Permit Fact Sheet

Changes from the previous permit are highlighted in grey

General Information

Permit Number:	WI-0064629-03-0
Permittee Name:	NLC Energy Denmark LLC
Address:	6601 County Rd R PO Box 610
City/State/Zip:	Denmark WI 54208-0396
Discharge Location:	Unnamed tributaries to the Neshota River, in the West Twin River Watershed, in the Twin-Door-Kewaunee Basin, and groundwaters of the State via land application on approved sites
Receiving Water:	Unnamed Tributary 1 (UT1); Unnamed Tributary 2 (UT2)
Stream Flow ($Q_{7,10}$):	UT1 = 0 cfs; UT2 = 0.02 cfs
Stream Classification:	UT1 = Limited Aquatic Life (LAL); UT2 = Warm Water Forage Fish (WWFF)
Discharge Type:	New (surface water); Existing (land application)

Facility Description

NLC Energy Denmark LLC (NLC Energy) owns and operates an anaerobic digestion facility and receives hauled-in industrial organic food waste and dairy manure, which are processed separately through the facility. The organic food waste is processed through a 1.7 MG anaerobic digester and the dairy manure is processed through three separate digesters totaling 5.6 MG. Solids from the screw presses are distributed or sold as animal bedding material. The digested liquid industrial sludge is stored and later landspread on Department approved land application sites. Digested liquid manure is transferred back to participating farms. Co-products of the digestion process include methane and carbon dioxide, which are further processed on-site to produce biogas for the natural gas pipeline, liquid CO_2, and dry ice. ~~Well water is conditioned with a water softener, flows through a continuous monitoring flow meter, and is added to the cooling tower system located in the CO_2 clean-up building. Additives are used in the cooling tower system to control corrosion and biofilm. The cooling water is discharged on a continuous basis to the unnamed tributaries to the Neshota River.~~

Permit Modification -1: Permit modification -1 was completed following NLC Energy's request to remove Surface Water Outfall 006 (Non-Contact Cooling Water).

Substantial Compliance Determination

Enforcement During Last Permit: There were no formal enforcement actions taken during the previous permit term.

After a desk top review of all land application reports, compliance schedule items, and a site visit on 6/29/21, this facility has been found to be in substantial compliance with their current permit.

Compliance determination entered by Alexis Heim Peter, Wastewater Specialist on 7/2/21.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**
701		American Foods Group (Green Bay) - Packing Plant: Paunch

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**
		manure and pretreatment sludge discharged to the NLC Energy Denmark digester 1.
702		Johnsonville Sausage (Sheboygan) - Meat Processor: Lime slurry and spent liquid smoke product discharged to the NLC Energy Denmark digester 1.
703		Bradley Trucking (Denmark) - Cattle truck washwater from pit to the NLC Energy Denmark digester 1.
704		Agropur Inc (Luxemburg) - Dairy: High strength cooker water/permeate and emergency untreated process water discharged to the NLC Energy Denmark digester 1.
705		JBS Green Bay Inc (Green Bay) - Meat Packing Plant: Paunch manure, liquid leachate ("Green Water") and wastewater sludge discharged to the NLC Energy Denmark digester 1.
706		Sandy Bay Mink Ranch (Mishicot) - Mink Farm: Paunch manure and blood from the mink slaughter operation discharged to the NLC Energy Denmark digester 1.
707		Sanimax Corporation (Green Bay) - Rendering Plant: Dissolved Air Flotation thickener waste from the wastewater treatment plant and non-renderable organics discharged to the NLC Energy Denmark digester 1.
708		Bay Valley Foods (Green Bay) - Food Processor: Vegetable waste (pickles and banana peppers) discharged to the NLC Energy Denmark digester 1.
709		Agropur Inc (Little Chute) - Dairy: Waste Activated Dissolved Air Flotation thickener sludge discharged to the NLC Energy Denmark digester 1.
710		Sensient Flavors (Juneau) - Food Processors: Yeast extracts and other by-product solid waste generated from yeast extraction process discharged to the NLC Energy Denmark digester 1.
711		Salm Partners LLC (Denmark) - Secondary Meat Processors: Grease trap waste from washdown process and production areas contains FOG and some solids discharged to the NLC Energy Denmark digester 1.
712		SC Johnson (Racine) - Process wash water: Wash water waste from washdown process and production areas of shaving gel production discharged to the NLC Energy Denmark digester 1.
713		Galloway Company (Neenah) - Dairy: Cream product waste discharged to the NLC Energy Denmark digester 1.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**
714		Mars Petcare (Mattoon, IL) - Pet food plant: Meat based pet food additive wastes discharged to the NLC Energy Denmark digester 1.
715		Sanimax Corporation (DeForest) - Rendering Plant: Washdown water and FOGs from cooking operations discharged to the NLC Energy Denmark digester 1.
716		Foremost Farms (Appleton) - Dairy: 40% whey permeate remaining after cheese making discharged to the NLC Energy Denmark digester 1.
717		Bay Valley Foods (Green Bay) - Pickling Brine: sweet brine water comprised of vinegar, sugar, and salt discharged to the NLC Energy Denmark digester 1.
718		Sanimax Corporation (DeForest) - Rendering Plant: Grease stick water (mid level float) discharged to the NLC Energy Denmark digester 1.
719		Northstar Recycling (Longmeadow, MA) - Recycling Entity for Mars Chocolate of North America: Confectionary wastes from overproduction or expired product discharged to the NLC Energy Denmark digester 1.
720		Clasen Quality Chocolate (Watertown) - Chocolate Producer: Chocolate and related ingredients not suitable for production discharged to the NLC Energy Denmark digester 1.
721		GLK Foods (Bear Creek) - Vegetable Processor: Waste (excess or off spec solid) sauerkraut discharged to the NLC Energy Denmark digester 1.
723		Sturm Foods (Manawa) - Food & Beverage Co.:Dry bulk food waste and material from dust collection system discharged to the NLC Energy Denmark digester 1.
724		Cargill, Inc. (West Fargo, ND) - Ag Business: Fats, Oils, and Greases from edible oil seed processing plant discharged to the NLC Energy Denmark digester 1.
725		D.R. Diedrich (Milwaukee) - Tannery: Lime fleshings from hide tanning process discharged to the NLC Energy Denmark digester 1.
727		McCain Foods USA, Inc. (Appleton, WI) - Food Processor: food waste (cheese, batter/breading, vegetables) discharged to the NLC Energy Denmark digester 1.
728		Clasen Quality Chocolate (Middleton) - Chocolate Producer: Chocolate and related ingredients not suitable for production discharged to the NLC Energy Denmark digester 1.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**
729		Chamness Technology Inc. (Blairsburg, IA) - Dry Pet Food: Off-spec product, over runs, line clean outs, floor sweepings, and expired product discharged to the NLC Energy Denmark digester 1.
730		Chamness Technology Inc. (Blairsburg, IA) - Molasses: Off-spec product, over runs, line clean outs, floor sweepings, and expired product discharged to the NLC Energy Denmark digester 1.
731		Emmi Roth (Seymour) - Cheese processing plant: Whey cream generated from curd and whey processing discharged to the NLC Energy Denmark digester 1.
732		Kalle USA (Gurnee, IL), a client of Certified Environmental Solutions (Brookfield, WI) - By-product gelatin from casings that cover meat products discharged to the NLC Energy Denmark digester 1.
733		Horseshoe Beverage (Neenah, WI) - off-spec dairy blend (includes milk, whey creams, ultra-filtered skim milk, and 'dairy base' ingredients for lattes that do meet specifications) discharged to the NLC Energy Denmark digester 1.
801		Liquid manure from WPDES (CAFO) permitted farms, discharged to the NLC Energy Denmark digester 2A, 2B and/or 3, dedicated to manure processing.
802		Liquid manure from farms without WPDES permits (non-CAFO), discharged to the NLC Energy Denmark digester 2A, 2B and/or 3, dedicated to manure processing.
001		Anaerobically digested industrial liquid sludge transferred to onsite storage structures and applied to approved land application sites. Monitoring is only required when wastes are direct land applied under this permit. Storage units shall be adequately mixed prior to sample collection.
002		Anaerobically digested sludge pressed (screw) to approximately 35% solids that is sold as bedding material. Report solids sold as bedding (or disposed of by other methods) on Form 3400-52, "Other Methods of Disposal." Direct land application of cake sludge shall be approved by the department prior to spreading.
003		Anaerobically digested sludge pressed (screw) and dried to approximately 80% solids. Report solids sold shipped as dried solids on Form 3400-52, "Other Methods of Disposal." Direct land application of cake sludge shall be approved by the department prior to spreading.
004		Anaerobically digested liquid manure transferred to WPDES permitted participating farms (CAFOs). The permittee shall not

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**
		direct land apply digested manure. Report digested manure volumes transferred back to permitted participating farms on Form 3400-52, "Other Methods of Disposal."
005		Anaerobically digested liquid manure transferred to participating farms without WPDES permits (non-CAFOs). The permittee shall not direct land apply digested manure. Report digested manure volumes transferred back to unpermitted participating farms on Form 3400-52, "Other Methods of Disposal."
~~006~~	~~N/A - new discharge~~	~~Noncontact cooling water shall be sampled prior to discharge to the unnamed tributaries to the Neshota River.~~

1 Influent – Monitoring Requirements

Sample Point Number: 701- American Foods Group; 702- Johnsonville Sausage; 703- Bradley Trucking; 704- Agropur Inc Luxemburg; 705- JBS Green Bay; 706- Sandy Bay Mink Ranch; 707- Sanimax; 708- Bay Valley Foods; 709- Agropur Inc Little Chute; 710- Sensient Flavors; 711- Salms Partners LLC; 712- SC Johnson; 713- Galloway Company; 714- Mars Petcare; 715- Sanimax Grease; 716- Foremost Farms; 717- Bay Valley Foods; 718- Sanimax Grease Stick Water; 719- Northstar Recycling; 720- Clasen Quality Chocolate; 721- GLK Foods; 723- Sturm Foods Inc.; 724- Cargill, Inc.; 725- D.R. Diedrich & Co Ltd; 727- McCain Foods USA; 728- Clasen Middleton; 729- Chamness Pet Food; 730- Chamness Molasses; 731- Emmi Roth; 732- Kalle USA; 733- Horseshoe Beverage

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Volume		gpd	Daily	Measure	The volume for each sample point shall be monitored & reported separately on the Discharge Monitoring Report.
Solids, Total		Percent	Annual	Grab	
COD		mg/kg	Annual	Grab	Shall be reported on a dry weight basis.
pH Field		su	Annual	Grab	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Total Kjeldahl		mg/kg	Annual	Grab	Shall be reported on a dry weight basis.
Nitrogen, Ammonia (NH3-N) Total		mg/kg	Annual	Grab	Shall be reported on a dry weight basis.
Chloride		mg/kg	Annual	Grab	Shall be reported on a dry weight basis.
Phosphorus, Total		mg/kg	Annual	Grab	Shall be reported on a dry weight basis.
Potassium, Total Recoverable		mg/kg	Annual	Grab	Shall be reported on a dry weight basis.

Changes from Previous Permit:

No changes from the previous permit.

Explanation of Limits and Monitoring Requirements

Influent monitoring is required because hauled-in industrial organic food wastes and dairy manure are received from various sources.

Sample Point Number: 801- Liquid Manure (Permitted) and 802- Liquid Manure (Unpermitted)

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Volume		gpd	Daily	Total Daily	

Changes from Previous Permit:

No changes from the previous permit.

Explanation of Limits and Monitoring Requirements

These sample points are for tracking the influent volume from CAFO permitted and unpermitted farms that truck their liquid manure to the NLC Energy digester.

Surface water section was removed due to permittee's permit modification request to remove Outfall 006 (Non-Contact Cooling Water).

2 Land Application - Sludge/Liquid Wastes (industrial only)

Sample Point Number: 001- SLUDGE; 002- SLUDGE SOLD AS BEDDING; 003- SLUDGE SHIPPED AS DRIED SOLIDS

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Monthly	Grab	
COD		Percent	Monthly	Grab	Dry Weight Basis
pH Field		su	Monthly	Grab	
Nitrogen, Total Kjeldahl		Percent	Monthly	Grab	Dry Weight Basis
Nitrogen, Ammonia (NH3-N) Total		Percent	Monthly	Grab	Dry Weight Basis
Chloride		Percent	Monthly	Grab	Dry Weight Basis
Phosphorus, Total		Percent	Monthly	Grab	Dry Weight Basis
Potassium, Total Recoverable		Percent	Monthly	Grab	Dry Weight Basis
PFOA + PFOS		ug/kg	Annual	Calculated	Report the sum of PFOA and PFOS. See PFAS Permit Sections for more information.
PFAS Dry Wt			Annual	Grab	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information.

Changes from Previous Permit:

- Annual PFAS monitoring is included in the permit pursuant to s. NR 214.18(5)(b), Wis. Adm. Code.

Explanation of Limits and Monitoring Requirements

Requirements for land application of industrial sludge are determined in accordance with ch. NR 214, Wis. Adm. Code.

PFAS – The presence and fate of PFAS in municipal and industrial sludges is an emerging public health concern. EPA is currently developing a risk assessment to determine future land application rates and expects to release this risk assessment by the end of 2024. In the interim, the Department has developed the "Interim Strategy for Land Application of Biosolids and Industrial Sludges Containing PFAS". Collecting sludge data on PFAS concentrations from a wide range of wastewater treatment facilities will help protect public health from exposure to elevated levels of PFAS and determine the Department's implementation of EPA's recommendations. To quantitate this risk, PFAS sampling has been included in the proposed WPDES permit pursuant to s. NR 214.18(5)(b), Wis. Adm. Code.

Sample Point Number: 004- LIQUID MANURE (PERMITTED) and 005- LIQUID MANURE (UNPERMITTED)

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Volume		gpd	Daily	Measure	

Changes from Previous Permit:

No changes from the previous permit.

Explanation of Limits and Monitoring Requirements

Requirements for land application of industrial liquid wastes are determined in accordance with ch. NR 214, Wis. Adm. Code.

3 Schedules

3.1 Land Application Management Plan

A management plan is required for the land application system.

Required Action	Due Date
Land Application Management Plan: Submit an update to the management plan to optimize the land application system performance and demonstrate compliance with Wisconsin Administrative Code NR 214.	03/31/2025

Explanation of Schedules

Management plan submittal is required per s. NR 214.17(6)(c) and NR 214.18(6)(c), Wis. Adm. Code. This schedule requires the permittee to update the existing management plan at least one time during the permit term.

Attachments:

N/A - None

Expiration Date:

December 31, 2028

Justification Of Any Waivers From Permit Application Requirements:

No waivers from permit application requirements were granted.

Prepared By: Sarah Donoughe, Wastewater Specialist-Senior

Date: November 7, 2023

Modified By: Ashley Clark, Wastewater Specialist – Sen.

Modification Fact Sheet Date: July 25, 2025