

WLSSD's regional mission includes environment, economy

Although WLSSD's treatment plant is located in Duluth, our full name describes a different reality. The Western Lake Superior Sanitary District serves a large region that includes 16 communities.

How large is that region? Our 75-mile network of large pipes collect wastewater from Wrenshall, Carlton, Cloquet, Jay Cooke State Park – even all the way down to Black Bear Casino and east to Knife River – a total of 530 square miles.

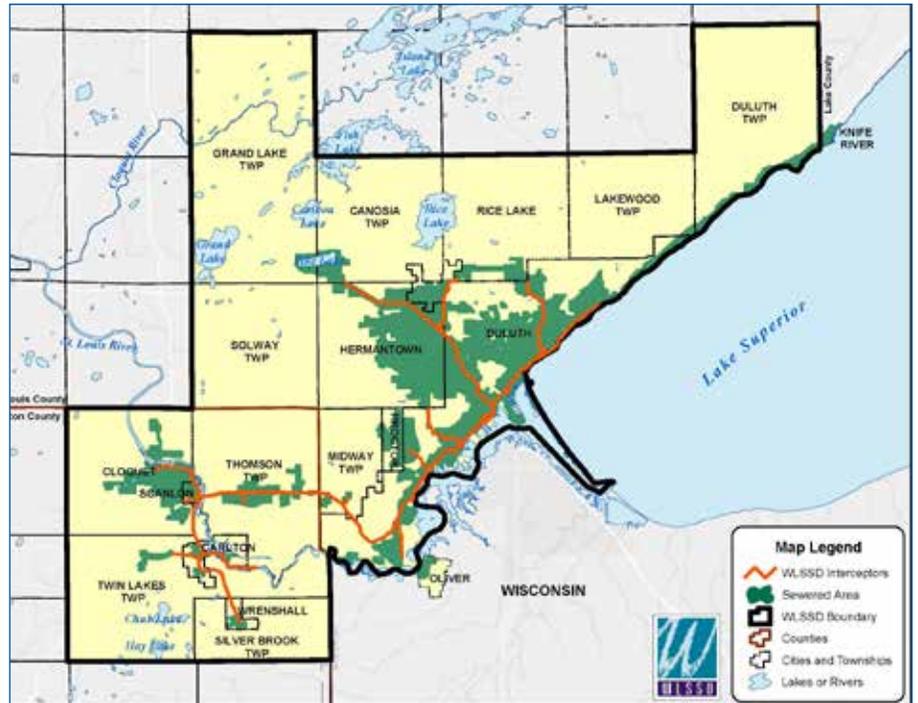
That means WLSSD has an important role in treating wastewater in a large region. In fact, about 40 percent of homes in Carlton County are connected to WLSSD's wastewater system.

The decision back in the 1970s to build one large, modern wastewater treatment plant to serve the region means those pipes (though hidden underground) visibly tie the economic and environmental future of all communities in the region.

Because WLSSD receives septage from rural areas and solids from rural wastewater treatment facilities, WLSSD's treatment plant plays an even larger role in solving the region's water quality challenges.

The District's service area includes rural areas with homes that are not connected to sewers and use septic systems. All septage pumped within WLSSD's boundaries comes to our plant for treatment. WLSSD receives septage and holding tank waste from homes outside our boundaries, too.

Western Lake Superior Sanitary District's large role in the regional economy and environment is the result of a well-thought-out decision-making process.



The Western Lake Superior Sanitary District's wastewater treatment system serves a region that stretches from Knife River to several towns in Carlton County.

The lower St. Louis River was polluted in the 1960s and 1970s, and it was recognized that it needed to be cleaned up.

When the Clean Water Act of 1972 provided federal money to help build wastewater treatment plants, local leaders concluded the most effective approach would be to build one larger wastewater treatment plant to replace the 17 smaller community systems.

“Some people approached the clean-up of the river as an economic necessity – jobs in Cloquet being critical,” said Ben Boo, Duluth's mayor. “Others approached it as an environmental issue – to clean up the river. And so we had two forces not normally in alliance who agreed.”

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A long-term trial on a Carlton County field (above) is helping WLSSD and the Minnesota Extension fine-tune application rates and nutrient management for alfalfa. The goal is to help farmers establish and maintain this higher-value forage crop by understanding what nutrients a farmer should consider along with biosolids when growing alfalfa.

WLSSD provides nutrient management information to its Field Green® customers.

Here are some tips to help you understand the nutrients WLSSD Field Green® provides and what you'll see in soil test reports we provide to our customers:

BIOSOLIDS DIGEST

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Nitrogen: One of the macronutrients necessary to help plants grow and produce protein. The nitrogen in biosolids is calculated carefully and only enough biosolids are spread to take care of the current year's crop needs.

Phosphorus: Helps photosynthesis, energy production, plant strength and cell structure. Generally, biosolids applications will provide ample phosphorus for your crop needs. In fact, over time biosolids applications may raise soil phosphorus levels to the point that a break will be needed to allow crops to take up phosphorus.

Potassium: Helps plants stay strong (potassium helps prevent grass hay lodging, for example), helps alfalfa resist winter kill, among other benefits. Biosolids don't provide enough potassium for most crops. Biosolids soil tests will report the amount of potassium in a field's soils, so the farmer can purchase enough to supplement a biosolids application.

Organic matter: Increasing organic matter in a soil is one of the best things you can do to help your crops. It helps hold water and nutrients. Biosolids provides organic matter, and other techniques can help, too.

pH: The right pH will help your crops take up fertilizer. Lime, ash and commercial products can help increase pH.

Boron: Often deficient in soils with organic matter below 3 percent. Boron helps with cell division and growth.

Working toward energy self-sufficiency

WLSSD's Field Green® biosolids program yields much more than a source of high-quality fertilizer. It produces renewable energy for WLSSD. It's playing a role in producing electricity and keeping rates for its customers stable and affordable.

Using clean, renewable energy, WLSSD is headed toward generating electricity to meet about half its needs by 2018.

Using "biogas", a methane-rich gas produced during wastewater treatment, WLSSD will produce both clean water and clean, renewable energy right at its regional treatment plant — saving the community millions of dollars with this "free" energy resource.

Generating electricity on-site will help control costs, for the businesses and households throughout the 530-square-mile region WLSSD serves, reduce emissions and contribute to Minnesota's renewable energy goals.

Wastewater treatment is energy-intensive.

At about \$3 million a year, electricity accounts for about a third of the cost to operate the wastewater treatment plant.

With electricity costs rising, it's difficult to maintain wastewater treatment rates for homeowners and businesses. To address this problem, WLSSD has developed a plan to conserve and generate energy—working toward the ultimate goal of energy self-sufficiency.

In WLSSD's plan, conservation will still be important. However, our studies show we'll get the best "bang for the buck" by using technology to fully utilize the biogas already produced at the wastewater plant.

Currently, we use only a portion of the biogas we produce. The excess gas is flared off and wasted. Biogas currently is used for heating and meets about 8 percent of our energy needs.



These four large tanks are the anaerobic digesters that produce Field Green® biosolids. Anaerobic, or oxygen-free, digestion uses bacteria to produce biosolids and methane. The methane is burned to produce heat and electricity.

Key goal is generating electricity

In the next couple of years, we'll use all of this biogas to generate electricity and meet about 35 percent of our treatment plant needs. Plans are in place to use other wastes to produce more electricity and meet about half our needs by 2020. Heat from the process will be captured and reused, too.

Until recently, WLSSD has focused its efforts and funding on eliminating sewer overflows and replacing aging equipment and pipes—leaving few funds for efficiency and energy improvements.

Even with the potential payback of energy projects, WLSSD has avoided additional spending in order to keep rates in check. Now, the time is right to invest in energy initiatives.

Reliable, effective and affordable wastewater treatment is vital to our quality of life. With WLSSD's energy plans, we'll use cleaner, less expensive resources and modern technology to ensure WLSSD can meet customer needs into the future.



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Clear Answers for Clean Water®

Contact us

Have a question or want information on Field Green® biosolids? Here is a guide to our staff members:

If you're interested in enrolling a field in the biosolids program, have general questions, are a member of the public or are a government official, contact:

**Craig Lincoln, Environmental Programs Coordinator,
(218) 740-4808 or craig.lincoln@wlssd.com**

If you are an existing customer and would like to schedule a field or have questions on a recent application, contact:

**Paul Wilken, lead land application operator,
(218) 740-4764 or paul.wilken@wlssd.com**

For general questions, contact:

**Todd MacMillan, biosolids supervisor,
(218) 740-4767 or todd.macmillan@wlssd.com**



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