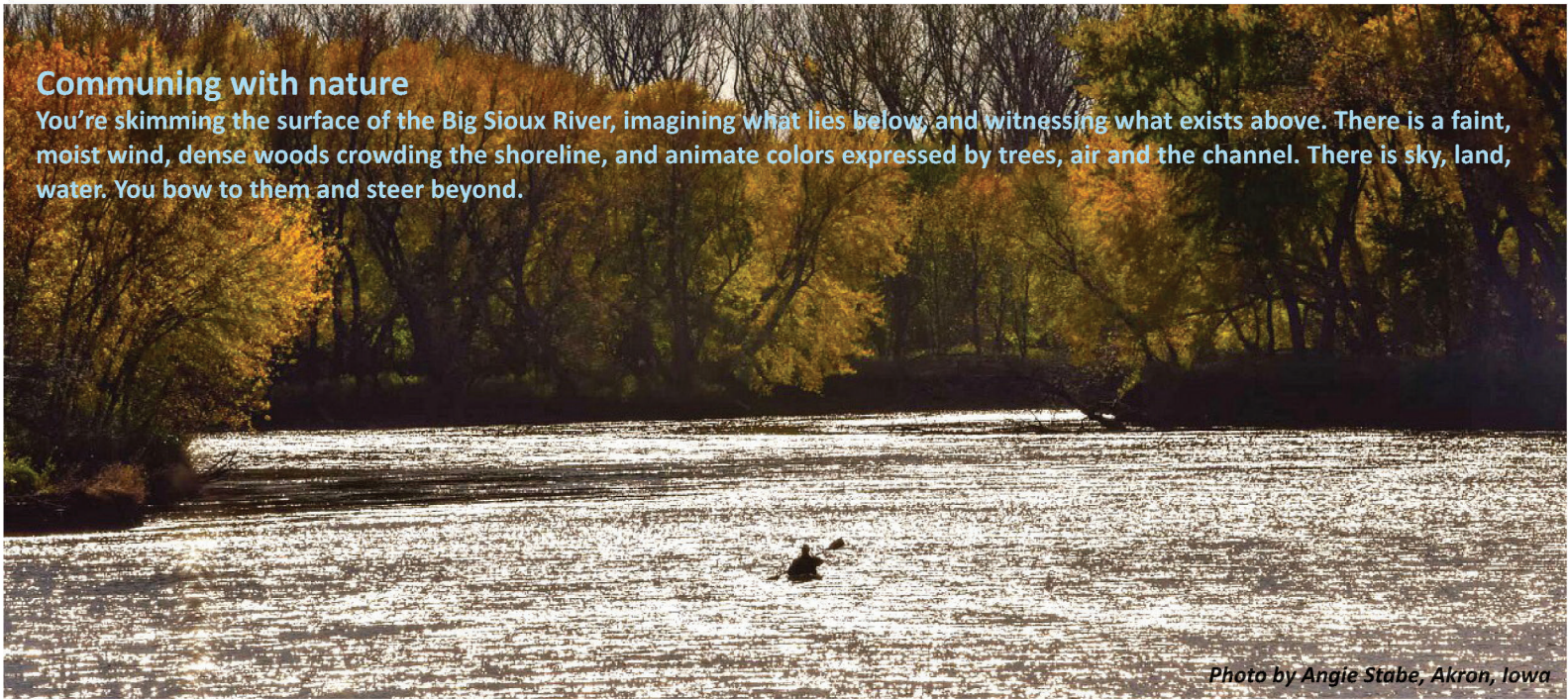
**September 13** Pulitzer Prize winner Art Cullen at 7 pm, Mikkelson Auditorium, Froiland Science Complex, Augustana University



[friendsofthebigsiouxriver@gmail.com](mailto:friendsofthebigsiouxriver@gmail.com)

## Communing with nature

You're skimming the surface of the Big Sioux River, imagining what lies below, and witnessing what exists above. There is a faint, moist wind, dense woods crowding the shoreline, and animate colors expressed by trees, air and the channel. There is sky, land, water. You bow to them and steer beyond.



*Photo by Angie Stabe, Akron, Iowa*

**We are grateful to our many individual and family members, and also to the following sponsors and sustainers.**

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