

RiverCurrents

The Voice of the St. Joseph River Watershed

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Friends of the St. Joe River Association, Inc.

Salting the Watershed

The Effects of Road Salt on Water Quality and Habitat

According to a 2008 U.S. Geological Survey (USGS) report, 43 percent of salt consumed in the United States was used for ice control and road stabilization. That amounts to 20 million metric tons of road salt (or sodium chloride) on our roadways every winter, about 13 times more salt than is used by the entire food processing industry.

The biggest concern with road salt is how it affects water quality. Salt does not just disappear; when the snow and ice melts, the salt washes into the St. Joseph River, its tributaries and eventually into Lake Michigan. Salt can also seep into local groundwater supplies. Once it gets into the watershed, the contamination is difficult and expensive to remove.

Salt pollution in surface waters is measured in terms of chloride concentration. The U.S. Environmental Protection Agency (USEPA) recommends that levels be kept below 230 milligrams per liter, measured over the course of four days (the equivalent of about one teaspoon of salt in five gallons of water). In September 2009, the USGS reported that 40 percent of the urban and suburban streams tested in the northern part of the country had chloride levels at or above that threshold at some point during the sampling period (1991 to 2004). Deicing of roads was singled out as a major culprit.

Impact on Vegetation & Habitat

The melting snow and ice carries deicing chemicals to soils along the roadside. Elevated salt levels in soils can inhibit the ability of vegetation to absorb both water and nutrients, which can slow plant growth and

ultimately affect animal habitats. This degradation can affect the ability of these areas to act as buffers (which slow and filter polluted runoff before it reaches waterbodies). Since there are no natural processes to remove salt in waterbodies, concentrations build up and affect aquatic plants and other organisms. A heavy influx of sodium chloride will disrupt the ability of freshwater organisms to regulate how fluid passes in and out of their bodies. Changes in the salinity of a waterbody can also affect the way the water mixes as the seasons change, leading to the formation of salty pockets near the bottom and biological dead zones.

The Wetland Connection

Wetlands protect water quality by trapping sediments and retaining excess nutrients and pollutants such as sodium chloride. These functions are especially important when a wetland is connected to groundwater or surface water sources. However, with a 53 percent wetland loss since pre-settlement times, the St. Joseph River Watershed has seen a significant reduction in its ability to handle excess pollutants such as salt.

Making a Difference

You can help keep salt out of our waterways by reducing your use of salt. Physically remove as much ice as possible before applying salt and only use it when necessary. Learn more about how your community deals with ice and snow on roadways and parking lots. Snow hauled from urban areas should not be placed close to the edge of lakes, rivers or streams. Encourage your community to place excess snow in areas where sediment retention and infiltration can be maximized.

About us

The Friends of the St. Joe River Association, Inc. (FotSJR) was established in April of 1994, and operates as a 501(c)(3) not-for-profit organization.

Mission

To unite a diverse group of stakeholders throughout the watershed in a collaborative effort to protect, restore and foster stewardship of the St. Joseph River Watershed.

Become a Friend

Join a group of stewards restoring and protecting this natural resource. We offer a variety of tax-deductible membership levels for both Personal and Business contributors.

Meetings

Monthly meetings of the Board of Directors and Watershed Council are usually held on the fourth Thursday of the month at the Three Rivers (Michigan) Public Library at 1:00 p.m. EDT. These meetings are open to the public. For more information and to verify dates and times, visit www.fotsjr.org.

Save the Date!

4th Annual SJR
Watershed Council Meeting
March 14, 2011
See inside for details!

The Clean Water Act: Water Quality Standards for Surface Waters

The objective of the Clean Water Act is to restore and maintain the chemical, physical and biological integrity of the Nation's waters (Sec. 101 (a)). Basically, the goal of the Act is to ensure all waterbodies in the United States are fishable and swimmable. Water Quality Standards are important because they provide guidance for protecting and restoring the quality of the Nation's surface waters, consistent with the requirements of the Clean Water Act. Standards help to identify water quality problems caused by improperly treated wastewater discharges, lawn and farm runoff, stream bank erosion and other sources. Standards also provide benchmarks for protecting and restoring water quality.

Monitoring

Water quality monitoring is conducted for a variety of reasons, including characterizing a watershed, measuring changes in water quality over time, identifying specific problems and determining whether pollution regulations and control measures are effective. Often the abundance and diversity of the plants and animals living in waters such as streams, rivers, lakes, and wetlands are monitored. By sampling macroinvertebrates (crayfish, clams, snails, worms and insects) trends in water quality can be monitored. Measuring these biological indicators can often show problems otherwise missed or underestimated with simple pollutant and water chemistry sampling.

For general information visit <http://water.epa.gov/scitech/swguidance/waterquality/standards/>. For state-specific information, visit <http://www.in.gov/legislative/iac/T03270/A00020.PDF> for Indiana. For Michigan, visit <http://www.michigan.gov/deq/water>, then click on *Water Quality Monitoring*, followed by *Assessment of Michigan Waters*.



Not All Wetlands are Created Equal

Exploring the different functions & values of these unique waterbodies

Wetlands perform an amazing array of ecological functions we have only begun to appreciate. Wetland ecologists have already documented the following environmental benefits of wetlands: water purification, flood protection, shoreline stabilization, groundwater recharge and streamflow maintenance. Wetlands also provide habitat for fish and wildlife, including endangered species. While not all wetlands are created equal in terms of how each one performs their complicated functions, this does not diminish their unique value to the ecosystem and the benefits wetlands provide.

Water Purification

Wetlands protect water quality by trapping sediments and retaining excess nutrients and other pollutants such as heavy metals. These functions are especially important when a wetland is connected to groundwater or surface water sources (such as rivers and lakes) that are used by humans for drinking, swimming, fishing or other activities. These same functions are also critical for the fish and other wildlife that inhabit these waters.

Flood Protection

Almost any wetland can provide some measure of flood protection by holding the excess runoff after a storm, and then releasing it slowly. The size, shape, location and soil type of a wetland determine its capacity to reduce local and downstream flooding. While wetlands cannot prevent flooding, they do lower flood peaks by temporarily holding water and by slowing the water's velocity. Wetland soils act as a sponge, holding much more water than other soil types.

Shoreline Stabilization

Wetlands occurring along the shoreline of lakes or along the banks of rivers and streams help protect the shoreline soils from the erosive forces of waves and currents. The wetland plants act as a buffer

by dissipating the water's energy and providing stability by binding the soils with their extensive root systems.

Groundwater Recharge

Aquifers and groundwater are "recharged" (or replenished) with water by precipitation that seeps into the ground. Wetlands are essential for the proper functioning of the hydrologic cycle. They retain water and provide time for infiltration to occur. Groundwater, in turn, provides water for drinking, irrigation and maintenance of streamflow and lake and reservoir levels. During periods of low water levels, the slow discharge of groundwater often helps maintain minimum water levels.

Fish & Wildlife Habitat

Wetlands provide unique habitat for species that cannot survive elsewhere. Migratory birds depend on wetlands, and many endangered and threatened animal species require wetlands during part of their life cycle. Wetland plants and small animals (especially insects) are essential links at the lowest levels of the food chain. A wetland environment supports these plants and animals, which in turn support the larger animals that feed on them. The incredibly high rate of wetland loss in the St. Joseph River Watershed has resulted in the loss of many animal and plant species.

Assessing Wetland Function in the St. Joseph River Watershed

The Friends of the St. Joe River (FotSJR), along with a diverse group of partners, are currently working on a Landscape Level Wetland Functional Assessment (LLWFA) for the entire St. Joseph River Watershed. The LLWFA will evaluate every existing and historical wetland in the watershed for several water quality and habitat related functions. The LLWFA is part of a three-year Wetland Partnership Project funded through the USEPA. For more information visit <http://www.fotsjr.org/WetlandPartnership>.

Award-Winning Restoration Pigeon Creek Watershed

When five streams within the Pigeon Creek Watershed were listed as impaired by the Indiana Department of Environmental Management (IDEM), the Steuben County Soil and Water Conservation District (SWCD) took proactive steps to create an effective, innovative and award-winning management plan.

The designation "impaired" refers to lakes, rivers and streams whose water quality is compromised. In Indiana and Michigan, both IDEM and the Michigan Department of Natural Resources and Environment (MDNRE) are required, under Section 303(d) of the Clean Water Act, to determine the health of each states' respective waters. Waters that do not meet specific water quality standards are placed on the governing agencies Impaired Water Bodies List (also known as the 303(d) list).

In partnership with the Steuben County Commission, the SWCD applied for and successfully received IDEM funding for the Pigeon Creek Watershed Management Plan. In 2005, during the development of the Management Plan, the County applied for an IDEM grant for Phase One Implementation, which was awarded in November 2006. Phase One provided funding for the Steuben County Surveyor's office to hire a person to promote and offer cost-share assistance for the installation of Best Management Practices (BMPs) such as filter strips, water and sediment control basins, grassed waterways and drop inlet structures through the Pigeon Creek Watershed.

In September 2008 the SWCD, serving as the coordinating agency for various partners, decided to apply for Phase Two Implementation funding, which was granted a year later. Phase Two consists of four initiatives involving several agencies:

- **The first** addresses stormwater issues in the City of Angola and at Trine University by providing cost-share assistance for the installation of rain gardens, green roofs, and rain barrels to help reduce and filter polluted urban runoff.
- **The second** is administered by the SWCD and addresses the need for improved agricultural practices to reduce and filter farmland runoff.
- **The third** provides funding to the County Health Department and the SWCD to hire an individual to provide educational outreach on proper septic maintenance.
- **The fourth** includes a series of sampling sites in the watershed monitored by the Steuben County Lakes Council to assess progress made toward meeting the water quality goals of the Management Plan.

A District Showcase Award was presented to the Steuben County SWCD by the Indiana Association of Soil and Water Conservation Districts for their efforts to improve water quality in the Pigeon Creek Watershed. "The biggest reason we won the award is our ability to work with an extensive and diverse number of partners to put conservation on the ground," said Brian Musser, Resource Conservationist at the Steuben County SWCD. "We are fortunate to have the cooperation between our partners at every level, which has been able to bring in over \$500,000 to Pigeon Creek alone since 2004."

Since the beginning of the Phase One Implementation Grant, an estimated 25,000 tons of soil loss has been prevented within the Pigeon Creek Watershed through BMP's including hay/pasture plantings, tree plantings, grassed waterways and cover crops. Additionally, the SWCD recently received a \$10,000 grant to expand their rain barrel program.

Creature Feature

Rayed Bean (*Villosa fabalis*)

Although the rayed bean is a freshwater mussel that has been wiped out from much of its Midwestern habitat, it is still found in Indiana and Michigan. It is a small mussel, usually less than 1.5 inches long. Generally, it lives in smaller, headwater creeks, but is sometimes found in large rivers and wave-washed areas of glacial lakes. The rayed bean prefers gravel or sand substrates, and is often found in and around roots of aquatic vegetation. Threats to this species include dams, pollution, chemical contaminants, sedimentation and non-native species such as the zebra mussel and round goby.

Conservation Status: Proposed as Endangered in the St. Joseph River



Photo Courtesy G. Thomas Watters, Ohio State University

FotSJR to Host Annual SJR Watershed Council Meeting & Dinner

Join the Friends of the St. Joe River on **March 14, 2011** for dinner and social time at their 4th Annual St. Joseph River Watershed Council Meeting at the Sturges-Young Auditorium in Sturgis, Michigan.

The keynote speaker will be Dr. Kevin Kincare of the U.S. Geological Survey (USGS). Dr. Kincare will speak on the geologic history of the St. Joseph River, and how it switched from being a tributary of the Mississippi River to the third largest tributary of Lake Michigan. His program is titled "From the Mississippi to Lake Michigan: Pirating and the St. Joseph River."

Dr. Kincare grew up in Three Rivers, Michigan and is well versed on the St. Joseph River and its history. He received both his B.S. and M.S. in Geology from Western Michigan University, and wrote his thesis on the St. Joseph River Watershed. He also holds a Ph.D. in Geology from Michigan State University. Currently, Dr. Kincare is mapping glacial geology in St. Joseph River Watershed as well as mapping in the Manistee River basin in northwest lower Michigan.

Date: March 14, 2011
Time: 5:30 p.m. to 9:00 p.m. (EDT)
Location: Sturges-Young Auditorium
 201 N. Nottawa Street
 Sturgis, Michigan
Cost: \$20.00 / person
 (includes dinner and program materials)

Registration & Payment Information:
 Register Online (preferred) or by Mail.
 Online credit card payments are processed free-of-charge through PayPal. If paying by check or money order, please make payable to **FotSJR, P.O. Box 1794, South Bend, Indiana 46634.**

Registration and additional event details are available at http://www.fotsjr.org/upcoming_events.

FlowFacts

The way a river responds to rainfall and snowmelt is an important indicator of watershed health. A stream rising slowly after a storm generally has a healthier watershed than one rising quickly. The USGS continuously monitors streamflow (or discharge) in the St. Joseph River Basin at 12 separate gauging stations. Real-time streamflow data from each gauging station is available through the USGS web site below.

FlowFacts from the USGS gauging station at Burlington, Michigan.

Period of Record March 1962 to present:

- Drainage Area: 206 square miles (4% of SJRW)
- 2009 Peak Flow: 973 cfs* (March 11)
- Maximum Flow on Record: 1,390 cfs (June 5, 1989)

*cfs = cubic feet per second

FlowFactoid

1,390 cfs would fill Notre Dame Stadium in about 4 hours!

Visit <http://waterwatch.usgs.gov> to find a gauging station nearest you and watch the **flow** of the Joe!

Biofilms: A Beneficial Bacterial Community

With winter in full swing, one might not consider the biological processes currently taking place in the waters of the St. Joseph River Watershed. In fact, one process set into motion this past autumn is creating a beneficial bacterial community that many aquatic creatures in the watershed depend upon.

Seasonally occurring leaf and/or plant litter that falls naturally is often an important source of organic matter in streams and rivers. Biofilms play an essential role in the decomposition and cycling of organic matter in leaves. A biofilm is an aggregate of microorganisms in which cells adhere to each other and/or to a surface. Biofilms can be found on rocks and pebbles at the bottom of most streams or rivers and often form on the surface of stagnant pools of water. Biofilms are important components of food chains in rivers and streams and are grazed by the aquatic invertebrates upon which many fish feed.



Although leaves seem natural and harmless, excess leaves can pose a threat to lake and stream quality. Do not rake leaves into rivers and lakes and keep them out of storm drains and ditches. Five bags of leaves and organic debris can contain over one pound of phosphorus, which can lead to the growth of up to 1,000 pounds of algae. Naturally occurring leaves and plant litter are an important part of the aquatic food chain, but adding yard waste causes excessive growth of aquatic plants and eutrophication.



P.O. Box 1794
South Bend, Indiana 46634
www.fotsjr.org

Support the Friends

The Friends of the St. Joe River are working with individuals and partner organizations to implement important restoration and protection projects throughout the watershed.

Pledge your support for our efforts by making a tax-deductible donation. Your support and generosity will help us improve and protect the quality of the water and other natural resources we depend on. Visit www.fotsjr.org for more information.