

## Enrollment Open For Winter Acres

Winters in the Northland can be challenging for many reasons—even when it comes to applying biosolids on farm fields and mineland reclamation sites.

Minnesota biosolids regulations define winter application as spreading on frozen or snow-covered ground. On average, this begins each November and ends the following March. Wisconsin regulations also allow winter applications, but WLSSD does not currently apply to fields in Wisconsin after September 30th.

Due to federal and state regulations, WLSSD uses more stringent practices to land-apply biosolids during winter months in order to protect surface water quality.

- To prevent biosolids from moving off of fields with spring run-off, a suitable field must be virtually flat (<2% slope).
- WLSSD steers clear of grassed waterways, ditches and other water sources by using setbacks, or buffer zones, of at least 10 meters (33 feet) from water sources.

- WLSSD requires at least 20 acres of farmland to be eligible for biosolids application.

WLSSD spreads biosolids on more than 2,000 acres each year. About 100-150 acres per month during the winter must be suitable for winter application to offset the production of biosolids. Although there are 30,000 acres of land enrolled in WLSSD's land application program, only about 3,000 of those acres have been designated suitable for winter application, and most are minelands.

Since winter sites are harder to come by, WLSSD stores surplus biosolids until the busier spring and summer application months.

The schedule for land applications is full until summer 2023, with the exception of fields that qualify for winter application. **WLSSD will prioritize the enrollment of new sites meeting the criteria for winter land application.** Just remember that WLSSD staff have to inspect the field and soil quality, and must also apply for permits from the Minnesota Pollution Control Agency, before application.



**Editor's Corner: The Biosolids Digest is going digital! If you'd like to receive the Digest in an email instead of the paper copy, please send an email to [Dori.Decker@wlssd.com](mailto:Dori.Decker@wlssd.com) or call 218-740-4808. Let's connect!**

# Forage Resiliency During Drought

By Jane Anklam, Agriculture and Horticulture Extension Educator, UW Madison, Douglas County

**Re-sil-i-en-cy: an ability to recover from or adjust easily to adversity or change.**  
(Merriam-Webster)

Applied to agriculture, resiliency can be considered the ultimate act of farming. The crop years of 2020 and 2021 challenged farmers to recover and adjust after two years of low moisture, resulting in a USDA drought designation.

Farmers of the clay soils of the Lake Superior Basin are familiar with slow moisture infiltration, compaction risks, and getting stuck cutting the first crop as thunder clouds roll in. Drought is not often an “adversity” we face on our clay soils—yet here we are.

Now is the time to incorporate management strategies that can help achieve resiliency for hay land, pastures, and livestock as we farm forward to 2022:

## Grazing Lands

- Grazing and perennial forages are the most resilient way to manage agricultural land, including and especially during a drought. The payoff is more resilient farmland in 2022.
- Avoid grazing below 4” this fall. Pastures need to rebuild reserves for next spring. If overgrazed in fall 2021, there is a greater risk for poor recovery in spring 2022. If you do need to graze this fall, wait until forage height reaches 8”. Move the animals frequently to graze no shorter than 4”.
- In spring 2022, transition the livestock from dry feed to fresh grass slowly. Wait a couple of weeks AFTER spring green up. That will mean feeding hay longer. It is cheaper to feed hay for a few weeks than to totally renovate an overgrazed pasture that is beyond help.
- Weed pressure increases after a drought. To thwart germination success, graze to a height of no less than 4”. Develop a clipping plan to manage weeds.



*Hayfield clipped for weeds and managed for fall forage reserves.  
Photo credit:  
Jane Anklam*

## Soil Health and Nutrient Management

- Order soil tests for hay fields that have not been tested in over 3 years. Remember, spend your “first dime on lime”. Without an adjusted pH, the soil nutrients may be inaccessible.
- Consider the benefits of manure or biosolids on hayfields and grazing land. Manure and biosolids may reduce the need for other fertilizer sources. Both are a source of organic matter—and hence soil health and forage resiliency.

## Culling Decisions

- Culling animals in response to feed shortage can enhance resiliency. Selling yearlings, less productive cow-calf pairs, and weaning calves early, are some options. Make culling decisions early.

## Hay Land Management

- Manage less land with attention to resiliency vs. more land to hedge your bets. During a drought we see the disadvantages of losing many acres of forage. In a “normal” year, we manage fewer fields with less risk, greater yields, and forage resiliency in response to natural disasters.



# Anaerobic Digestion for Biosolids Production, Recycles Nutrients & Recovers Energy

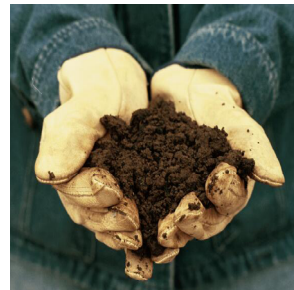
WLSSD's regional wastewater treatment plant in Duluth cleans about 35 million gallons of wastewater from homes, business and industries, every day.

The treatment process utilizes beneficial bacteria similar to those found in area rivers to break down the organic matter in wastewater. After treatment, clean water is released into the St. Louis River. The separated solids flow into four 1-million gallon tanks for additional treatment called anaerobic digestion.

Anaerobic digestion is a two-stage process. In the first stage, wastewater solids are heated in two "thermophilic" digesters to 130°F for 10-15 days. The high temperatures kill harmful bacteria and viruses. Heat-loving beneficial bacteria reduce the solids while generating methane and carbon dioxide in the process. In the second stage, the solids are further broken down in two "mesophilic" digesters at 95-100°F for another 10-15 days. Each digester has mixers and pumps that effectively churn the solids allowing bacteria to break down the large complex molecules into simpler molecules.

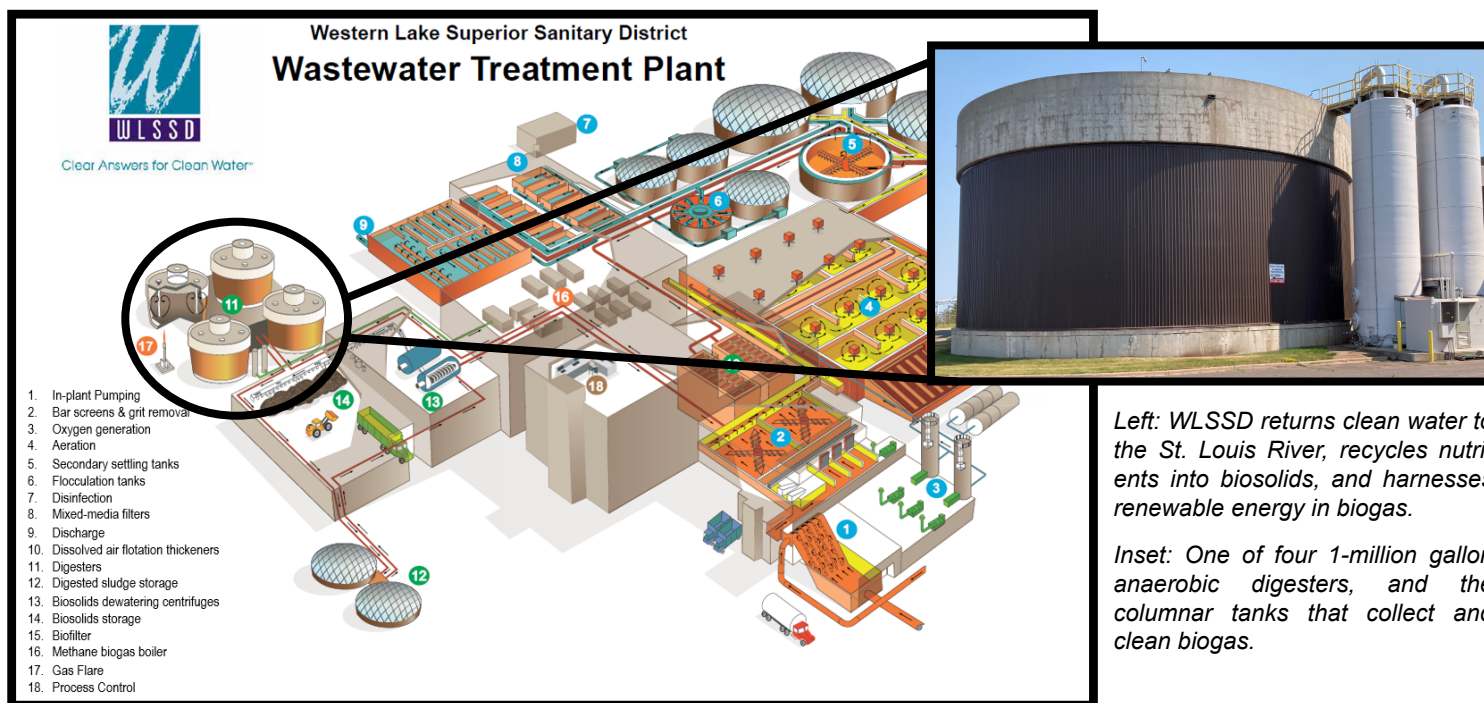
The end result of this process is nutrient-rich biosolids. Biosolids are a valuable resource containing essential plant nutrients and organic

matter, that get recycled as a fertilizer and soil amendment. To prepare the biosolids for land application on agricultural fields and mineland reclamation sites, WLSSD removes excess water with a centrifuge.



WLSSD's Field Green® biosolids have the appearance and texture of damp soil. Field Green® is land-applied by WLSSD's highly trained staff with Type 4 Certification from the Minnesota Pollution Control Agency. They use top-of-the-line equipment and GPS technology. WLSSD's biosolids and application process exceed state and federal regulations established for public health and environmental protection.

During anaerobic digestion, about 30% of the organic solids are converted into methane-rich biogas. WLSSD has invested in infrastructure to use biogas for heating the plant. The next step is to integrate engine generators that can use biogas to create electricity. It is estimated that these generators will produce 50% of WLSSD's electricity needs, a savings of approximately \$1.5 million dollars each year.





Field Green® Program  
Western Lake Superior Sanitary District  
2626 Courtland Street  
Duluth, MN 55806

Clear Answers for Clean Water™

## Contact us

### Existing customer?

Schedule a field or ask questions about a recent application:

**Paul Wilken, Lead Land Application Operator**  
(218) 348-9457 or [paul.wilken@wlssd.com](mailto:paul.wilken@wlssd.com)

### New customer or community member?

Enroll in the biosolids program, or ask for information:

**Dori Decker, Environmental Programs Coordinator**  
(218) 740-4808 or [dori.decker@wlssd.com](mailto:dori.decker@wlssd.com)

### For general questions:

**Todd MacMillan, Biosolids Program Supervisor**  
(218) 740-4767 or [todd.macmillan@wlssd.com](mailto:todd.macmillan@wlssd.com)

## Field Green® Fee Schedule

A nominal fee is charged for land application of biosolids. If the farmer would like the biosolids tilled into the soil, there is an additional fee. A delivery fee is applied for distances greater than 40 miles from WLSSD's treatment plant.

Service	Rate
First 300 tons/year	\$19/acre
300-900 tons/year	\$17/acre
900+ tons/year	\$15/acre
Primary Tillage	\$12/acre

Invoices will be mailed following application of Field Green®. A 5% discount is applied if paid within one month of invoice date.



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