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VIA EMAIL (jane.landretti@wisconsin.gov)
AND U.S. MAIL

Jane R. Landretti
Staff Attorney
Wisconsin Department of Natural Resources
P.O. Box 7921
Madison, WI 53707-7921

Re: Central Sands Dairy, LLC ("CSD") – WPDES Permit No. WI-0063533-02-1

Dear Ms. Landretti:

Pursuant to Paragraphs 1 and 2 of the Settlement Agreement effective July 27, 2017, enclosed is a crop history report for RDO-12 prepared by CSD.

Sincerely,

MICHAEL BEST & FRIEDRICH LLP

Cameron Field

Cameron F. Field

Enclosure

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Crop History Report

Central Sands Dairy, per Settlement agreement 7/27/2017.

The following is summary of the cropping history for RDO 12 from 2012 through 2016. RDO 12 is the field immediately north of the Central Sands Dairy and has received manure on a somewhat annual basis over the time being discussed herein. The entire focus is on nitrogen as that is the primary nutrient of concern. All manure nutrient applications are presented as plant available nitrogen per SNAP+ records.

a. **Evidence of crop failure.** Field was corn for silage in 2014. Corn silage yields during the 2014 crop year were 10% off of previous year average and are nearly 20% lower than 2017 crop year corn silage yield for the farm. While not a crop failure, 23.6 ton/a is less than average production. Table 1. Pea crop in 2015, also underperformed relative to average pea production. We experienced a hard frost after flower initiation on RDO 12 which resulted in pod reset. The second set of pods formed close to the ground and were not harvestable. The result was a 2000-4000 lb/a reduction in yield relative to other pea fields during the summer of 2015.
b. **Actual crop yields from RDO 12.**

Table 1. Actual crop yield from RDO 12 from 2012 through 2016.

		Crop 1		Crop 2	
Year	Crop*	Yield	Units		
2012	Green bean x 2	14,434	lb/a	15700	lb/a
2013	Potato	553	cwt/a		
2014	Field corn**	23.6	ton/a		
2015	Pea/green bean	4684	lb/a	13719	lb/a
2016	Potato/alfalfa	370	cwt/a		

*Fields were planted to either oat or winter wheat cover crop after main harvest

**Field corn was harvested for silage and yield is presented at 65% moisture

c. **Forage quality samples.** No forage quality samples are available for 2014. Average nutrient recovery data for 6 neighboring fields suggest 75 to 85% of the nitrogen applied was removed with the harvested crop, but no specific data is available for the corn silage grown on RDO 12.
d. **Identify the quantity and nutrient content of the manure and commercial fertilizer applied.** Source of nitrogen includes carryover nutrients from previous years applications of manure (Table 2).

Table 2. Estimate year 2 and 3 nitrogen credit from manure applied the previous year

Year	Crop*		
2012	Green bean x 2	26	lb/a
2013	Potato	15	lb/a
2014	Field corn**	0	lb/a
2015	Pea/green bean	29	lb/a

2016	Potato/alfalfa	7	lb/a

Furthermore, current year plant available nitrogen from manure and commercial fertilizer is included (Table 3).

Table 3. Quantity and nutrient content of manure and fertilizers applied to crops on RDO 12 from 2012 to 2016.

Year	Crop	Product	Amount applied	Product Units	Nutrient content	Content units	N lb/a
2012	Green bean - Crop 1	Liquid Manure	6800	gal/a	4.26	lb/1000 gal	28
		Popper	5	gal/a	5	%	3
		32% UAN	5	gal/a	32	%	18
	Green bean - Crop 2	Liquid Manure	7400	gal/a	4.38	lb/1000 gal	34
		Popper	5	gal/a	5	%	3
		32% UAN	5	gal/a	32	%	18
2013	Potato	AMS	100	lb/a	21	%	21
		Urea	100	lb/a	46	%	46
		32% UAN	15	gal/a	32	%	52.5
		32% UAN	10	gal/a	32	%	35
		Nitro 9	10	gal/a	9	%	10
		Nitro 12	15	gal/a	12	%	19
		Nitro 12	10	gal/a	12	%	13
2014	Field corn	Liquid Manure	12022	gal/a	7.26	lb/1000 gal	87.28
		Starter	10	gal/a	18	%	20
		AMS	150	lb/a	21	%	31.5
		32% UAN	10	gal/a	32	%	35
		32% UAN	5	gal/a	32	%	17
		32% UAN	5	gal/a	32	%	18
2015	Pea	Liquid manure	8063	gal/a	3.7	lb/1000 gal	29.8
		32% UAN	2.5	gal/a	32	%	8.75
	Green bean	Liquid manure	8055	gal/a	2.0	lb/1000 gal	16.11
		Starter	5	gal/a	7	%	3.5
		32% UAN	3	gal/a	32	%	10.7
		Starter	1	gal/a	7	%	0.7
		Nitro 9	2	gal/a	9	%	1.9
2016	Potato/alfalfa	Solid Manure	8.3	ton/a	2	lb/ton	16.6
		Potato Starter	15	gal/a	9	%	15
		Popper	13	gal/a	7	%	10
		AMS	200	lb/a	21	%	42
		32% UAN	25	gal/a	32	%	87.5
		32% UAN	15	gal/a	32	%	42.5
		32% UAN	10	gal/a	32	%	35
		Nitro 9	10	gal/a	9	%	10

e. **Identify when manure and commercial fertilizer were applied**

Table 4. Timing of nutrient applications during the 2012 to 2016 crop production years.

Year	Crop	Product	Time of application	Date of application
2012	Green bean - Crop 1	Liquid Manure	preplant	5/7/2012
		Popper	planting	5/16/2012
		32% UAN	3rd leaf	6/7/2012
	Green bean - Crop 2	Liquid Manure	preplant	7/13/2012
		Popper	planting	7/17/2012
		32% UAN	3rd leaf	8/7/2012
2013	Potato	AMS	hilling	5/22/2013
		Urea	hilling	5/22/2013
		32% UAN	hilling	5/22/2013
		32% UAN	50% canopy	6/11/2013
		Nitro 9	50% canopy	6/11/2013
		Nitro 12	Early bulking	7/3/2013
		Nitro 12	Late bulking	7/15/2013
2014	Field corn	Liquid Manure	preplant	5/8/2014
		Starter	planting	5/14/2014
		AMS	5 lf stage	6/12/2014
		32% UAN	cultivation	6/19/2014
		32% UAN	tassel	7/12/2014
		32% UAN	silk	7/31/2014
2015	Pea	Liquid manure	preplant	4/19/2015
		32% UAN	blossom	5/18/2015
	Green bean	Liquid manure	preplant	7/15/2015
		Starter	planting	7/18/2015
		32% UAN	3rd leaf	8/6/2015
		Starter	3rd leaf	8/6/2015
		Nitro 9	blossom	8/24/2015
2016	Potato/alfalfa	Solid Manure	preplant	1/7/2016
		Potato Starter	planting	4/18/2016
		Popper	planting	4/18/2016
		AMS	hilling	5/5/2016
		32% UAN	hilling	5/10/2016
		32% UAN	50% canopy	6/3/2016
		32% UAN	Full canopy	6/14/2016
		Nitro 9	Late bulking	6/14/2016