



Quality control and pollution prevention

WLSSD carefully monitors its treatment process to ensure the water that's returned to the St. Louis River and the biosolids it produces are clean. The WLSSD laboratory samples water at all stages of the process, and works with industries to monitor, limit and reduce discharges of toxins and materials that would upset the biological process or would pollute the St. Louis River.

WLSSD also has an active educational program to help residents prevent pollution by avoiding the use of toxic substances in homes and by not flushing substances down the drain that can't be treated, such as medications and toxic chemicals. Preventing pollution before it happens is more effective than cleaning it up afterwards.

Scientists, often with support from WLSSD and the wastewater profession, continue to study emerging pollutants and find ways to treat those pollutants or keep them out of the environment completely. You can help, too, by not using toxic chemicals and being careful about how you dispose of waste.

With everyone's help, the St. Louis River and Lake Superior will remain clean and healthy, and an environmental and economic asset for our region.

For more information about WLSSD's wastewater treatment process or to request a copy of the "Return to the River" video, call 218-722-3336 or visit www.wlssd.com.



Clear Answers for Clean Water

Wastewater Treatment at WLSSD

The Western Lake Superior Sanitary District (WLSSD) was created in 1971 by the Minnesota Legislature to address the problem of serious pollution in the St. Louis River, an important tributary to Lake Superior.

For decades, industries and communities had sent dirty water directly to the river with only minimal treatment, polluting the river and killing fish. With federal, state and local funding, WLSSD's modern wastewater treatment plant began operating in 1978. Within two years, the river was clean enough to support fish and wildlife again.

Today, industries and communities along the St. Louis River send wastewater to WLSSD, where it's treated before being returned to the river. WLSSD uses a natural process to clean up waste — one that relies on beneficial bacteria and other microorganisms to remove pollutants.

Although the St. Louis River is healthy again, the job isn't complete. WLSSD continues to work with residents and industries to avoid flushing pollutants that can't be treated into the sewer, and invests in research and operational improvements to find better ways to keep the St. Louis River and Lake Superior clean.



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A streamlined process inspired by the river

Thousands of miles of city sewer pipes connect to WLSSD's 75 miles of interceptor sewers to bring sewage, or wastewater, from homes and businesses to the treatment plant. Industries and residents each contribute about half of the wastewater treated by WLSSD, totaling about 40 million gallons each day.

(A) Wastewater treatment begins by screening out large objects such as rags and sticks. Sand, gravel and grit are settled out and taken to a landfill. Wastewater then flows into deep, concrete channels, where it is stirred by large paddles and injected with pure oxygen. The channels are an ideal environment for oxygen-loving, aerobic bacteria to thrive and digest the waste that would otherwise pollute the river.

(B) The wastewater then flows into large, domed clarifier tanks where the naturally-sticky clumps of bacteria settle out as sludge. Most of the sludge is returned to the channels to provide an ample supply of microorganisms for the treatment process. Remaining sludge is removed and treated further to make a valuable fertilizer product.

(C) Next, the water is filtered through several layers of sand, gravel and coal to trap small bits of solid material. If necessary, the water is disinfected with a strong bleach solution.

(D) This entire water-cleaning process takes about 10 hours. The water is then safely returned to the St. Louis River.

(E) The sludge continues its path through the treatment system. It is piped to tanks called digesters. Within these tanks, anaerobic bacteria thrive without oxygen, breaking down the sludge, digesting it and reducing its volume. High temperatures are also used to kill pathogens — microorganisms that can cause disease.

(G) Field Green® biosolids are spread on farm fields and mine reclamation projects as a valuable fertilizer and soil amendment. The water-treatment process is now complete. It's an efficient, living system that delivers three useful products: clean water, biosolids and biogas.

(F) The bacteria produce methane-rich biogas as they digest waste. WLSSD captures this methane and burns it to heat the digesters and generate electricity used in the treatment plant. After about 30 days, the sludge is removed from the digesters and spun in centrifuges to remove water. The resulting product looks and feels like damp soil. This nutrient-rich fertilizer is called Field Green® biosolids.

