



The Business Case for Clean Water in the Upper Mississippi River Basin

Water is one of our nation's priceless resources, essential to life itself. Healthy ecosystems and a robust economy depend on plentiful, clean water — and unlike almost all other resources, water has no substitute. It's why businesses in all sectors support protecting clean water — whether as a direct component of their operations or simply to keep their communities and employees healthy. And in the Upper Mississippi River Basin (UMRB), clean water is big business. **American Sustainable Business Council (ASBC)** has worked tirelessly to support legislation protecting and improving our clean water supplies. Business leaders and other concerned Americans can add their voices to our vital effort at <https://cleanwatersbasin.asbcouncil.org/>.

The Upper Mississippi River: Supporting a Vibrant Economy

The Upper Mississippi River Basin (UMRB) covers approximately 189,000 square miles in Illinois, Iowa, Minnesota, Missouri, and Wisconsin; including the Upper Mississippi River (UMR) and the many rivers, streams, and other bodies of water that feed into it. From its headwaters in Minnesota to its confluence with the Ohio River in southern Illinois, the UMR covers nearly 1,300 miles and contains a series of locks and dams making much of it navigable. Each day, over seven billion gallons of water are extracted from the UMR, most of it used as cooling water for energy production along the river.¹ The UMR corridor, made up of 133 counties on or adjacent to the UMR, contributes over \$345 billion in annual economic activity and supports over 1.86 million jobs in the manufacturing, tourism, recreation, agriculture, commercial navigation and energy sectors.²

The health and navigability of the UMR are crucial to the area's prosperity. Many business sectors depend on clean water provided by the basin for both extractive and non-extractive uses. Each year, millions of tourists from around the world visit state parks, national historic landmarks, interpretive centers and scenic outlooks in the river basin, generating \$20.6 billion in expenditures and supporting more than 358,000 jobs. Recreation along the UMR contributes \$4 billion to the region's economy through wildlife-watching, hunting, fishing, camping, boating, cycling and hiking in the two million acres of protected conservation land in counties along the river.³



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Agriculture is a \$25-billion industry in the UMR corridor, drawing water for irrigation and livestock, and supporting 136,000 jobs. Water drawn from the basin must be clean to ensure that food grown with it is not contaminated with pathogens that can transmit diseases to farmworkers and consumers.⁴

A reliable supply of clean water is also essential to the region's food and beverage sector, including the thriving craft beer industry. Minnesota's more than 150 breweries, like August Schells Brewing Co. and Summit Brewing Co., produce over 600,000 barrels of craft beer every year for a total of \$2 billion in revenue, and breweries in Illinois produce 385,874 barrels of craft beer generating \$2.6 billion in economic impact each year.⁵

A clean, healthy river also significantly enhances property values and supports a thriving riverfront economy.⁶ Cities along the UMR have continued revitalizing downtown areas to attract new business and promote economic growth. For example, the Minneapolis Parks Foundation, a philanthropic partner of

¹ <http://www.umrba.org/facts.htm>

² <http://www.umrba.org/umr-econ-profile.pdf>

³ Ibid.

⁴ <https://www.ncbi.nlm.nih.gov/pubmed/15633699>

⁵ <https://www.brewersassociation.org/statistics/by-state/?state=MN>; <https://www.brewersassociation.org/statistics/by-state/?state=IL>

⁶ <https://www.usnews.com/news/cities/articles/2018-10-02/rust-belt-cities-turn-to-riverfront-development-for-economic-boost>;
<https://www.glc.org/work/blue-economy/GLRI-economic-impact/case-studies>.

the Minneapolis Park and Recreation Board, is moving forward with RiverFirst, to “transform the Upper Mississippi Riverfront into a regional economic engine and world-class cultural and recreational destination.”⁷

Manufacturing companies — including steel manufacturers, chemical companies, paper mills, cement production facilities, and oil refineries — make up the UMRB region’s largest business sector, bringing in \$282.5 billion in revenue annually and providing 49% of the area’s jobs.⁸ Improved water quality benefits these industrial water users by reducing wear on equipment and costs of water and wastewater treatment.⁹ Because these manufacturers rely on clean water to operate, it makes sense that they are invested in ensuring the health and quality of the river basin.

The benefits of clean water to businesses across the watershed cannot be overstated. Waters from the UMRB launched the region’s economy and are crucial to its ongoing revitalization. All businesses need a healthy workforce, healthy customers and an uncontaminated supply chain to survive. Reliably available, clean water will stimulate growth and opportunities for a variety of sectors in every community dependent on the watershed.

Threats Facing the Upper Mississippi River Basin

Despite the necessity of clean water for the region’s economy, human activity across the river basin poses a variety of threats to water quality.¹⁰ The conversion of the region’s landscape for human use exacerbates all of these threats. The destruction of forests, prairies and wetlands by agriculture and paved surfaces alters the flow and filtration of water throughout the basin, leading to an increase in a variety of pollutants.¹¹

Nutrient Pollution

Nitrogen and phosphorus pollution is one of the biggest threats to the UMRB. High concentrations of these nutrients in water stimulate growth of algae which, as it dies and decomposes, uses

up the dissolved oxygen in the water. Many aquatic species cannot survive when oxygen levels plummet, resulting in massive die-offs of fish and other wildlife.

Algal blooms cause significant economic damage to business sectors that rely on clean water. Every year, excess nutrients in waterways cost the U.S. tourism industry \$1 billion in losses and cost the fishing industry tens of millions of dollars.¹² Property values can erode by as much as \$85,000 on land near water with high nutrient pollution levels¹³ and nutrient runoff can contaminate drinking water, causing birth defects, cancer and other profound health damage that is costly to treat.¹⁴ In Minnesota, the need to use nitrate-removal systems has raised water supply costs from 5-10 cents per 1000 gallons to over \$4 per 1000 gallons.¹⁵

With nearly half of the UMRB’s streams containing high nitrogen levels and about 23% containing high phosphorus levels, algae blooms are very common in the region.¹⁶ In Iowa and Minnesota, it is even common for beaches to close during the summer due to these algal blooms.¹⁷

Agricultural Pollution

Nutrient pollution, pesticides, and animal waste bacteria from agriculture severely affect UMRB water quality. Agriculture is the largest source of nitrogen and phosphorus pollution in the UMRB, mostly from row crop farms but also from livestock operations.¹⁸

Nitrogen and phosphorus are naturally present in soils, but most farms also use fertilizers containing these nutrients. Over-production of row crops and widespread use of poor soil and water management techniques in the UMRB have left soil highly susceptible to erosion and unable to hold water.¹⁹ Runoff from rain and irrigation carries nutrients from fertilizers and soil into nearby surface water. This runoff also leaches into groundwater, where it pollutes aquifers or drains back into surface water.²⁰

⁷ <https://mplsparksfoundation.org/riverfirst/>; <https://mplsparksfoundation.org/2019/01/14/riverfirst-in-the-news/>

⁸ <http://www.umrba.org/umr-econ-profile.pdf>

⁹ <https://www.pca.state.mn.us/sites/default/files/wq-rule4-06f.pdf>; <https://www.naturalproductsinsider.com/regulatory/understanding-importance-clean-water-manufacturing-natural-products>

¹⁰ http://dels.nas.edu/resources/static-assets/materials-based-on-reports/reports-in-brief/miss_river_cwa_final.pdf; <http://americaswatershed.org/report-card/the-basins/upper-mississippi-river/>

¹¹ <https://drive.google.com/file/d/0ByX3chjR3UG6cj5TFhSTUI1Vm8/view>

¹² <http://www2.epa.gov/nutrientpollution/effects-economy>; <https://eomyths.org/2015/11/11/myth-treat-it-to-beat-it-water-pollution-that-is/>

¹³ <https://www.epa.gov/sites/production/files/2015-04/documents/nutrient-economics-report-2015.pdf>

¹⁴ <https://www.epa.gov/nutrientpollution/effects-human-health>; <https://www.iaenvironment.org/newsroom/water-and-land-news/report-raises-health-concerns-about-nitrate-in-drinking-water>

¹⁵ <https://www.epa.gov/nutrientpollution/effects-economy>

¹⁶ https://www.epa.gov/sites/production/files/2015-03/documents/epa-marb-fact-sheet-112911_508.pdf; <https://www.noaa.gov/media-release/gulf-of-mexico-dead-zone-is-largest-ever-measured>

¹⁷ <https://www.waltonfamilyfoundation.org/stories/k-12-education/river-at-risk-the-mississippi>

¹⁸ <http://stateoftheriver.com/state-of-the-river-report/>

¹⁹ <https://gulphypoxia.net/the-failure-of-us-farm-policy-its-in-the-snirt/>

²⁰ https://cdn3.ewg.org/sites/default/files/u352/EWG_PollutedRunoff.pdf?_ga=2.82694550.1696580399.1556923520-1175761568.1556649026

Livestock operations also cause nutrient pollution in the UMRB through runoff, groundwater leaching and soil erosion; plus harmful fecal bacteria; especially from concentrated animal feeding operations (CAFOs). Federal law requires larger CAFOs to store and handle waste to prevent unsafe levels of water contamination, but inequitable federal and state implementation allows much of this waste to enter the UMRB.²¹ Additional contamination is caused by slaughterhouses and meat processing plants that dump large amounts of animal waste and chemicals directly into waterways.²²

Pesticides are another major waterway contaminant. Applied to crops, pesticides may leach directly into groundwater or may be carried into local waterways as occurs with nutrient pollutants. A study conducted in the Midwest, including states in the UMRB, found that half of sampled streams contained high enough levels of pesticides to cause harm to aquatic life, including long-term impairment of reproduction and development, and even death.²³ Pesticide contamination of waterways may also cause chronic health problems in humans, such as organ damage and cancer, after long-term exposure.²⁴

Urban Runoff

During rainstorms, water in urban areas runs off roofs, roads, sidewalks, and other impervious surfaces into drains instead of being captured in soils. This runoff water picks up contaminants — from trash, excess oil, chemicals, and salt from roads and sidewalks; fertilizers and pesticides from lawns; and sediment from construction and other surfaces — and runs, untreated, into rivers, streams, and other water sources. When cities experience larger storms that overwhelm their combined sewer systems, raw sewage is released directly into rivers and carries bacteria such as E. Coli into nearby waterways.²⁵

Urban runoff is also a significant source of phosphorus, and to a lesser extent, nitrogen, in the UMRB.²⁶ These nutrient pollutants end up in the basin's waters when stormwater passes over materials such as fertilizers applied to lawns, leaf litter, and pet waste. Chloride runoff from salt treatment for snow and ice, which can harm fish and plant life in high concentrations, is also a problem in the UMRB.²⁷

“Clean water is mission critical for my organic baby food business and many others. Up and down the Mississippi River Basin and across the country, even businesses that don’t depend deeply on clean water for their core business, need clean water for their employees at work and at home.”

- Ashley Rossi,
Founder and CEO,
Tiny Human Food, Naperville, IL.

Coal Pollution

Every year, coal-burning power plants emit millions of tons of coal ash — fine particles infused with toxins like sulfur dioxide, nitrogen oxide and carbon monoxide²⁸ — which poisons our air and waterways. Coal power plants frequently store coal and coal ash in open, un-lined pits located close to water sources.²⁹ When rain and snow come into contact with the exposed coal, the water becomes acidic and picks up heavy metals like mercury and nickel. This toxic water then frequently leaches into ground water or spills and leaks into nearby bodies of water.³⁰

Almost all of Iowa's 72 coal power plants store coal in an open pit. In Muscatine, Iowa, residents have found that their water is often undrinkable, sometimes even turning black. A local environmental group found that the stretch of the Mississippi River in Muscatine is impaired with aluminum, arsenic and mercury. Many of the local residents blame upstream coal plants and are demanding better testing and regulations.³¹

Wastewater Discharge

Approximately 278 facilities discharge wastewater directly into the UMRB, including industrial facilities, power plants, and municipal sewage treatment plants.³² In 2012, industrial facilities (excluding municipal-run sewage treatment plants) reported that they discharged at least 16.8 million pounds of toxic material into the UMRB.³³

²¹ <https://www.iowapolicyproject.org/2018docs/180125-CAFO.pdf>

²² https://environmentmissouri.org/sites/environment/files/reports/MO_wastingwaterways_scrn%20061814.pdf

²³ <https://www.usgs.gov/news/pesticides-prevalent-midwestern-streams>

²⁴ <http://psep.cce.cornell.edu/facts-slides-self/facts/pes-heef-grw85.aspx>

²⁵ <https://www.americanrivers.org/threats-solutions/clean-water/sewage-pollution/>; <http://stateoftheriver.com/state-of-the-river-report/>

²⁶ <https://www.pca.state.mn.us/sites/default/files/wq-iw3-12.pdf>; <https://www.pca.state.mn.us/featured/report-nitrogen-surface-water>

²⁷ <https://www.pca.state.mn.us/sites/default/files/wq-ws4-38b.pdf>

²⁸ <https://earthjustice.org/features/the-coal-ash-problem>

²⁹ <https://earthjustice.org/sites/default/files/files/National%20Coal%20Ash%20Report%203.4.19.pdf>

³⁰ https://environmentamerica.org/sites/environment/files/reports/WEB_AME_Accidents-Report-Jan19.pdf

³¹ <http://www.iniwawater.org/story/residents-say-uncontrolled-coal-is-harming-drinking-water-mississippi-river/>

³² <http://www.umrba.org/facts.htm>

³³ https://wisconsinenvironment.org/sites/environment/files/reports/WI_wastingwaterways_scrn_061814.pdf

“Nutrient loading is one of the greatest threats to our business lines on the river because it compromises water quality, impedes manufacturing, and depresses the tourism and recreation industries that account for the second largest economy on the waterway.”

– 2018 Mississippi River Cities & Towns Initiative, comprised of mayors of cities along the Mississippi River

Paper, textile, and chemical manufacturers, among others, use large volumes of water in their processes and can release wastewater that adds pollutants like mercury and lead to waterways if not properly regulated and operated.³⁴ These industrial discharges can threaten wildlife and ecosystems and infiltrate drinking water supplies, causing dramatic hazards to human health.³⁵ Power plant wastewater is the main source of several toxic heavy metals in water sources across the country.³⁶

Municipalities in the United States treat sewage wastewater before discharging it back into water bodies. Unfortunately, there are certain pollutants that treatment centers cannot eliminate. In St. Paul, Minnesota, the wastewater treatment plant is unable to remove pollutants like BPA that affect aquatic life.³⁷ For this reason, sewage is one of the main sources of phosphorus in the UMRB.³⁸

Thermal Pollution

In 2010, power plants along the UMR used 7.1 billion gallons of cooling water each day; more than any other industry in the

region.³⁹ In certain types of power plant cooling systems, once the water makes its way through the plant, it is discharged at a high temperature into rivers or other water sources, causing thermal pollution and threatening organisms living in the waterbody.⁴⁰ This heated water also can lower efficiencies at downstream power plants and force them to curtail output, affecting power availability for surrounding residences and commerce.⁴¹

A Call to Action

Despite formidable threats to the Upper Mississippi River Basin, numerous opportunities can be taken to improve and protect the watershed. For example, much of the wastewater, stormwater, and drinking water infrastructure in the region needs significant investment. Existing water infrastructure costs increase the longer we delay investing in repairs, but supplementing existing infrastructure with new, green infrastructure can help minimize these costs in several ways.

Using green infrastructure to help handle water system issues works with the natural landscape to mitigate effects of disruptive events like floods, as well as being more cost-effective and resilient to change than conventional infrastructure.⁴² Agriculture also offers vital opportunities to reduce water pollution while improving farmers' incomes and resilience to flooding. Adopting a variety of helpful farming technologies and practices, and ending rowcrop overproduction, would benefit the majority of farmers and the UMRB overall. Many industries can also take opportunities to improve their management of hazardous materials and transition to using less harmful alternatives. Businesses in every sector, from agriculture to tourism, breweries to factories, must urge public policymakers to recognize clean water as the irreplaceably valuable resource it is, and act now to protect it — and the prosperity of the Upper Mississippi River Basin. ★

³⁴ https://environmentamerica.org/sites/environment/files/reports/WEB_AME_Accidents-Report-Jan19.pdf

³⁵ https://wisconsinenvironment.org/sites/environment/files/reports/WI_wastingwaterways_scrn_061814.pdf

³⁶ <https://earthjustice.org/cases/2014/cleaning-up-power-plant-water-pollution>

³⁷ <https://www.mprnews.org/story/2018/12/03/five-gross-things-we-used-to-dump-in-the-mississippi-river-and-what-we-are-dumping-now>

³⁸ <https://www.sciencedaily.com/releases/2011/05/110506093112.htm>

³⁹ <http://www.umrba.org/umr-econ-profile.pdf>;

⁴⁰ https://www.ucsusa.org/clean_energy/our-energy-choices/energy-and-water-use/freshwater-use-by-us-power-plants.html#.XFskj1xKg2w
<https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2015WR017676>

⁴¹ <http://iopscience.iop.org/article/10.1088/1748-9326/aaac85/meta>

⁴² <https://www.epa.gov/green-infrastructure/what-green-infrastructure>

