



FOND DU LAC
WTRRF

**Biosolids Land Application
Experience**

Digestion

TPAD Digestion



High Strength Waste





Dewatering Centrifuges

- 130,000 gal/day
- 1.4% feed solids
- 25% cake
- 8000 Wet Tons Annually
- Class B Product
- 75% to farmer
- 25% to landfill

Biosolids Hauling

- Contract Hauling/Land App
- 30 wet tons/day on avg.
- 4 trailers = no storage
- 3-5 times/week
- Fields within 15 minutes
- Proactive communication with schedule coordinator
 - Weather
 - O&M
 - Planned Outages
 - Farmer



Land Application



Biosolids Spreading/Incorporation

- No cost fertilizer for Farmer
- One Farmer has enough approved land for us
- Lives in area, is aware of neighbors concerns and considers them when applying
- Contractor flags setbacks
- Works with farmer on equipment settings for proper application rates
- Ensures regulations are followed for land application - Reporting
- Actively looking for new fields



Door Knocking

- Process
- Analysis
- Quality Product
- Benefits: Farmer, Soil, Crops
- Application Rates/Monitoring/Records
- Safe and Ethical Land Application

Biosolids
Land Application of Organic Fertilizer & Soil Conditioner for Fond du Lac Farmers

Fields where our biosolids can be land applied must meet the following criteria:

- Fields with crops not grown for human consumption
- Fields with low slopes
- Fields low in phosphorus
- Fields must be within 20 miles of Fond du Lac
- Fields with early Spring access before planting
- Fields that are accessible in Summer (Alfalfa)
- Fields that are ready after Fall harvest

Services that are provided

- Soil testing is provided every four years on fields that are DNR approved
- Nitrogen is supplied at the agronomic rate for the crop season
- Lost organic matter is replenished and the biosolids addition will increase soil water holding capacity
- A report is provided to each farmer with amounts of nutrients supplied per field

FOND DU LAC WASTEWATER TREATMENT & RESOURCE RECOVERY FACILITY

City of Fond du Lac Wastewater Treatment & Resource Recovery Facility

The Fond du Lac Wastewater Treatment & Resource Recovery Facility (WTRRF) consists of a complex biological treatment process that will produce three valuable end products.

1. Clean water
2. Methane gas
3. Biosolids

The Fond du Lac WTRRF annually provides local farmers with over 4,500 wet tons of cake biosolids fertilizer. The land application of the biosolids provides a slow release, quality nitrogen and phosphorus product at no cost to the farmers.

The Wastewater Treatment Process

The treatment process used at WTRRF cleans organic waste from the water using a biological and natural process. This is the same process used in nature by microorganisms to clean water in lakes, rivers and streams. At WTRRF, the process is accelerated by creating a very stable and controlled environment for the microorganisms. The wastewater is cleaned by aerobic and anaerobic microorganisms. To keep the process stable and

Interested?
Want to learn more about biosolids?
Would you like a tour of the Wastewater Plant?
Please call: 920-539-0733

running efficiently, microorganisms must be removed from the system daily. The aerobic process (aeration basins) we use to anaerobic digesters for further treatment and solids reduction.

Fond du Lac biosolids meet all requirements and are land applied on WI DNR approved sites. Comprehensive monitoring, sampling and record keeping are key components of our Biosolids Program.

Aeration Basins

Dewatering Centrifuges

The Benefits of Biosolids

Biosolids supply nitrogen, phosphorus, potassium, and valuable micronutrients to the soil. Biosolids applications also supply valuable organic material to the soil called humus. Humus will help keep the soil healthy. A healthy and active soil contains microorganisms that suppress disease causing bacteria and will benefit the soil structure. Improved soil structure will help increase the soil's water holding capacity and will help in making better root structure for the crops. Participating farmers have been able to improve soil pH and at the same time reduce the potential of soil erosion by adding valuable organic matter back to the soil. The participating farmers have also reduced their reliance on commercial fertilizers while at the same time maintaining or improving crop yields.

Land Application

Application of the biosolids is either done by incorporation or surface application on our permitted sites. When biosolids are incorporated in a field, they are injected into the soil at a depth of approximately 7 inches. Prior to land application the contents of the biosolids are analyzed by an independent lab. The results of the analysis are then used to determine application rates at each site. The EPA and WI DNR specify the parameters that need to be analyzed and the frequency of analysis. We base our biosolids application rates on the nitrogen

requirement of the crop grown. Information on biosolids quality and metal participating farmers provided to the WI DNR and participating rates are annually. During land application, a great amount of consideration for safety, human health, and the environment are taken into account. Certain setback distances from homes, wells, and environmentally sensitive areas are maintained to provide a high level of safety.

Nutrients

Nitrogen (N), phosphorus (P), and potassium (K) are added to the soil from the application of biosolids. The addition of nitrogen to the soil via biosolids application is a type of nitrogen that is a slow release organic form that the soil microorganisms must break down for the crops to utilize. Our rates for land application are based on nitrogen. Typically, for field corn and soybeans we use 140 pounds per acre of N and for alfalfa we use 200 pounds per acre of N as target rates. We will also take into account other sources of nitrogen and adjust our application rates. Other sources of nitrogen that we take into account are: previous biosolids applications, a previous legume crop, manure applications, and commercial fertilizer applications.

Annual Report

2016 Annual Summary

Fond du Lac Regional Wastewater Treatment and Resource Recovery Facility

We Have a New Name!

For many years, City residents and employees have known the wastewater plant by a variety of names. We have heard everything from Water Pollution Control Plant (WPCP) to Wastewater Collection and Treatment System (WCTS) and even "Stinky Point." With the evolution of the wastewater industry and in recognition of our recent designation as a Utility of the Future, we wanted a name that was more all-encompassing of what we really do every day. In February 2017, the Fond du Lac Regional Wastewater Treatment Facility was officially renamed the **Fond du Lac Regional Wastewater Treatment and Resource Recovery Facility (WTRRF)**.

The idea of what wastewater treatment is has changed and the products we produce every day, clean water, biosolids and biogas are no longer looked at as waste. Biogas is a renewable energy source used to power a combined heat and power engine which offsets our overall power consumption by approximately 40%. Biosolids, a nutrient rich organic material, are used as a fertilizer for farming. These resources we recover are reclaimed and used for the benefit of the environment. We have become focused on more efficient operations and pride ourselves for our efforts in water reuse, watershed stewardship, beneficial biosolids reuse and energy efficiency, generation and recovery. We consistently surpass our regulatory requirements and feel strongly that we are providing a sustainable, efficient and value-added service to our community.

As a Utility of the Future, WTRRF was among 61 public and private utilities from across the U.S., Canada and Denmark recognized in 2016. The designation shows the facility's progression towards resource recovery and now we have a name to better match our forward thinking efforts toward sustainability.

Many are not familiar with the fact that we are a regional facility, treating the wastewater of not only residents of the City of Fond du Lac, but also 18 outlying communities surrounding Fond du Lac as well as industrial and commercial contributors.

MISSION STATEMENT

Our mission is to operate and maintain the Fond du Lac Regional Wastewater Treatment and Resource Recovery Facility in a cost effective manner, producing effluent water that achieves permit requirements and to recover valuable resources such as energy, biosolids and nutrients to be used in an environmentally friendly and beneficial manner.

Values

- Responsiveness** - We will provide collection and wastewater services that are timely and serve the needs of our customers and communities all day, every day.
- Safety** - We will work safely and protect ourselves and others before all other priorities.
- Strategic Thinking** - We commit to implementing projects, programs and processes that promote sustainability and meet the needs and challenges of our wastewater and resource recovery facility.
- Environmental Responsibility** - We will manage water as a limited but renewable natural resource in accordance with regulatory requirements and through cooperation, participation and education with other stakeholder organizations.
- Teamwork** - We will promote communication, unity and cooperation among staff, as well as with our customers and stakeholders, in order to meet the common purpose of achieving the mission, vision and work of the department.
- Integrity** - We will act in an honest, ethical, professional and respectful manner with each other and our customers, take personal responsibility and be accountable for achieving results.

VISION STATEMENT

To become an innovative and resilient clean water enterprise, revolutionizing the recovery of valuable resources for water and environmental sustainability.

2016 UTILITY OF THE FUTURE

Accomplishments

- Biochemical Oxygen Demand (BOD) - 96% reduction
- Total Suspended Solids - 97% Reduction
- Total Phosphorus - 85% Reduction
- Ammonia Nitrogen - 97% Reduction
- Watershed Stewardship - Monitored 17 locations city and county wide

2016 Resource Recovery

- 2.9 Billion Gallons of Wastewater Treated
- 85,000 Pounds of Phosphorus Removed
- 4,882 Wet Tons of Biosolids Reused as Fertilizer
- 101 Million Cubic Feet of Biogas Generated

Upcoming Projects

- Biological ammonia removal system (2018)
- Phosphorus removal compliance plan (2018)
- Struvite harvesting (2019)

Sponsor

Winnebago Waterways
Lake Management Planning

CONTACT US:
<https://www.fdl.wi.gov> Departments > Wastewater Treatment
920-322-3663

Communication

- Farmer
- Contractor – Monthly Reporting
- DNR Basin Engineer – Reporting/Situations
- Land Owners – Forms Up to Date
- Neighbors – Newly Approved Fields – Door Knocking
- Address Concerns ASAP
- Be inviting and approachable

Concerns

- Slopes/Runoff
 - Good communication
 - Ethical Practices
 - Involve Necessary Parties (DNR)
- Odor
 - Neighborhood
 - Host a meeting – addresses there concerns
 - Show proof of approval and practice

FOND DU LAC

WASTEWATER TREATMENT & RESOURCE RECOVERY FACILITY



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