Ocean Spray Cranberry, Inc. @ Babcock Draft Permit Fact Sheet

General Information

Permit Number:	WI-0039071-11-0
Permittee Name:	Ocean Spray Cranberries, Inc., 1 Ocean Spray Drive, Lakeville, MA, 02349
Discharge Location:	Ocean Spray Cranberries, Inc. Babcock, PO Box 155, 1522 Necedah Rd., Babcock, WI 54413
Receiving Water:	the groundwaters of the Hemlock Creek and Upper Yellow River Watersheds in the Upper Wisconsin River Southern Sub-Basin in Wood County
Discharge Type:	Existing, seasonally

Facility Description

Ocean Spray Cranberries Inc in Babcock is a fruit/receiving facility that generates approximately 3 million gallons of wastewater annually. Wastewater is generated through the cleaning of fruit and washing of floors and equipment. Sanitary wastewater is discharged to an on-site septic system. During cold weather months (Dec-March) the wastewater is stored in a 0.35 million gallon above-ground tank. During warm weather months (April-Nov) the stored wastewater, along with wastewater generated from April-December, is transported to the spray field and spray irrigated via traveling gun on a 42-acre spray field. Byproduct solids generated during fruit receiving and packaging operations are landspread on the spray field also. A groundwater monitoring system exists at the site. No major operational changes occurred during the last permit term. The only significant effluent monitoring change in the upcoming permit is the addition of a total nitrogen monitoring requirement at the spray irrigation outfall. Based on recent calculations of groundwater sampling data, the following groundwater monitoring/limit changes are in the next permit term:1) the alternate concentration limit (ACL) has been removed for nitrite + nitrate nitrogen and replaced with the preventative action limit (PAL) in ch. NR 140 Wis. Adm. Code, 2) the organic nitrogen & total dissolved solids PALs increased. Schedules have been included in the permit that require submittal of updated Land Treatment & Land Application Management plans.

Substantial Compliance Determination

Enforcement During Last Permit: No enforcement actions were taken during this permit term.

After a desk top review of all discharge monitoring reports, and a site visit on 11/24/2023 by Mike Chang, this facility has been found to be in substantial compliance with their current permit.

Compliance determination entered by Mike Chang on 11/27/2023.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)**
004	396,000 gallons in 2023	Representative effluent samples shall be collected prior to discharge to the spray irrigation field. Discharge is limited to process wastewater from cleaning of fruit and washing of floors and equipment. Samples shall be collected prior to discharging to the spray irrigation site located at NW ¼, SE ¼, and N ½, SW ¼, SE ¼, Section 2, T21N, R3E, Town of Remington, Wood County.
005	150 tons/yr (dry weight), as reported on their application	Representative samples shall be collected prior to commencement of landspreading. Discharge is limited to by-product solids.

Sample Point Designation For Groundwater Monitoring Systems			
System	**Sample Pt Number**	**Well Name**	**Comments**
SPRAY IRRIGATION SYSTEM	806	WELL 6	Down-gradient, Non-point of standard
	808	WELL 8	Upgradient, background
	809	WELL 9	Down-gradient, Non-point of standard

1 Land Treatment – Monitoring and Limitations

Sample Point Number: 004- SPRAY IRRIGATION

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		gpd	Daily	Total Daily	
Hydraulic Application Rate	Monthly Avg	3,175 gal/ac/day	Monthly	Calculated	Limit applies April - November
Hydraulic Application Rate	Monthly Avg	0 gal/ac/day	Monthly	Calculated	Limit applies December - March
Nitrogen, Max Applied On Any Zone	Annual Total	300 lbs/ac/yr	Annual	Total Annual	
Chloride		mg/L	Monthly	Grab	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Total Kjeldahl		mg/L	Monthly	Grab	
Nitrogen, Total		mg/L	Monthly	Grab	

Changes from Previous Permit:

Per s. NR 214.14 (3) (c) Wis. Adm. Code nitrogen (mass) loading is based on total nitrogen. As a result, total effluent nitrogen sampling and reporting has been added, without a limit. The future annual mass loading should be calculated using total nitrogen.

Explanation of Limits and Monitoring Requirements

Requirements for land treatment of industrial wastewater are determined in accordance with ch. NR 214 Wis. Adm. Code.

Groundwater – Monitoring and Limitations

1.1 Groundwater Monitoring System for SPRAY IRRIGATION SYSTEM

Location of Monitoring system: NW ¼, SE ¼ and N ½, SW ¼ SE ¼ of Section 2, T21N, R3E, Town of Remington, Wood County, WI

Wells to be Monitored: 806 (WELL 6), 808 (WELL 8), 809 (WELL 9)

Well Used To Calculate PALs: 808 (WELL 8)

Point of Standards Application Well(s): None

Parameter	**Units**	**Preventative Action Limit**	**Enforcement Standard**	**Frequency**
Depth To Groundwater	feet	*****	N/A	1/ 6 Months
Groundwater Elevation	feet MSL	*****	N/A	1/ 6 Months
Chloride Dissolved	mg/L	125	250	1/ 6 Months
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	1/ 6 Months
pH Field	su	6.4	N/A	1/ 6 Months
Nitrogen, Ammonia Dissolved	mg/L	0.97	9.7	1/ 6 Months
Nitrogen, Organic Dissolved	mg/L	2.4	N/A	1/ 6 Months
Solids, Total Dissolved	mg/L	260	N/A	1/ 6 Months

Changes from Previous Permit:

Based on the background groundwater quality sampling the alternative concentration limit (ACL) for nitrite + nitrate nitrogen has been reduced to the s. NR 140.10 Wis. Adm. Code PAL of 2.0 mg/l. Based on background groundwater quality sample results the indicator parameter PALs for organic nitrogen and TDS have increased.

Explanation of Limits and Monitoring Requirements

Groundwater limits and requirements are determined in accordance with ch. NR 140, Wis. Adm. Code. Indicator parameter Preventive Action Limit (PAL) values are established per s. NR 140.20 Wis. Adm. Code. Alternative Concentration Limits as allowed under s. NR 140.28 Wis. Adm. Code, are established on a case-by-case basis. Groundwater limits and requirements are determined in accordance with ch. NR 140, Wis. Adm. Code.

For more information on the calculations and explanations on the changes, see the February 14, 2024 memo written by Woody Myers titled "Ocean Spray Cranberries, Inc. - Land Treatment System Evaluation Report, WPDES Permit #WI-0039071".

2 Land Application - By-Product Solids

Sample Point Number: 005- BY-PRODUCT SOLIDS

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Annual	Grab	
Nitrogen, Total Kjeldahl		Percent	Annual	Grab	
Phosphorus, Water Extractable		% of Tot P	Annual	Grab	
Phosphorus, Total		Percent	Annual	Grab	
Potassium, Total Recoverable		Percent	Annual	Grab	

Changes from Previous Permit:

No changes

Explanation of Limits and Monitoring Requirements

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

3 Schedules

3.1 Land Treatment Management Plan

A management plan is required for the land treatment system.

Required Action	Due Date
Land Treatment Management Plan: Submit an updated management plan to optimize the land treatment system performance and demonstrate compliance with Wisconsin Administrative Code NR 214. The management plan shall be consistent with the requirements of this permit, and NR 214.14 Wis. Adm. Code. To ensure this consistency, the management plan shall address the information identified in NR 214.14. The plan shall specify information on pretreatment processes, load and rest schedules, scheduled maintenance, vegetative cover control and removal, operational strategies for periods of adverse weather, monitoring procedures and any other pertinent information. If operational changes are needed, the Land Treatment Management Plan shall be amended by submitting a written request to the Department for approval of such amendments. Included in the plan update shall be the following: All monitoring well locations shall be reported to the department on a plan map drawn to a specific scale. The exact latitude/longitude location of the groundwater monitoring wells shall be included, in decimal degrees. The map shall indicate structure boundaries, property boundaries, any nearby surface waters and a north arrow. The plan shall show the wells in relation to each other, to property and structure boundaries and to a common reference point on a horizontal grid system. The origin of the grid system shall be located according to latitude and longitude or according to the state plane coordinate system. The exact vertical location of the top of the well casing shall be referenced to the nearest benchmark for the national geodetic survey datum to an accuracy of 0.01 feet. This plan map shall show the exact location of the installed well on a horizontal grid system which is accurate within 1 foot. The groundwater monitoring well latitude/longitude need to be provided in decimal degrees.	09/30/2024

Explanation of Schedule: An up-to-date Land Treatment Management plan is a standard requirement in reissued industrial permits per s. NR 214.13(5)(e) Wis. Adm. Code.

3.2 Land Application Management Plan

A management plan is required for the land application system.

Required Action	Due Date
Land Application Management Plan: Submit a management plan to optimize the land application system performance and demonstrate compliance with Wisconsin Administrative Code NR 214. The plan shall specify information on pretreatment processes, site identification on plat and soil maps, aerial photographs, if available, description of all site limitations, vegetative cover management and removal, availability of storage, type of transporting and spreading vehicle, load and rest schedules, monitoring procedures, contingency plans for periods of adverse weather or odor or nuisance abatement and any other pertinent information. If operational changes are needed, the Land Application Management Plan shall be amended by submitting a written request to the Department for approval of such amendments.	09/30/2024

Explanation of Schedule: An up-to-date Land Application Management plan is a standard requirement in reissued industrial permits per s. NR 214.17(6)(c) Wis. Adm. Code.

Special Reporting Requirements

N/A

Other Comments:

Publishing Newspaper: The Daily Tribune, 220 1st Ave South, Wisconsin Rapids, WI 54494-8090

Attachments:

NR 140 Groundwater Evaluation Report: February 14, 2024 memo written by Woody Myers titled "Ocean Spray Cranberries, Inc. - Land Treatment System Evaluation Report, WPDES Permit #WI-0039071"

Expiration Date:

June 30, 2029

Justification Of Any Waivers From Permit Application Requirements

None

Prepared By: Holly Heldstab, Wastewater Specialist **Date:** March 18, 2024

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: February 14, 2024 FILE REF: 5472

TO: File

FROM: Woody Myers - WCR

SUBJECT: Ocean Spray Cranberries, Inc. - Land Treatment System Evaluation Report, WPDES Permit # WI-0039071

Site Information

The Ocean Spray Cranberries, Inc (Babcock) facility is located at 1522 Necedah Road, Babcock, Wood County. This is an industrial wastewater treatment facility. Wastewater is generated through the cleaning of fruit and washing of floors and equipment. Wastewater is currently treated and discharged to groundwater via infiltration by way of a spray irrigation field (land treatment system) located in the NW ¼, SE ¼ and N ½, SW ¼ SE ¼ of Section 2, T21N, R3E, Town of Remington.

Land Treatment Effluent & Groundwater Evaluation Summary

Table 1 Land Treatment Effluent Parameters and Limits
Outfall 004 Spray Irrigation

Parameter	Current Permit WI-0039071-10		Proposed Permit WI-0039071-11	
	Limits and Units	Limit Type	Limits and Units	Limit Type
Flow Rate	- gpd	Monthly Avg-LT	- gpd	
Hydraulic Application Rate (Dec-Mar)	0 gal/ac/day	Monthly Avg	0 gal/ac/day	Monthly Avg
Hydraulic Application Rate (Apr-Nov)	3,175 gal/ac/day	Monthly Avg	3,175 gal/ac/day	Monthly Avg
Nitrogen, Max Applied to Any Zone	300 lbs/ac/yr	Annual Total	300 lbs/ac/yr	Annual Total
Chloride	- mg/l		- mg/l	
Nitrogen, Total Kjeldahl	- mg/l		- mg/l	
***Nitrogen, Total**	Not Required		- mg/l	

* Proposed permit changes

Table 2 Monitoring Wells

Well	Current Permit WI-0039071-10		Proposed Permit WI-0039071-11	
	Well Location	Well Designation	Well Location	Well Designation
806	Down-gradient	Non-Point of Standard	Down-gradient	Non-Point of Standard
808	Up-gradient	Background	Up-gradient	Background
809	Down-gradient	Non-Point of Standard	Down-gradient	Non-Point of Standard

No proposed permit changes

Table 3 Groundwater Quality Standards

Parameter	Current Permit WI-0039071-10		Proposed WI-0039071-11	
	PAL	ES	PAL	ES
Depth to Groundwater	N/A	N/A	N/A	N/A
Groundwater Elevation	N/A	N/A	N/A	N/A
Chloride, dissolved	125 mg/l	250 mg/l	125 mg/l	250 mg/l
Nitrogen, Nitrite + Nitrate	3.8 mg/l (ACL)	10.0 mg/l	***2.0 mg/l**	10.0 mg/l
pH, Field	4.4-6.4 su	N/A	4.4-6.4 su	N/A
Nitrogen, Ammonia	0.97 mg/l	9.7 mg/l	0.97 mg/l	9.7 mg/l
Nitrogen, Organic	2.2 mg/l	N/A	***2.4 mg/l**	N/A
Total Dissolved Solids	250 mg/l	N/A	***260 mg/l**	N/A

* Proposed permit changes

Geology

The bedrock under this facility is the Mount Simon Formation. This formation is comprised of sandstone, conglomerate and shale (*Bedrock Geology of Wisconsin, Regional Map Series West-Central Sheet*, Wisconsin Geological and Natural History Survey (WGNHS), 1988). Bedrock is anticipated to be between 50 and 100 feet below ground surface (bgs) (*Depth to Bedrock in Wisconsin,* WGNHS, 1973). The regolith consists of material ranging from coarse sand to silt. Surface soil primarily consists of the Tint sand and the Plainfield loamy sand (USDA NRCS Web Soil Survey).

Hydrogeology

Calculated groundwater elevation ranges between 971 and 978 feet above mean sea level (msl). Depth to groundwater was reported to be between 8 and 13 feet bgs. Groundwater flow direction was calculated to be predominately to the west. Regional groundwater is to the west southwest in this area of Wood County (*Water Table Elevation*, Wood County Map, WGNHS, 1981). The site is adjacent to an unnamed creek that eventually discharges to the Yellow River. There are ten wells (municipal, other than municipal, private and high-capacity) within a 1,500-foot range of this facility's groundwater discharge.

Land Treatment Effluent Quality and Loading Rates

Outfall 004 is the discharge associated with the groundwater monitoring network. The following table is the average flow (hydraulic loading), total Kjeldahl nitrogen, nitrogen mass and chloride loading summations for the land treatment system.

Table 4 Land Treatment Loading Averages

Year	Flow (gpd)	Kjeldahl Nitrogen (mg/l)	Nitrogen Mass (lbs/ac/yr)	Chloride (mg/l)
2023	7,107	5.9	38.3	63
2022	9,068	3.2	58.1	78
2021	6,918	5.8	58.1	80
2020	10,061	2.4	41.5	65
2019	10,076	8.2	38.3	70

Groundwater Monitoring System and Sampling Frequency

Groundwater samples were collected semi-annually from the three wells. All of the groundwater sampling parameters were analyzed for the dissolved phase in groundwater. Established groundwater quality standards are found in Table 1 Public Health Groundwater Quality Standards s. NR 140.10 Wis. Adm. Code, and Table 2 Public Welfare Groundwater Standards s. NR 140.12 Wis. Adm. Code. The thresholds of these standards are the Enforcement Standard (ES) and the Preventative Action Limit (PAL).

Table 5 Groundwater Monitoring Well Data

Sample Point	Well Name	Elevation (feet above msl)				Length (feet)		Well Type
		Casing Top	Ground Surface	Screen Top	Screen Bottom	Screen Length	Well Depth	
806	806	983.72	981.2	974.0	959.0	15.0	22.2	WT
808	808	982.47	980.0	975.0	960.0	15.0	20.0	WT
809	809	982.45	980.0	973.6	958.6	15.0	23.8	WT

All measurements in feet
WT-Water table Observation P-Piezometer O-Other

Groundwater Sampling Results

Groundwater sampling results from this facility have been analyzed for each well to evaluate trends of the regulated compounds in groundwater and to calculate PALs for s. NR 140.22 Wis. Adm. Code Indicator Parameters and to evaluate potential exemptions under s. NR 140.28 Wis. Adm. Code. The groundwater was evaluated by looking at the groundwater data from March 20, 2019 – May 23, 2023.

Background Groundwater Quality

There were minimal unexpected levels of the sampled compounds in the background groundwater sample results (well 808). There was one elevated result for nitrite + nitrate of 2.6 mg/l. All of the other results for nitrite + nitrate were below 0.4 mg/l.

Down-gradient Groundwater Quality

The only exceedances of the groundwater quality limits were for nitrite + nitrate. These PAL exceedances were infrequent and relatively low in magnitude. No trend was established. The exceedances were observed in both down-gradient wells. No ES exceedances occurred.

Land Treatment System Impact to Groundwater Quality

Concentrations and trends in the groundwater monitoring data were compared to the loading data for the land treatment system. There were no observed correlations between the effluent loading levels and the groundwater monitoring results.

Proposed Groundwater Monitoring Requirements

Table 6 Groundwater Quality Sampling Frequency and Limits
Outfall 004 (Spray Irrigation) Permit WI-0039071-11

Sample Point	Well Name	Sample Frequency	Well Designation
806	806	Semi-annually	Non-Point of Standard
808	808	Semi-annually	Background
809	809	Semi-annually	Non-Point of Standard
Parameter	PAL	ES	Source
Depth to Groundwater	N/A	N/A	Measured
Groundwater Elevation	N/A	N/A	Measured
Chloride	125 mg/l	250 mg/l	NR 140 Table 2
Nitrogen, Nitrite + Nitrate	***2.0 mg/l**	10.0 mg/l	Calculated, NR 140 Table 1
pH, Field	4.4-6.4 su	N/A	Calculated
Nitrogen, Ammonia	0.97 mg/l	9.7 mg/l	NR 140 Table 1
Nitrogen, Organic	***2.4 mg/l**	N/A	Calculated
Total Dissolved Solids	***260 mg/l**	N/A	Calculated

* Proposed permit changes

Indicator Parameter PALs

Indicator Parameter PALs are developed following the procedures described in s. NR 140.20(2), Wis. Adm. Code. Indicator parameters do not have Enforcement Standards. The PAL for an indicator parameter is a benchmark for evaluating site specific trends. When significant increases in the trends are observed, the facility and the department's response action under s. NR 140.24 Wis. Adm. Code should be to investigate the source of the compound. The indicator PALs for this facility were calculated using whichever of the two following methods provides a greater ACL.

- $\sum$ [Background groundwater quality mean + Minimum Increase (NR 140.20 Table 3)]

The PAL for organic nitrogen and TDS were increased due to increases in background groundwater quality sampling results from well 808.

Alternative Concentration Limits

Groundwater limit exemptions including alternative concentration Limits (ACLs) can be developed and provided for a groundwater monitoring system utilizing the procedures described in s. NR 140.28, Wis. Adm. Code. The ACLs were calculated and evaluated using the following equation:

- $\sum$ [(Standard Deviation of Results x 2) + [Background groundwater quality mean] = ACL

The ACLs calculated for ammonia, nitrite + nitrate and chloride (well 808) were all below the ss. NR 140.10 and NR 140.12 Wis. Adm. Code PALs therefore the ch. NR 140 PALs have been used.

Conclusions

Per s. NR 214.14 (3) (c) Wis. Adm. Code nitrogen (mass) loading is based on total nitrogen. As a result, total effluent nitrogen sampling and reporting will be required (without a limit at this time) at Outfall 004. The future pounds per acre per year mass loading should be calculated using total nitrogen.

There were infrequent PAL exceedances of nitrite + nitrate in the down-gradient wells. The magnitude of these exceedances were relatively low, and these wells are non-point of standards application wells. Therefore no s. NR 140.24 Wis. Adm. Code response actions are required.

Based on the background groundwater quality sampling the ACL for nitrite + nitrate has been reduced to the s. NR 140.10 Wis. Adm. Code PAL of 2.0 mg/l.

Based on background groundwater quality sample results the indicator parameter PALs for organic nitrogen and TDS have been increased to 2.4 and 260 mg/l respectively.

Compliance Schedule Recommendations

The s. NR 214.14 (5)(d) Wis. Adm. Code requires a land disposal management plan for facilities with land disposal systems. The facility should review their plan within 90 days of permit reissuance and any revisions should be submitted to the department for approval.

The groundwater monitoring well latitude/longitude need to be provided in decimal degrees. These should be provided to the department within 90 days after the permit reissuance.