FRIENDS OF THE BIG SIOUX RIVER

THE OTTER

Newsletter of Friends of the Big Sioux River Winter, 2021

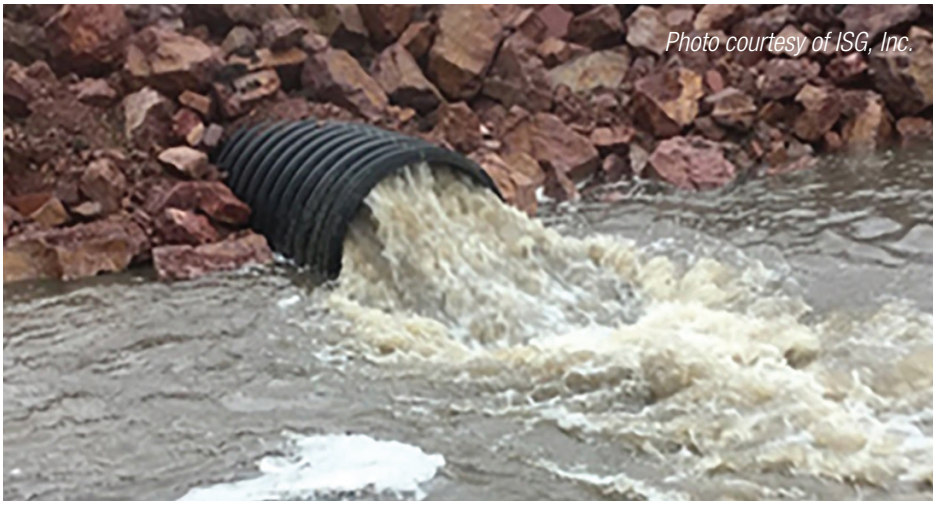
The challenging, complicated circumstances of cleaner water

Advocating for the restoration and protection of water quality in the Big Sioux River will require diligence and doggedness by the region's residents. Some water rules and regulations are susceptible to tweaking and interpretation by special interests and regulators who may favor special interests. Water regulations are also complicated, and citizen groups typically lack funding, expertise, and horsepower to effectively navigate, legislate and litigate the arcane world of water pollution law and policy.

As citizens, we'd prefer to defer to state and federal agencies to restore and protect healthy water. But that is naïve. Although considerable progress has been made since an era when pollution was completely ignored, ample concerns continue. In 2012, forty years after historic water protection measures were enacted, water quality in the Big Sioux River plummeted to disgraceful levels. Sediment, animal and farm waste and other pollutants wrecked the river's water quality. This happened under the "watchful" eye of state government and the federal Environmental Protection Agency (EPA).

In 2017, about two-thirds of South Dakota's rivers were classified as impaired by pollution. Again, this happened on the watch of regulatory agencies.

Then there's this example of regulatory stewardship: A state permit allowed Smithfield Foods meat processing facility to release up to 102 pounds of ammonia each day into the Big Sioux River, with a month-long average of 58 pounds per day. On one August day, in 2018, Smithfield discharged 2,199 pounds of ammonia into the Big Sioux River. This followed several days in which daily releases exceeded 1,500 pounds.



No one knows how many tile drains serving farm fields discharge into the Big Sioux River, or any other river. That's because tile drains are considered non-point pollution sources, and there are no regulations restricting or monitoring non-point polluters. Tile drains can carry farm pollutants such as fertilizers to waterways, large and small. Overlooking their impact on water quality is a serious shortcoming of the Clean Water Act.

In between 2000 and 2019, Smithfield committed at least 61 pollution permit violations, including discharges of fecal coliform, chlorine, and ammonia into the river. For these violations, South Dakota regulators fined the company a total of $99,642. Smithfield's parent company, a Chinese multinational, recorded 2018 sales of $22.6 billion. Is it cheaper to pollute than prevent pollution?

Passage of the Clean Water Act (CWA), in 1972, included overriding a veto by President Nixon. Though Congressional support was relatively strong, many members abstained from voting. The concept of defending natural resources remained for many an awkward, expensive abstraction.

Amended several times since 1972, the CWA retains a basic principle: The federal government, through EPA, delegates much regulatory authority regarding clean water protections to each state.

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The CWA did allow for EPA to set pollution parameters for "point" sources, required point polluters to obtain permits limiting pollution and funded sewage treatment plants, among other important actions.

Addressing "point" sources of pollution while ignoring "non-point" sources (NPS) is viewed as a significant deficiency of CWA. Point sources typically are outlet pipes from factories, energy plants and municipal facilities discharging directly into surface water. Most non-point pollution comes from runoff related to agriculture and from community storm sewer systems.

South Dakota relies on voluntary measures for implementation of Best Management Practices (BMPs) to control NPS pollution. Many water researchers identify non-point contaminants emanating from farm fields as the nation's top unresolved water pollution issue.

To view the results of FBSR's extensive water quality sampling program for 2020, please visit our website.

South Dakota officials can determine which water bodies are to be protected. Long debated is the value of protecting small streams that flow into larger streams and rivers. South Dakota has opposed extending protections to our smallest waterways, leaving them vulnerable to polluters. Of course, tributaries do not exist in a vacuum. The pollution they carry impacts the environment before flowing into and impacting other waterways.

There are nearly 100,000 miles of rivers and streams in South Dakota. About 87,000 miles of those are small and ephemeral waterways unprotected by South Dakota and the CWA.

States monitoring and regulating surface waters within their boundaries establish acceptable limits for pollutants that must align with the range of limits set by EPA. In South Dakota, those limits are posted on the DENR website. Our state tends to choose generous limits.

An example is how South Dakota addresses nitrate pollution, an escalating issue because of shoreline cropping practices and unregulated tile drains funneling fertilizer pollution into surface water. Despite these worrisome circumstances, the State's allowable nitrate standards are often higher than EPA's drinking water standards.

Equally impactful regarding nitrates is runoff from manure applications to farm fields. This threat is worsening, but the state appears intent on boosting development of confined animal feeding operations (CAFOs) rather than elevating water protection standards.

Section 303 (c) of the CWA requires states to periodically review the clean water standards set for applicable waterways.

A critical determinate of water quality is to measure Total Maximum Daily Loads (TMDL). Translated: How much pollution can a waterbody receive and still support its designated beneficial uses?

What are the designated beneficial uses for the state's waterways? Here's the list: 1) domestic water supply; 2) coldwater fish habitat; 3) marginal coldwater fish habitat; 4) warmwater fish habitat; 5) warmwater semipermanent fish habitat; 6) warmwater marginal fish habitat; 7) immersion recreation water; 8) limited contact recreation water; 9) fish and wildlife propagation, recreation, and stock watering; 10) irrigation; 11) commerce and industry.

What are designations for the Big Sioux River? In Sioux Falls and the Sioux Falls vicinity, DENR has assigned the following beneficial uses: warmwater semipermanent fish life, immersion recreation; limited contact recreation, fish and wildlife propagation/recreation/stock watering, and irrigation. Only the needs of irrigation and fish and wildlife propagation/recreation/stock watering designations are sufficiently satisfied by existing water quality characteristics to be in full compliance. Note that domestic water supply -the beneficial use requiring the best water quality- is not included for the Big Sioux River in Sioux Falls.

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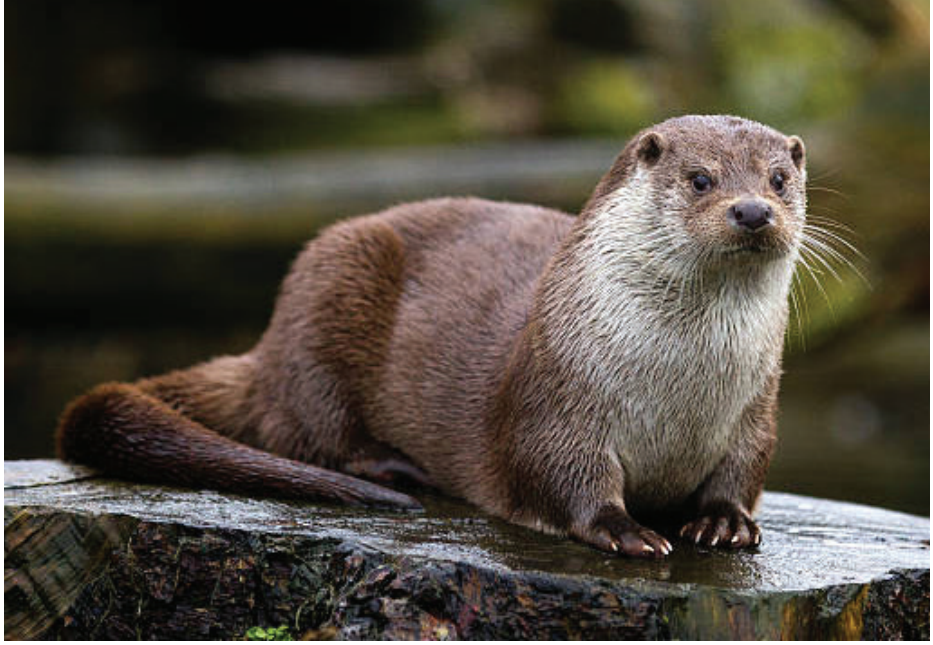
River Quiz

Can you identify this Big Sioux River location?

See page 3 for the answer.

Photo courtesy of East River WDD

River Otter Report



We opposed the State of South Dakota's strange and short-sighted decision, last year, to de-list the Northern River Otter from threatened status to furbearer, removing certain protections we believe are necessary to encourage the growth of sustainable otter numbers in South Dakota. While neighboring states have otter populations in the thousands, our state seems content with a meager population likely numbering less than 100 animals. Instead of viewing otters as integral to riparian ecosystems, South Dakota wildlife officials now manage them as if they are a nuisance and a commercial critter for trappers. In fall 2020, trappers were allowed to legally kill 15 otters. This was the first time in modern history that this was allowed. Thirteen of those otters were killed in the Big Sioux River watershed. Six of the killed otters were females. Trappers also caught 32 otters that were considered "incidental" catches, and all but three of these otters died as a result of being trapped. Incidental catches occur when a trapper is pursuing a different species such as beaver or muskrat. During 2020, there were 41 reported "sightings" of otter or otter sign in all of South Dakota. That number does not include otters that were legally or incidentally killed. Most otters in South Dakota are found in the easternmost area of the state, especially the Big Sioux River and its watershed. South Dakota officials have publicly stated that otter populations in the state have successfully rebounded. Success can't be measured by comparing near zero otters in the entire state as recently as the 1990s, to less than 100 today. At least the species didn't completely disappear, but it is far from safely established. Compare otter numbers in neighboring states. Iowa reports some 4,000 otters, and Nebraska claims 7,000. Minnesota tops the region with 12,000 otters. Did our wildlife managers decide to delist the otter because they felt protections were no longer necessary, or to allow trappers to more conveniently and legally dispose of otters that are busting up their beaver traps? We'd like more opportunities to view these fascinating animals along the Big Sioux River. Clean water, shoreline habitat and protection from human predation are three critical elements to be met if we are to restore otter numbers.

River Quiz Answer

The proximity of the Big Sioux River and Lake Poinsett, located in southern Hamlin County, inspired early engineers to divert river flows to replenish the lake when lake levels were low and also to provide flood-prevention. Poinsett, with a surface area exceeding 7,800 acres, is one of the largest natural lakes in South Dakota, and it offered lots of potential water storage. Immediately north of Lake Poinsett is Dry Lake, and the two lakes are physically connected. In 1929, a dam –Boswell Dam- with control gates was built across the Big Sioux River several miles east of Dry Lake. A diversion ditch –called the Boswell ditch- was excavated to move river water blocked by the dam westerly to and then through Dry Lake and into Lake Poinsett. The capacity of the ditch was dramatically expanded in 1955. The engineered system proved short-sighted. In 1956, a control structure on the diversion ditch called the Boswell Gates was erected to help prevent Big Sioux flows from entering the lakes. In 2008, the Boswell Dam was removed and the diversion ditch was blocked. A major concern was the unacceptable river water entering Lake Poinsett , carrying loads of phosphorus, nutrients and sediment. Poinsett, a highly popular residential and recreational resource, was becoming polluted. The lake's natural outlet to the Big Sioux River, located in its northeast corner, was modified in 1989 with a control structure to prevent river flows from reaching the lake. Pictured is the Boswell Gates, situated as part of a road and bridge that spans the Boswell diversion ditch. This 111-foot long structure –located about ¾ of a mile west of the river- includes five steel gates, each about 20 feet long and 8 feet tall. The gates, originally lifted and lowered by electric motors, are now permanently lowered and closed.

We oppose the proposed merger of the Department of Environment and Natural Resources and the Department of Agriculture. By Travis Entenman

SD Governor Kristi Noem issued an executive order to merge the Department of Agriculture (DOA) and the Department of Environment and Natural Resources (DENR). This merger is bad for the environment and bad for South Dakota.

1. The merger is not good governance for states with large agricultural economies

- The only states in the US that have combined agriculture and environmental and natural resources agencies are Alaska and Rhode Island. Alaska has $40 million and Rhode Island has $170 million in ag production, while South Dakota has over $10 billion in ag production. Clearly, the 47 states with large ag/farm economies recognize the need to have an ag department focused on the challenges and demands faced by agricultural producers.
- Roughly a third of US states have a DENR that includes hunting, fishing, parks, and recreation oversight. Many of these states have large tourism and recreational economies, and they recognize the synergy between a healthy environment and recreation/tourism.

2. The merger shortchanges both departments in the performance of their responsibilities

- We recognize there are a few areas of overlap between the departments; however, the responsibilities and duties of each department cover so many diverse goals that each department would better serve South Dakota by being expanded instead of consolidated. Indeed, many states have divided environmental concerns into additional departments with differing responsibilities.
- The DOA should help farmers and ranchers profitably produce and sell their products while advocating conservation practices that improve soil and water for future generations.
- The DENR should advise, regulate, and enforce practices that protect public health and our natural resources for today and for tomorrow. South Dakota deserves a resource protection agency that serves all South Dakotans, not just the agricultural sector.

We ask you to oppose this merger and contact your legislators. The Governor can implement this ill-advised action, but it can be reversed with a majority vote in the legislature.

Personnel Update

Peter Carrels, Sioux Falls, is departing the board of directors after six years of service. He produced, edited and wrote each issue of this newsletter after launching it in 2016, and he has served as secretary of the organization for the past year.

Rachel Kloos, Sioux Falls, has joined the board of directors. Rachel, an engineer, works for the design and engineering firm, ISG, in Sioux Falls, and she specializes in water issues and waste water treatment.

Jose Vizcarrondo, Sioux Falls, is the newest member of our board of directors. Jose, a chartered financial analyst (CFA), works at Elgethun Capital Management in Sioux Falls.

Life along the River

River ecosystems, already stressed by many factors, face another threat: Invasive species.

In 1998, Asian carp were first discovered in South Dakota on the Missouri River. These species – primarily the bighead carp and silver carp- voraciously feed on plankton, and they can decimate a fishery by depleting a food source needed by smaller fish in the food chain. Consequently, these small forage fish and young gamefish starve and perish. And then bigger fish – predatory fish like catfish, northern pike, and walleye- struggle to survive without adequate food.

Asian carp were brought to the United States during the 1970s as a tool to clean fish farms and sewage lagoons in Arkansas. Some escaped captivity due to flooding and found their way into the Mississippi River, and some headed upriver, veering into tributaries like the Missouri River. Stopped by Gavins Point dam, Asian carp began finding and populating rivers below the dam, like the James, Vermillion, and the Big Sioux.

It appears they have been blocked from migrating further upriver on the Big Sioux River by the falls in Falls Park. But between Sioux Falls and Sioux City their numbers are climbing, and they pose a threat not only to the river's fishery, but also to boaters. Silver carp, you see, can leap up to ten feet out of the water. Kayakers describe incidents of jumping carp striking them as they paddled. Motorized craft provoke jumping by these fish because engines and props vibrate the water, startling the fish. Some anglers traveling the river using outboard motors have encountered stretches thick with airborne carp.

Silver carp can exceed twenty pounds, and they reproduce prodigiously.

Biologists in other states report that boaters suffer injuries caused by leaping silver carp. A South Dakota official says there have been no serious injuries reported by boaters on the Big Sioux River, but warns those using the river to be vigilant.

Photo courtesy of SDGFP

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From 2014-2019, DENR assessed about 5,900 miles of rivers and streams in South Dakota. That's half the waterway miles identified as needing regulation. Only 22 per cent of those miles fully supported the assigned beneficial uses.

The agency has already admitted it lacks the budget and manpower to monitor and safeguard all regulated surface water in South Dakota. This circumstance will be exacerbated if the agency is merged with the Department of Agriculture.

Dana Loseke, founder of Friends of the Big Sioux River and sitting board member explained a basic weakness that flaws today's water protections. "Polluters and regulators rely on a waterway's volume to help cleanse its flows," said Loseke. "Yes, there are waste treatment plants and regulations on industry, but dilution continues to be mistakenly relied on for a major part of our government's solution to pollution."

As population grows and competition for useable water intensifies, dilution as a solution will be recognized as being short-sighted and incomplete. Competition and clamoring for clean water will necessitate more stringent approaches.

But our situation is not desperate. Water quality issues remain mostly manageable in South Dakota and the Big Sioux River. However, the forecast is worth noting. There are supremely challenging times ahead for advocates of cleaner water in South Dakota. Even-handed and public-spirited preparedness and enforcement must happen. Favoritism to polluting businesses and industry must cease. Water is a public resource and it should be regulated and protected to serve all constituiencies.

Unnatural Data

Historic Study Underway

A significant and historic research effort studying the relationship between the Big Sioux River and the aquifer that underlies its channel and those lands adjacent to the river is now being conducted by South Dakota's Geological Survey, an agency of the state's Department of Environment and Natural Resources. This multi-year project is especially interested in determining how river flows migrate into its aquifer, the speed of that movement, the association of aquifer volume and river flows, and how water quality in the Big Sioux River impacts the quality of water in the aquifer. Approximately 300,000 people consume water from wellfields tapping this aquifer.

River Wildlife Numbers Dwindle

River-based biodiversity is dramatically shrinking because of human activities. A study by University of Wisconsin researchers states, "Multiple environmental stressors, such as agricultural runoff, pollution and invasive species, threaten rivers that serve 80 percent of the world's population. These same stressors endanger the biodiversity on 65 percent of the world's river habitats, putting thousands of aquatic wildlife species at risk." Though the researchers didn't mention climate change, this factor certainly adds problems to water quality and flow patterns. The researchers declared that it is smarter and more cost-efficient to prevent river degradation rather than respond to degradation.

River Flows Are Changing Color

Shifting weather patterns and more powerful precipitation events triggered by climate change cause soils, agricultural chemicals and other pollutants to wash into rivers and change water chemistry and color. Analyzing nearly 16 million satellite images taken over three decades allowed researchers to discover that about 33% of America's rivers have changed color since 1984, leaving only about 5% retaining their natural color. They also determined that 56% of America's largest rivers (rivers at least 197 feet wide) were predominately yellow, because they carried excessive amounts of soil and sediment, and 38% appeared predominately green because of algae buildup due to fertilizer runoff. The same factors influencing the nation's largest rivers also impact smaller rivers, such as the Big Sioux.

Pharmaceutical Waste

Often overlooked as a threat to clean water are the impacts associated with medicines and pharmaceuticals. Scientists with the United States Geological Survey were able to detect and identify chemicals used in pharmaceutical production as far as 18 miles downstream from where they were discharged into a waterway after so-called treatment. Not only does the manufacturing process for pharmaceuticals pollute waterways, so does the disposal of such chemicals by homeowners, landowners and businesses. This can happen by tossing them into the garbage or flushing them down the toilet. Many of the more than 4,000 prescription medications used for humans and animals ultimately find their way into the environment. To dispose of unused medicine and pills, deliver them to a local take-back facility. In Sioux Falls, old or unused prescriptions can be deposited in the lobby of the downtown police department. Your neighborhood Lewis Drug store also accepts such medications. Otherwise, mix them with dirt or coffee grounds and place the mixture in a sealed bag. Place the bag in your household trash. Recycle or trash empty bottles of drug packaging after removing labels.

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Photo courtesy of South Dakota Department of Tourism

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