Permit Fact Sheet

General Information

Permit Number	WI-0052809-11-0
Permittee Name and Address	Seneca Foods Corporation W1102 Buttercup Court, BERLIN, WI 54923
Permitted Facility Name and Address	Seneca Foods Corporation Berlin NEQ NEQ SEC 34 T19N R13E
Permit Term	January 01, 2026 to December 31, 2030
Discharge Location	Willow Creek and the groundwater of the Pine and Willow River Watershed (WR02), Wolf River Basic
Receiving Water	Willow River in Pine and Willow Rivers of Wolf River in Waushara County
Stream Flow ($Q_{7,10}$)	30 cfs
Stream Classification	Warm water sport fish community, non-public water supply
Discharge Type	Existing, seasonal

Facility Description

Seneca Foods Corporation Berlin (formerly "Leach Farms Inc.") is a vegetable processing and freezing operation. Celery is grown on leased acreage in the area and then brought to the facility for washing, processing, and freezing. Vegetables processed and prepared at other Seneca locations (such as green beans from Seneca – Ripon) are transported to Berlin for freezing. Wastewater is generated at the main processing plant which is held in a lagoon and spray irrigated on an area of reed canary grass adjacent to the lagoon. By-product solids are landspread on Department-approved sites. Outfall 005 consists of freezer defrost water that discharges to a ditch at the west side of the facility. The freezer defrost water may contain pieces of vegetables. Freezer defrost water flows through a series of ditches and channels, along with storm water and ground water, until it reaches Willow Creek approximately 3/4 miles northwest of the facility.

Substantial Compliance Determination

After a desk top review of all discharge monitoring reports, CMARs, land app reports, compliance schedule items, and a site visit on May 15, 2024, this facility has been found to be in substantial compliance with their current permit.

Compliance determination made by Barti Oumarou, Wastewater Engineer, on May 29, 2024.

Sample Point Descriptions

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**
101	0.09 MGD (2022-2024)	In-Plant: Process wastewater grab sample collected from the sump prior to discharge to lagoon prior to spray irrigation. Flow is measured with a mag meter just after the pump to the lagoon.
104	N/A	In-Plant: Field tile sump collection system pumped to lagoon prior

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**
		to spray irrigation
005	0.02 MGD (2022-2024)	Effluent: Freezer defrost water discharged to Willow Creek. Grab sample is taken from the end of the pipe that runs under the driveway. Flow is estimated based off water used for defrost event.
002	0.12 MGD (2022-2024)	Land Treatment: Process wastewater grab sample collected prior to spray irrigation during the spray irrigation season. Grab sample collected from the sample port on the piping that is connected to the sprayer. Flow meter located at spray irrigation pump.
003	161 tons (2024)	Land Application: By-product solids landspread on Department approved sites
004	N/A – new sample point	Land Application: Lagoon sludge and sediment from the inlet to the wastewater lagoon

Permit Requirements

1 Inplant - Monitoring and Limitations

1.1 Sample Point Number: 101- HOLDING LAGOON

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Annual	Total Annual	
BOD5, Total		mg/L	Annual	8-Hr Comp	
Nitrogen, Total Kjeldahl		mg/L	Annual	8-Hr Comp	

1.1.1 Changes from Previous Permit:

In-plant limitations and monitoring requirements were evaluated for this permit term and no changes were required in this permit section.

1.1.2 Explanation of Limits and Monitoring Requirements

Monitoring is needed to provide an overall water balance of the system.

1.2 Sample Point Number: 104- FIELD TILE SUMP COLLECT SYSTEM

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
BOD5, Total		mg/L	Annual	Grab	
Nitrogen, Total Kjeldahl		mg/L	Annual	Grab	
Nitrogen, Nitrate		mg/L	Annual	Grab	

1.2.1 Changes from Previous Permit:

In-plant limitations and monitoring requirements were evaluated for this permit term and no changes were required in this permit section.

1.2.2 Explanation of Limits and Monitoring Requirements

Monitoring is needed to provide an overall water balance of the system.

2 Surface Water - Monitoring and Limitations

2.1 Sample Point Number: 005- FREEZER DEFROST WATER

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Estimated	
BOD5, Total		mg/L	Monthly	Grab	
BOD5, Total	Daily Max	188 lbs/day	Monthly	Grab	
BOD5, Total	Monthly Avg	109 lbs/day	Monthly	Grab	
BOD5, Total	Annual Avg	74 lbs/day	Monthly	Grab	
Suspended Solids, Total	Daily Max	40 mg/L	Monthly	Grab	
Suspended Solids, Total	Daily Max	333 lbs/day	Monthly	Calculated	
Suspended Solids, Total	Monthly Avg	226 lbs/day	Monthly	Calculated	
Suspended Solids, Total	Annual Avg	134 lbs/day	Monthly	Calculated	
Suspended Solids, Total		lbs/month	Monthly	Calculated	Calculate the Total Monthly Discharge of TSS and report on the last day of the month on the DMR. See TMDL Calculations

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					section.
Suspended Solids, Total	Annual Total	1219 lbs/yr	Monthly	Calculated	Calculate the 12-month rolling sum of total monthly mass of TSS discharged and report on the last day of the month on the DMR. See TMDL Calculations section.
Chlorine, Total Residual	Daily Max	38 ug/L	5/Week	Grab	
Oil & Grease (Hexane)	Daily Max	15 mg/L	Monthly	Grab	
Oil & Grease (Hexane)	Monthly Avg	15 mg/L	Monthly	Grab	
pH Field	Daily Max	9.0 su	5/Week	Grab	
pH Field	Daily Min	6.0 su	5/Week	Grab	
Nitrogen, Ammonia (NH3-N) Total		mg/L	Monthly	Grab	
Phosphorus, Total	Monthly Avg	1.2 mg/L	Monthly	Grab	Interim limit effective from permit reissuance until final mass limits are effective on 10/1/30.
Phosphorus, Total		lbs/day	Monthly	Calculated	
Phosphorus, Total		lbs/month	Monthly	Calculated	Calculate the Total Monthly Discharge of phosphorus and report on the last day of the month on the DMR. See TMDL Calculations section.
Phosphorus, Total	Annual Total	5.0 lbs/yr	Monthly	Calculated	Limit effective 10/1/30 following compliance schedule. Calculate the 12-month rolling sum of total monthly mass of phosphorus discharged and report on the last day of the month on the DMR. See TMDL Calculations section.
Temperature		deg F	Monthly	Grab	

2.1.1 Changes from Previous Permit

Effluent limitations and monitoring requirements were evaluated for this permit term and the following changes were made from the previous permit. See additional explanation of limits under "Explanation of Limits and Monitoring Requirements" below.

- **BOD5, Total** – Mass limits (technology-based limits) have been added.
- **Suspended Solids, Total -** The sample frequency has been changed from "annual" to "monthly". Mass limits have been added.
- **Chlorine, Total Residual –** The sample frequency has been changed from "annual" to "5/week".
- **Oil & Grease (Hexane)** - The sample frequency has been changed from "annual" to "monthly".
- **pH Field** - The sample frequency has been changed from "annual" to "5/week".
- **Nitrogen, Ammonia (NH3-N) Total** - The sample frequency has been changed from "annual" to "monthly".
- **Phosphorus, Total** - The sample frequency has been changed from "annual" to "monthly". Phosphorus concentration limit added, mass limit added.
- **Temperature** - The sample frequency has been changed from "annual" to "monthly".

2.1.2 Explanation of Limits and Monitoring Requirements

Detailed discussions of limits and monitoring requirements can be found in the attached water quality-based effluent limits (WQBEL) memo dated August 27, 2024 and Technology-Based Effluent Limitations (TBEL) memo dated September 5, 2024.

Monitoring Frequencies: The Monitoring Frequencies for Individual Wastewater Permits guidance (April 12, 2021) recommends that standard monitoring frequencies be included in individual wastewater permits based on the size and type of the facility, in order to characterize effluent quality and variability, to detect events of noncompliance, and to ensure consistency in permits issued across the state. Guidance and requirements in administrative code were considered when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term. The sample frequencies for outfall 005 have been updated based on these considerations. Temperature sampling has been increased to provide data for each month discharge occurs. Sampling frequencies for all parameters was determined to be less frequent than needed to ensure representative data. Monthly sampling for all parameters except pH, which is set to weekly, will be required upon reissuance. Monitoring of pH is a process control parameter that is tested in-house. This parameter can quickly provide information on how well a treatment system is performing and help identify compliance issues. The increased monitoring frequency ensures better calibration of sampling equipment, improves data reliability, and ensures more frequent oversight of the treatment process.

Phosphorus, Total: An interim phosphorus concentration limit was added to serve as the interim limit until the mass limit is effective following a compliance schedule.

Since wasteload allocations are expressed as annual loads (lbs/yr), a seasonal discharger reports the sum of the monthly mass discharged for the calendar year can be compared directly to the annual wasteload allocation. These reporting requirements have been added to the permit. Facilities in the UFWRB TMDL that are seasonal dischargers must report the sum of the discharge for the calendar year (lbs/yr).

Upper Fox Wolf River Total Maximum Daily Load (TMDL): The permitted facility is located within the Upper Fox Wolf River Basin Total Maximum Daily Load (TMDL), which was approved by EPA February 27, 2020. The TMDL establishes Waste Load Allocations (WLAs) for point source dischargers and determines the maximum amounts of phosphorus and total suspended solids that can be discharged and still protect water quality. The final effluent limits and

monitoring expressed in the permit were derived from and comply with the applicable water quality criterion and are consistent with the assumptions and requirements of the EPA-approved WLAs in the TMDL, which are 5 lbs/yr for phosphorus and 1,219 lbs/yr for TSS for the permitted facility.

The approved TMDL expresses WLAs as lbs/year and lbs/day (maximum annual load divided by 365 days). As outlined in Section 4.6 of the department's 2020 *TMDL Implementation Guidance for Wastewater Permits*, TMDL limits must be given in the permit that are consistent with the TMDL WLA permit limits derived from TMDL and need to be expressed as specified by 40 CFR 122.45 (d), s. NR 212.76 (4), and s. NR 205.065 (7),Wis. Adm. Code, unless determined to be impracticable. Impracticability has already been determined for phosphorus limits as laid out in the phosphorus impracticability agreement that was approved by USEPA in 2012 (see NPDES MOA Addendum dated July 12, 2012 at https://prodoasint.dnr.wi.gov/swims/downloadDocument.do?id=167886175).

BOD – The discharge is freezer defrost water that meets the subcategory "Canned and Preserved Vegetables" as defined in s. NR 225.02, Wis. Adm. Code. Previous permit terms had incorrectly categorized this discharge as noncontact cooling water in error. The limitations included in this permit term are based on the TBELs in ch. NR 225, Wis. Adm. Code. There is limited BOD data available for this facility. Based on the limited data available the department believes the permittee can meet these limits and a schedule is not needed.

Total Suspended Solids – TSS limits in accordance with the UFWRB TMDL are included as daily maximum and monthly average limits in addition to the 40 mg/L daily maximum limit that is retained. Since wasteload allocations are expressed as annual loads (lbs/yr), a seasonal discharger reports the sum of the monthly mass discharged for the calendar year can be compared directly to the annual wasteload allocation. These reporting requirements have been added to the permit. Facilities in the UFWRB TMDL that are seasonal dischargers must report the sum of the discharge for the calendar year (lbs/yr).

Additionally, the discharge is freezer defrost water that meets the subcategory "Canned and Preserved Vegetables" as defined in s. NR 225.02, Wis. Adm. Code. Previous permit terms had incorrectly categorized this discharge as noncontact cooling water in error. Mass limits expressed as daily maximum, monthly average and annual average are included in this permit term are based on the TBELs in ch. NR 225, Wis. Adm. Code. These limits are in addition to the concentration and TMDL mass limitations.

Oil and Grease – Oil and grease sampling and limits are retained and sampling frequency increased to monthly. The oil and grease limitation of 15 mg/L represents the degree of effluent reduction attainable by the application of best practicable control technology currently available for noncontact cooling water dischargers. This is based on the best professional judgment at this time and the requirements and preamble of 40 CFR 423.12 were utilized to make this determination. A monthly average is also needed in this permit in order to comply with NR 205.065(7), Wis. Adm. Code, and 40 CFR 122.45(d), and is set equal to the daily maximum limitation. While this permit correctly places this wastewater as contact cooling (freezer defrost water) the Oil and Grease limits in the current permit are retained. Removal or reduction of these limits would require evaluation for anti-degradation and anti-backsliding that has not been requested.

Chlorine – Chlorine (TRC) limits are required because the permittee uses a biocide and chlorine is present in effluent. Upon reissuance, a daily maximum limit of 38 µg/L is required, and sampling frequency is increased to monthly. No additional limits are required because the discharge is noncontinuous in nature, therefore s. NR 106.07(4), Wis. Adm. Code does not apply.

3 Land Treatment – Monitoring and Limitations

3.1 Sample Point Number: 002- SPRAY IRRIGATION

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Hydraulic Application Rate	Monthly Avg - LT	0 gal/ac/day	Monthly	Calculated	Effective December - April.
Hydraulic Application Rate	Monthly Avg - LT	6,800 gal/ac/day	Monthly	Calculated	Effective May - November.
Nitrogen, Total Kjeldahl		mg/L	Annual	Grab	
BOD5, Total		mg/L	Annual	Grab	
Nitrogen, Total		mg/L	Annual	Grab	
Nitrogen, Max Applied On Any Zone	Annual Total	165 lbs/ac/yr	Annual	Calculated	Use the total nitrogen concentration when calculating the annual total. See the Maximum Applied Nitrogen On Any Zone section.
Soil – Nitrogen Available		mg/kg	Annual	Grab	
Soil – Phosphorus Available		mg/kg	Annual	Grab	
Soil – Potassium Available		mg/kg	Annual	Grab	
Soil – pH Lab		su	Annual	Grab	
Other Sources of Nitrogen		lbs/ac/yr	Annual	Measure	

3.1.1 Changes from Previous Permit:

Effluent limitations and monitoring requirements were evaluated for this permit term and the following changes were made from the previous permit. See additional explanation of limits under "Explanation of Limits and Monitoring Requirements" below.

- **Flow Rate –** Sample frequency increased to "Daily".
- **Hydraulic Application Rate –** Monitoring and limits added.
- **Nitrogen, Total –** Monitoring added.
- **Soil – Nitrogen Available –** Monitoring added.
- **Soil – Phosphorus Available –** Monitoring added.
- **Soil – pH Lab –** Monitoring added.
- **Other Sources of Nitrogen –** Monitoring added.
- **Nitrogen, Max Applied to Any Zone –** Monitoring and limits added.

- **Annual Report –** Changes have been made in the permit for reporting of the soil survey data that eliminates the Annual Report but add required reporting of the information previously submitted in the Annual Report on the eDMR.

3.1.2 Explanation of Limits and Monitoring Requirements

All requirements for land treatment of industrial wastewater are determined in accordance with ch. NR 214, Wis. Adm. Code. All categorical limits are based on ch. NR 214 Subchapter II (14)-Spray field Wis. Adm. Code. More information on the limitations can be found in the Seneca Foods Corporation Berlin – Groundwater Evaluation Report, WPDES Permit # WI-0052809, Woody Myers, dated July 9, 2024.

4 Land Application - Sludge/By-Product Solids (industrial only)

4.1 Sample Point Number: 003- BY-PRODUCT SOLIDS

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

4.1.1 Changes from Previous Permit:

Sludge limitations and monitoring requirements were evaluated for this permit term and the following changes were made from the previous permit. See additional explanation of limits under "Explanation of Limits and Monitoring Requirements" below.

- **Solids, Total** – The sample frequency has been changed from "annual" to "monthly".
- **Nitrogen, Total Kjeldahl** – The sample frequency has been changed from "annual" to "monthly".
- **Chloride** – The sample frequency has been changed from "annual" to "monthly".
- **Phosphorus, Total** – The sample frequency has been changed from "annual" to "monthly".
- **Phosphorus, Water Extractable** – The sample frequency has been changed from "annual" to "monthly".

4.1.2 Explanation of Limits and Monitoring Requirements

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

4.2 Sample Point Number: 004 – LAGOON SLUDGE

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Once	Composite	
Nitrogen, Total Kjeldahl		Percent	Once	Composite	
Chloride		Percent	Once	Composite	
Phosphorus, Total		Percent	Once	Composite	
Phosphorus, Water Extractable		% of Tot P	Once	Composite	
Potassium, Total Recoverable		Percent	Once	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Once	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Once	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Once	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Once	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Once	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Once	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Once	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Once	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Once	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Once	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Once	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Once	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Once	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Once	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Once	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Once	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Once	Composite	

4.2.1 Changes from Previous Permit:

New outfall.

4.2.2 Explanation of Limits and Monitoring Requirements

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

Testing for the parameters listed in the table above only need to occur with desludging of the lagoons.

5 Schedules

5.1 Phosphorus - TMDL Limits for Total Phosphorus

No later than 30 days following each compliance date, the permittee shall notify the Department in writing of its compliance or noncompliance with the required action. If a submittal is part of the required action then a timely submittal fulfills the written notification requirement.

Required Action	Due Date
Operational Evaluation Report: The permittee shall prepare an operational evaluation report and submit it for Department approval. The report shall include an evaluation of collected effluent data, possible source reduction measures, operational improvements or other minor modifications that would enable compliance with the final phosphorus WQBEL (water quality based effluent limit) or some improved level of effluent quality using the existing wastewater treatment system. If the operational evaluation report concludes that the facility can achieve the final phosphorus WQBELs using the existing treatment system with only source reduction measures, operational improvements or minor facility modifications, the report shall contain a schedule for implementation of the improvements or other report recommendations necessary to meet final phosphorus WQBELs. The implementation schedule shall be based on providing compliance with the final phosphorus WQBEL as soon as reasonably possible. Once the report is approved by the Department, the permittee shall take the steps called for in the operational evaluation report and follow the schedule of implementation as approved. If the Department approved report concludes that the facility cannot achieve the phosphorus limit with source reduction measures, operational improvements or other minor facility modifications, the permittee shall initiate a Facility Planning Study and comply with the remaining schedule of compliance. Regardless of the conclusion of the operational evaluation report, the report shall also include a plan and implementation schedule for optimizing the treatment plant's removal of phosphorus during the period prior to complying with the WQBELs. Once the operational evaluation report is approved by the Department, the permittee shall proceed with implementation of the optimization plan and follow the schedule of implementation as approved.	07/01/2026
Compliance Alternatives, Source Reduction, Improvements and Modifications Status: The permittee shall submit a 'Compliance Alternatives, Source Reduction, Operational Improvements and Minor Facility Modification' status report to the Department. The report shall provide an update on the permittee's: (1) progress implementing source reduction measures, operational improvements, and minor facility modifications to optimize reductions in phosphorus discharges and, to the extent that such measures, improvements, and modifications will not enable compliance with the WQBELs, (2) status evaluating feasible alternatives for meeting phosphorus TMDL limits.	01/01/2027
Preliminary Compliance Alternatives Plan: The permittee shall submit a preliminary compliance alternatives plan to the Department. If the plan concludes upgrading of the permittee's wastewater treatment facility is necessary to achieve final phosphorus TMDL limits, the submittal shall include a preliminary engineering design report. If the plan concludes Adaptive Management will be used, the submittal shall include a completed Watershed Adaptive Management Request Form 3200-139 without the Adaptive Management Plan. If water quality trading will be undertaken, the plan must state that trading will be pursued.	04/01/2027
Final Compliance Alternatives Plan: The permittee shall submit a final compliance alternatives plan to the Department. If the plan concludes upgrading of the permittee's wastewater treatment is necessary to meet final	10/01/2027

phosphorus TMDL limits, the submittal shall include a final engineering design report addressing the treatment plant upgrades, and a facility plan if required pursuant to ch. NR 110, Wis. Adm. Code. If the plan concludes Adaptive Management will be implemented, the submittal shall include a completed Watershed Adaptive Management Request Form 3200-139 and an engineering report addressing any treatment system upgrades necessary to meet interim limits pursuant to s. NR 217.18, Wis. Adm. Code. If the plan concludes water quality trading will be used, the submittal shall identify potential trading partners.	
Final Plans and Specifications: Unless the permit has been modified, revoked and reissued, or reissued to include Adaptive Management or Water Quality Trading measures or to include a revised schedule based on factors in s. NR 217.17, Wis. Adm. Code, the permittee shall submit final construction plans to the Department for approval pursuant to s. 281.41, Stats., specifying treatment plant upgrades that must be constructed to achieve compliance with final phosphorus TMDL limits, and a schedule for completing construction of the upgrades by the complete construction date specified below. (Note: Permit modification, revocation and reissuance, and reissuance are subject to s. 283.53(2), Stats.)	04/01/2028
Facility Plan: The permittee shall submit a Facility Plan that evaluates feasible alternatives for meeting the phosphorus WQBELs. Alternatives may include: upgrading wastewater treatment facilities, selecting the Watershed Adaptive Management Option pursuant to s. NR 217.18, Wis. Adm. Code, using Water Quality Trading in conjunction with or in place of facility upgrading, site-specific water quality criteria development, or a variance from water quality standards pursuant to s. 283.15, Stats.	07/01/2028
Final Plans and Specifications: If the facility plan concluded that upgrading of the permittee's wastewater treatment system is necessary to meet final water quality based effluent limits, submit construction plans and specifications for Department approval.	01/01/2028
Construction Progress Report: Submit a progress report on meeting the final WQBEL for phosphorus.	01/01/2029
Complete Construction: Complete construction of wastewater treatment system upgrades. Comply with the final phosphorus limits.	10/01/2030

5.1.1 Explanation of Schedule

Subchapter NR 217.17, Wis. Adm. Code, allows the department to provide a schedule of compliance for water quality based phosphorus limits where the permittee cannot immediately achieve compliance. This compliance schedule requires the permittee to comply with the final water quality based phosphorus limits within 5 years.

The permittee may be required to meet the final phosphorus WQBEL sooner than September 30, 2030 (less than 5 years) if the required “Operational Evaluation Report” concludes that the phosphorus WQBEL can be met using the existing treatment system with only source reduction measures, operational improvements and minor facility modifications. Also, the permittee will conduct a “Study of Feasible Alternatives” to determine whether Water Quality Trading or Adaptive Management, either alone or in combination with plant upgrades will allow the plant to meet the phosphorus WQBEL.

The department believes that the compliance schedule suggested in the draft permit provides the appropriate length of time for the permittee to evaluate these options, implement the chosen option and meet the final phosphorus limits (WQBELs).

5.2 Groundwater Monitoring Well - Installation

Required Action	Due Date
Plans and Specifications: Submit plans and specifications for installation of monitoring wells. A minimum of three groundwater monitoring wells are required. Of these wells at least one should be up-gradient to determine background gound water quality and at least one should be down-gradient of the spray irrigation field.	4/01/2026
Installation: Complete well installation in accordance with ch NR 141, Wisconsin Administrative Code. (Note: Documentation of well construction must be submitted to the Department within 60 days of well installation.)	10/01/2026

5.2.1 Explanation of Schedule

Given the flow and average concentrations of the effluent to the spray irrigation system a simple groundwater monitoring system is required per s. NR 214.21(1)(b), Wis. Adm. Code. A minimum of three groundwater monitoring wells are required.

5.2.2 Land Treatment Management Plan

A management plan is required for the land treatment system.

Required Action	Due Date
Land Treatment Management Plan: Submit a management plan to optimize the land treatment system performance and demonstrate compliance with Wisconsin Administrative Code NR 214.	01/01/2027

5.2.3 Explanation of Schedule

Land Treatment Management Plan (industrial)- An up-to-date Land Treatment Management plan is a standard requirement in reissued industrial permits per ch. NR 214, Wis. Adm. Code.

5.2.4 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.	01/01/2027

5.2.5 Explanation of Schedule

Land Application Management Plan (industrial)- An up-to-date Land Application Management plan is a standard requirement in reissued industrial permits per ch. NR 214, Wis. Adm. Code.

Attachments

Water Quality-Based Effluent Limitations for Seneca Foods Corporation Berlin WPDES Permit No. WI-0052809-11, Nicole Krueger, PE, Water Resources Engineer, dated August 27, 2024

Technology-Based Effluent Limitations for Seneca Foods Corporation Berlin WPDES Permit No. WI-0052809-11, Nicole Krueger, PE, Water Resources Engineer, dated September 5, 2024

Justification Of Any Waivers From Permit Application Requirements

No waivers requested or granted as part of this permit reissuance

Prepared By: Ashley Clark, Wastewater Specialist

Date: September 22, 2025

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: 03/22/2024 – updated 08/27/2024

TO: Jennifer Jerich – SCR

FROM: Nicole Krueger – SER Nicole Krueger

SUBJECT: Water Quality-Based Effluent Limitations for Seneca Foods Corporation Berlin
WPDES Permit No. WI-0052809-11

This is in response to your request for an evaluation of the need for water quality-based effluent limitations (WQBELs) using chapters NR 102, 104, 105, 106, 207, 210, 212, and 217 of the Wisconsin Administrative Code (where applicable), for the discharge from Seneca Foods Corporation Berlin in Waushara County. This industrial facility discharges to Willow Creek, located in the Pine and Willow Rivers Watershed in the Wolf River Basin. This discharge is included in the Upper Fox and Wolf River Basin TMDL as approved by EPA in February 2020. The evaluation of the permit recommendations is discussed in more detail in the attached report.

Based on our review, the following recommendations are made on a chemical-specific basis at Outfall 005:

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Annual Total	Footnotes
Flow Rate						1,2
TSS TMDL	40 mg/L				 1,219 lbs	1,3,4
Residual Chlorine	38 µg/L					1
Oil & Grease	15 mg/L			15 mg/L		1
pH	9.0 s.u.	6.0 s.u.				1
BOD_5						1,2,3
Ammonia Nitrogen						1,2
Phosphorus Interim TMDL				 Narrative	 5 lbs	1,4,5
Temperature						1,2

Footnotes:

1. The monitoring frequency is recommended to be increased consistent with guidance and similar facilities.
2. Monitoring only.
3. Categorical limits based on ch. NR 225, Wis. Adm. Code are addressed in a separate technology-based effluent limit memo.
4. The TSS and phosphorus mass limits are based on the Total Maximum Daily Load (TMDL) for the Upper Fox and Wolf River Basin TMDL to address phosphorus water quality impairments within the TMDL area. The TMDL was approved by EPA in February 2020. A compliance schedule is recommended for phosphorus.
5. The interim phosphorus limit during the compliance schedule shall be a narrative limit: "The plant shall be operated such that the amount of phosphorus being discharged on an annual basis does not increase over the permit term, and that the phosphorus reductions will occur over time through optimization."

No WET testing is required because information related to the discharge indicates low to no risk for toxicity.

Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are not required due to the non-continuous nature of the discharge.

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Nicole Krueger at Nicole.Krueger@wisconsin.gov or Diane Figiel at Diane.Figiel@wisconsin.gov.

Attachments (3) – Narrative, Map, & Thermal Table

PREPARED BY: Nicole Krueger, Water Resources Engineer – SER

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Nate Willis, Wastewater Engineer – WY/3
Kari Fleming, Environmental Toxicologist – WY/3
Michael Polkinghorn, Water Resources Engineer – NOR/Rhinelander Service Center

Attachment #1

Water Quality-Based Effluent Limitations for
Seneca Foods Corporation Berlin

WPDES Permit No. WI-0052809-11

Prepared by: Nicole Krueger

PART 1 – BACKGROUND INFORMATION

Facility Description

Seneca Foods Corporation Berlin (formerly "Leach Farms Inc.") is a vegetable farm growing celery, carrots, onions, and corn. Wastewater is generated at the main processing plant which is held in a lagoon and spray irrigated on an area of reed canary grass adjacent to the lagoon. By-product solids are landspread on Department-approved sites. Outfall 005 consists of freezer defrost water that discharges to a ditch at the west side of the facility. The freezer defrost water may contain pieces of vegetables. Freezer defrost water flows through a series of ditches and channels, along with storm water and ground water, until it reaches Willow Creek approximately 3/4 miles northwest of the facility. Recommendations in this memo apply only to the discharge from Outfall 005.

Attachment #2 is a map of the area showing the approximate location of Outfall 005.

Existing Permit Limitations

The current permit, expiring on 06/30/2024, includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Footnotes
Flow Rate					1
TSS	40 mg/L				
Residual Chlorine	38 µg/L				
Oil & Grease	15 mg/L			15 mg/L	
pH	9.0 s.u.	6.0 s.u.			2
BOD_5					1
Ammonia Nitrogen					1
Phosphorus					1
Temperature					1

Footnotes:

1. Monitoring only.
2. These limitations are not being evaluated as part of this review. Because the water quality criteria (WQC), reference effluent flow rates, and receiving water characteristics have not changed, limitations for these water quality characteristics do not need to be re-evaluated at this time.

Receiving Water Information

- Name: Willow Creek
- Waterbody Identification Code (WBIC): 243700
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Warm Water Sport Fish (WWSF) community, non-public water supply.

- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-Q_{10} and 7-Q_2 values are from USGS for Station W72, where Outfall 001 is located.

  7-Q_{10} = 30 cfs (cubic feet per second)
  7-Q_2 = 36 cfs

- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: 25%
- Source of background concentration data: Chloride data from Willow Creek at Cth D is used in this evaluation. The numerical values are shown in the tables below.
- Multiple dischargers: Redgranite WWTF also discharges to Willow Creek over ten miles upstream of Seneca Foods. It is not in the immediate vicinity and the mixing zones do not overlap, so it does not impact this evaluation.
- Impaired water status: Willow Creek at the point of discharge is 303(d) listed as impaired for elevated temperature.

Effluent Information

- Flow rate(s):
  Maximum annual average = 0.020 MGD (Million Gallons per Day)
- Acute dilution factor used in accordance with s. NR 106.06(3)(c), Wis. Adm. Code: Not applicable – this facility does not have an approved Zone of Initial Dilution (ZID).
- Water source: Private well.
- Additives: Hypochlorite is added for chlorination.
- Effluent characterization: This facility is categorized as a minor industry and sampled for chloride for the permit application. The permit required ammonia nitrogen and phosphorus monitoring during the current permit term which is used in this evaluation.
- Effluent data for substances for which a single sample was analyzed is shown in the tables in Part 2 below, in the column titled "MEAN EFFL. CONC.". Otherwise, substances with multiple effluent data are shown in the tables below or in their respective parts in this evaluation.

The following table presents the average concentrations and loadings at Outfall 005 from 09/01/2019 – 12/31/2023 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6), Wis. Adm. Code:

Parameter Averages with Limits

	Average Measurement
TSS	9.7 mg/L
pH field	7.06 s.u.
Residual chlorine	54 µg/L*

*Results below the level of detection (LOD) were included as zeroes in calculation of average.

PART 2 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR TOXIC SUBSTANCES – EXCEPT AMMONIA NITROGEN

Permit limits for toxic substances are required whenever any of the following occur:

1. The maximum effluent concentration exceeds the calculated limit (s. NR 106.05(3), Wis. Adm. Code)

2. If 11 or more detected results are available in the effluent, the upper 99th percentile (or P_{99}) value exceeds the comparable calculated limit (s. NR 106.05(4), Wis. Adm. Code)
3. If fewer than 11 detected results are available, the mean effluent concentration exceeds 1/5 of the calculated limit (s. NR 106.05(6), Wis. Adm. Code)

Acute Limits based on 1-Q_{10}

Daily maximum effluent limitations for toxic substances are based on the acute toxicity criteria (ATC), listed in ch. NR 105, Wis. Adm. Code. Previously daily maximum limits for toxic substances were calculated as two times the ATC. However, changes to ch. NR 106, Wis. Code, (September 1, 2016) require the Department to calculate acute limitations using the same mass balance equation as used for other limits along with the 1-Q_{10} receiving water low flow to determine if more restrictive effluent limitations are needed to protect the receiving stream from discharges which may cause or contribute to an exceedance of the acute water quality standards. The mass balance equation is provided below.

$$\text{Limitation} = \frac{(WQC)\,(Qs + (1-f)\,Qe) - (Qs - f\,Qe)\,(Cs)}{Qe}$$

Where:

WQC =Acute toxicity criterion or secondary acute value according to ch. NR 105, Wis. Adm. Code.

Qs = average minimum 1-day flow which occurs once in 10 years (1-day Q_{10}) if the 1-day Q_{10} flow data is not available = 80% of the average minimum 7-day flow which occurs once in 10 years (7-day Q_{10}).

Qe = Effluent flow (in units of volume per unit time) as specified in s. NR 106.06(4)(d), Wis. Adm. Code.

f = Fraction of the effluent flow that is withdrawn from the receiving water, and

Cs = Background concentration of the substance (in units of mass per unit volume) as specified in s. NR 106.06(4)(e), Wis. Adm. Code.

If the receiving water is effluent dominated under low stream flow conditions, the 1-Q_{10} method of limit calculation produces the most stringent daily maximum limitations and should be used while making reasonable potential determinations. This is not the case for Seneca Foods and the limits are set based on two times the acute toxicity criteria.

The following tables list the calculated WQBELs for this discharge along with the results of effluent sampling. All concentrations are expressed in terms of micrograms per Liter (µg/L), except for hardness and chloride (mg/L)

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 24 cfs, (1-Q_{10} (estimated as 80% of 7-Q_{10})), as specified in s. NR 106.06(3)(bm), Wis. Adm. Code.

SUBSTANCE	REF. HARD.* mg/L	ATC	MEAN BACK-GRD.	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Chlorine (µg/L)		19.0		38.1	7.61	**50**
Chloride (mg/L)		757	7.25	1514	303	19.9

* The indicated hardness may differ from the effluent hardness because the effluent hardness exceeded the maximum range in ch. NR 105, Wis. Adm. Code, over which the acute criteria are applicable. In that case, the maximum of the range is used to calculate the criterion.

* * The 2 × ATC method of limit calculation yields a more restrictive limit than consideration of ambient concentrations and 1-Q_{10} flow rates per the changes to s. NR 106.07(3), Wis. Adm. Code, effective 09/01/2016.

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)

RECEIVING WATER FLOW = 7.5 cfs (¼ of the 7-Q_{10}), as specified in s. NR 106.06(4)(c), Wis. Adm. Code

SUBSTANCE	REF. HARD.* mg/L	CTC	MEAN BACK-GRD.	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Chlorine (µg/L)		7.28		1772	354	50
Chloride (mg/L)		395	7.25	94371	18874	19.9

* The indicated hardness may differ from the receiving water hardness because the receiving water hardness exceeded the maximum range in ch. NR 105, Wis. Adm. Code, over which the chronic criteria are applicable. In that case, the maximum of the range is used to calculate the criterion.

In addition to evaluating the need for limits for each individual substance for which HCC exist, s. NR 106.06(8), Wis. Adm. Code, requires the evaluation of the cumulative cancer risk. Because no effluent limits are needed based on HCC, determination of the cumulative cancer risk is not needed per s. NR 106.06(8), Wis. Adm. Code.

Conclusions and Recommendations

Based on a comparison of the effluent data and calculated effluent limitations, effluent limitations are required for chlorine.

Total Residual Chlorine – Because chlorine is added as a disinfectant, effluent limitations are recommended to assure proper operation of the de-chlorination system. Section NR 210.06(2)(b), Wis. Adm. Code, states, "When chlorine is used for disinfection, the daily maximum total residual chlorine concentration of the discharge may not exceed 0.10 mg/L." Because the WQBELs are more restrictive, they are recommended instead. Specifically, **a daily maximum limit of 38 µg/L is required to continue.** Due to the noncontinuous nature of the discharge, expression of limits requirements do not apply.

PFOS and PFOA – The need for PFOS and PFOA monitoring is evaluated in accordance with s. NR 106.98(2), Wis. Adm. Code. Based on the type of discharge, **PFOS and PFOA monitoring is not recommended.** The Department may re-evaluate the need for sampling at the next permit reissuance if new information becomes available that suggests PFOS or PFOA may be present in the discharge.

PART 3 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR AMMONIA NITROGEN

The State of Wisconsin promulgated revised water quality standards for ammonia nitrogen in ch. NR 105, Wis. Adm. Code, effective March 1, 2004 which includes criteria based on both acute and chronic toxicity to aquatic life. Given the fact that Seneca Foods does not currently have ammonia nitrogen limits, the need for limits is evaluated at this time.

Ammonia Nitrogen Effluent Data

Sample Date	Ammonia Nitrogen mg/L
09/18/2019	1.2
09/21/2020	<0.26

Attachment #1

Sample Date	Ammonia Nitrogen mg/L
08/17/2021	0.24
08/30/2022	0.65
08/09/2023	0.78
Average*	0.57

*Results below the level of detection (LOD) were included as zeroes in calculation of average.

These concentrations are low and well below any of the applicable criteria for the receiving water. **Therefore, no limits are recommended; however, monitoring is recommended to continue.**

PART 4 – PHOSPHORUS

Technology-Based Effluent Limit
Subchapter II of Chapter NR 217, Wis. Adm. Code, requires industrial facilities that discharge greater than 60 pounds of Total Phosphorus per month to comply with a monthly average limit of 1.0 mg/L, or an approved alternative concentration limit.

Because Seneca Foods does not currently have an existing technology-based limit, the need for this limit in the reissued permit is evaluated. The data demonstrates that the annual monthly average phosphorus loading is less than 60 lbs/month, which is the threshold for industries in accordance to s. NR 217.04(1)(a)2, Wis. Adm. Code, and therefore no technology-based limit is required.

Annual Average Mass Total Phosphorus Loading

Month	Result mg/L	Total Flow MG/month	Total Phosphorus lb./mo.
September 2019	1.1	0.6	5.5
September 2020	0.4	0.6	2.0
August 2021	0.44	0.6	2.2
August 2022	0.32	0.6	1.6
August 2023	0.45	0.6	2.3
Average			2.7

Total P (lbs/month) = Monthly average (mg/L) × total flow (MG/month) × 8.34 (lbs/gallon)
Where total flow is the sum of the actual (not design) flow (in MGD) for that month

Because there is only annual monitoring for flow, the calculation for the monthly mass loading assumed a flow rate of 0.02 MGD every day for the most conservative result.

TMDL Limits – Phosphorus
Total phosphorus (TP) effluent limits in lbs/day are calculated as recommended in the *TMDL Development and Implementation Guidance: Integrating the WPDES and Impaired Waters Programs (*April 2020) and are based on the annual phosphorus wasteload allocation (WLA) given in pounds per year. This WLA found in Appendix H of the *Total Maximum Daily Loads for Total Phosphorus and Total Suspended Solids in the Upper Fox and Wolf River Basins (UFW TMDL)* report dated February 2020 are expressed as maximum annual loads (lbs/year).

The annual WLA for Seneca is 5 lbs/year. Due to the seasonal nature of the discharge, it's recommended that this limit be included in the reissued permit and expressed as an annual total.

The UFW TMDL establishes TP wasteload allocations to reduce the loading in the entire watershed including WLAs to meet water quality standards for tributaries to the Upper Fox and Wolf River. Therefore, WLA-based WQBELs are protective of immediate receiving waters and TP WQBELs derived according to s. NR 217.13, Wis. Adm. Code are not required.

Effluent Data
The following table summarizes effluent total phosphorus monitoring data 09/18/2019 – 08/09/2023. The mass discharge is calculated using a flow rate of 0.02 MGD and the conversion factor of 8.34.

Total Phosphorus Statistics

	Concentration (mg/L)	Mass Discharge (lbs/day)
09/18/2019	1.1	0.183
09/21/2020	0.4	0.067
08/17/2021	0.44	0.073
08/30/2022	0.32	0.053
08/09/2023	0.45	0.075
Average	0.54	0.090

Interim Limit – Phosphorus
An interim limit is needed when a compliance schedule is included in the permit to meet the TMDL limits. This limit should reflect a value which the facility is able to currently meet; however, it should also consider the receiving water quality, keeping the water from further impairment.

There is a very limited data set for phosphorus from this facility. Therefore, a narrative interim phosphorus limit is deemed more appropriate than a numeric interim phosphorus limit and a **narrative** Interim Phosphorus Limitation similar to the following is recommended: "The plant shall be operated such that the amount of phosphorus being discharged on an annual basis does not increase over the permit term, and that the phosphorus reductions will occur over time through optimization."

PART 5 – TOTAL SUSPENDED SOLIDS

Total Suspended Solids (TSS) effluent limits in lbs/day are calculated as recommended in the *TMDL Development and Implementation Guidance: Integrating the WPDES and Impaired Waters Programs (*April 2020). This WLAs found in Appendix I of the *Total Maximum Daily Loads for Total Phosphorus and Total Suspended Solids in the Upper Fox and Wolf Basins (UFW TMDL)* report dated February 2020 are expressed as maximum annual loads (lbs/year).

The annual WLA for Seneca is 1,219 lbs/year. Due to the seasonal nature of the discharge, it's recommended that this limit be included in the reissued permit and expressed as an annual total.

Effluent Data
The following table summarizes effluent total suspended solids monitoring data 09/18/2019 – 08/09/2023. The mass discharge is calculated using a flow rate of 0.02 MGD and the conversion factor of 8.34.

Total Suspended Solids Effluent Data

Attachment #1

09/18/2019	6.8	1.13
09/21/2020	13.5	2.25
08/17/2021	5.6	0.93
08/30/2022	7.4	1.23
08/09/2023	15.2	2.54
Average	9.7	1.62

Seneca can currently meet the TSS TMDL-based mass limit so it can become effective upon reissuance and a compliance schedule is not needed.

PART 6 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR THERMAL

Surface water quality standards for temperature took effect on October 1, 2010. These regulations are detailed in chs. NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. Daily maximum and weekly average temperature criteria are available for the 12 different months of the year depending on the receiving water classification.

Due to the amount of upstream flow available for dilution in the limit calculation (Qs:Qe >20:1), the lowest calculated limitation is 120° F (s. NR 106.55(6)(a), Wis. Adm. Code).

The table below summarizes the maximum temperatures reported during monitoring from 09/18/2019 – 08/09/2023.

Monthly Temperature Effluent Data & Limits

Month	Representative Highest Monthly Effluent Temperature (°F)		Calculated Effluent Limit	
			Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation (°F)
JAN			NA	**120**
FEB			NA	**120**
MAR			NA	**120**
APR			NA	**120**
MAY			NA	**120**
JUN			NA	**120**
JUL			NA	**120**
AUG	67	67	NA	120
SEP	52	59	NA	120
OCT			NA	**120**
NOV			NA	**120**

Attachment #1

Month	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Weekly Maximum (°F)	Daily Maximum (°F)	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
DEC			NA	**120**

Reasonable Potential
Permit limits for temperature are recommended based on the procedures in s. NR 106.56, Wis. Adm. Code.

- An acute limit for temperature is recommended for each month in which the representative daily maximum effluent temperature for that month exceeds the acute WQBEL. The representative daily maximum effluent temperature is the greater of the following:
  (a) The highest recorded representative daily maximum effluent temperature
  (b) The projected 99th percentile of all representative daily maximum effluent temperatures
- A sub−lethal limitation for temperature is recommended for each month in which the representative weekly average effluent temperature for that month exceeds the weekly average WQBEL. The representative weekly average effluent temperature is the greater of the following:
  (a) The highest weekly average effluent temperature for the month.
  (b) The projected 99th percentile of all representative weekly average effluent temperatures for the month

There is very minimal amount of data and only available August and September. The highest temperature sample was 67° F in August. This is well under the lowest calculated limit of 120° F and it's unlikely that the effluent will exceed this. Therefore, no effluent limits are recommended for temperature. **Monitoring is recommended to continue in the reissued permit, at a frequency that temperature data is collected for every month that there is a discharge.**

The complete thermal table used for the limit calculation is attached.

PART 7 – WHOLE EFFLUENT TOXICITY (WET)

WET testing is used to measure, predict, and control the discharge of toxic materials that may be harmful to aquatic life. In WET tests, organisms are exposed to a series of effluent concentrations for a given time and effects are recorded. Decisions below related to the selection of representative data and the need for WET limits were made according to ss. NR 106.08 and 106.09, Wis. Adm. Code. WET monitoring frequency and toxicity reduction evaluation (TRE) recommendations were made using the best professional judgment of staff familiar with the discharge after consideration of the guidance in the *Whole Effluent Toxicity (WET) Program Guidance Document (2022).*

- Acute tests predict the concentration that causes lethality of aquatic organisms during a 48 to 96-hour exposure. To assure that a discharge is not acutely toxic to organisms in the receiving water, WET tests

must produce a statistically valid LC_{50} (Lethal Concentration to 50% of the test organisms) greater than 100% effluent, according to s. NR 106.09(2)(b), Wis. Adm Code.

- Chronic testing is usually not recommended where the ratio of the 7-Q_{10} to the effluent flow exceeds 100:1. For Seneca, that ratio is approximately 970:1. With this amount of dilution, there is believed to be little potential for chronic toxicity effects in Willow Creek associated with the discharge from Seneca, **so the need for chronic WET testing will not be considered further.**
- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), a synthetic (standard) laboratory water may be used as the dilution water and primary control in acute WET tests, unless the use of different dilution water is approved by the Department prior to use. The primary control water must be specified in the WPDES permit.

The WET checklist was developed to help DNR staff make recommendations regarding WET limits, monitoring, and other related permit conditions. The checklist indicates whether acute and chronic WET limits are needed, based on requirements specified in s. NR 106.08, Wis. Adm. Code. The checklist steps the user through a series of questions, assesses points based on the potential for effluent toxicity, and suggests monitoring frequencies based on points accumulated during the checklist analysis. As toxicity potential increases, more points accumulate, and more monitoring is recommended to ensure that toxicity is not occurring. A summary of the WET checklist analysis completed for this permittee is shown in the table below. Staff recommendations based on best professional judgment are provided below the summary table. For guidance related to reasonable potential and the WET checklist, see Chapter 1.3 of the WET Guidance Document: https://dnr.wisconsin.gov/topic/Wastewater/WET.html.

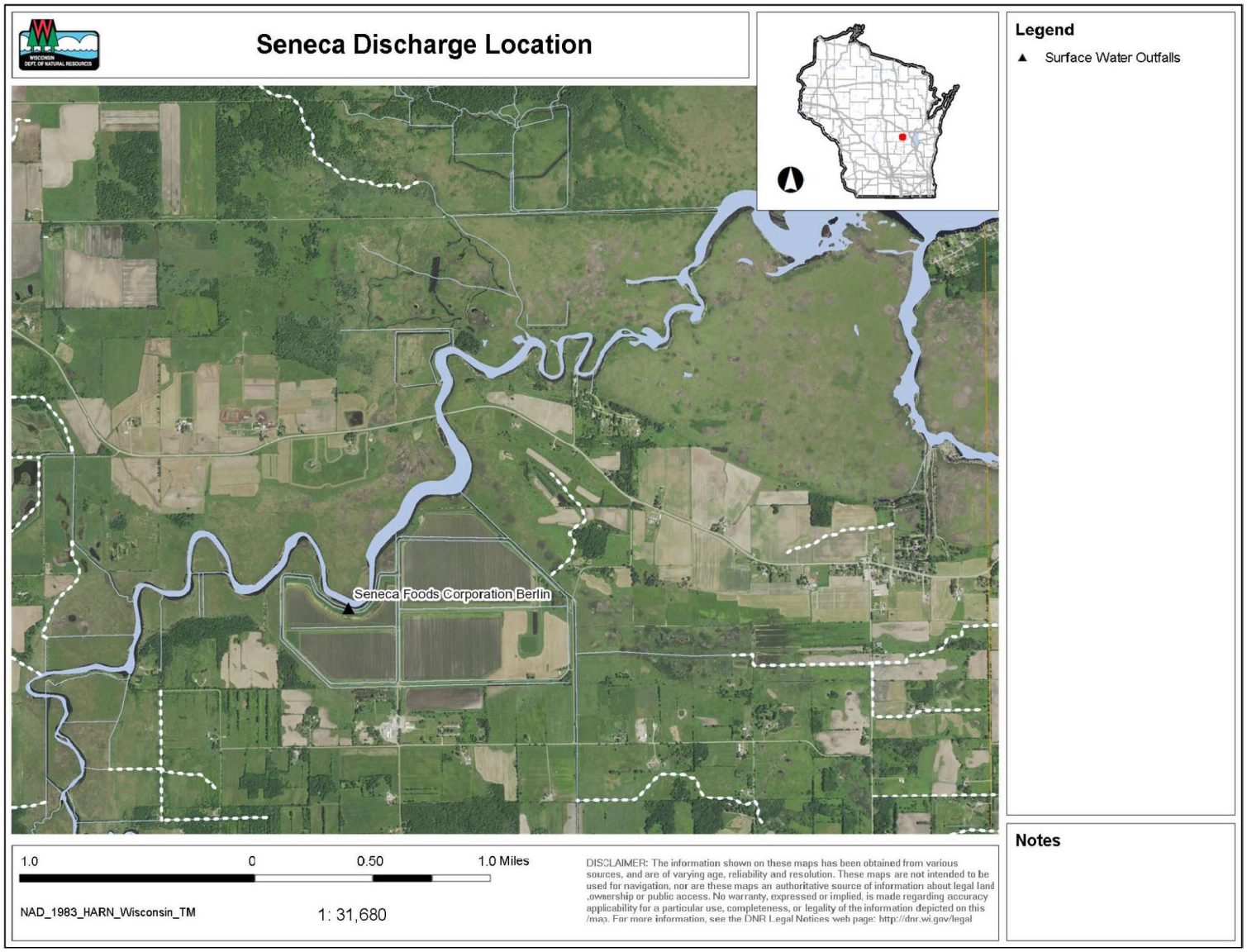
WET Checklist Summary

	Acute
AMZ/IWC	Not Applicable. **0 Points**
Historical Data	0 tests used to calculate RP. **5 Points**
Effluent Variability	Little variability, no violations or upsets, consistent WWTF operations. **0 Points**
Receiving Water Classification	Warmwater sport fish. **5 Points**
Chemical-Specific Data	Reasonable potential for limits for chlorine based on ATC; Ammonia and chloride detected. Additional Compounds of Concern: None. **7 Points**
Additives	1 Biocide and 0 Water Quality Conditioners added. **3 Points**
Discharge Category	NCCW **0 Points**
Wastewater	NCCW

Attachment #1

	Acute
Treatment	**0 Points**
Downstream Impacts	No impacts known. **0 Points**
Total Checklist Points:	**20 Points**
Recommended Monitoring Frequency (from Checklist):	2 tests during permit term
Limit Required?	No
TRE Recommended? (from Checklist)	No

- After consideration of the guidance provided in the Department's WET Program Guidance Document (2022) and other information described above, **no WET testing is required** because information related to the discharge indicates that there is very low to no risk for toxicity to aquatic life in the receiving water due to the intermittent discharge and any potential toxicity from chlorine is addressed with a daily maximum limit.


Seneca Discharge Location
WISCONSIN DEPT. OF NATURAL RESOURCES
Seneca Foods Corporation Berlin
Legend
Surface Water Outfalls
Notes
1.0
0
0.50
1.0 Miles
NAD_1983_HARN_Wisconsin_TM
1: 31,680
DISCLAIMER: The information shown on these maps has been obtained from various sources, and are of varying age, reliability and resolution. These maps are not intended to be used for navigation, nor are these maps an authoritative source of information about legal land ,ownership or public access. No warranty, expressed or implied, is made regarding accuracy applicability for a particular use, completeness, or legality of the information depicted on this /map. For more information, see the DNR Legal Notices web page: http://dnr.wi.gov/legal

Attachment #3

Temperature limits for receiving waters with unidirectional flow

(calculation using default ambient temperature data)

						Temp Dates	Flow Dates
Facility:	Seneca Foods Corporation		**7-Q_{10}:**	30.00	cfs		
Outfall(s):	005		**Dilution:**	25%		**Start:**	09/18/19	09/18/19
Date Prepared:	2/6/2024		**f:**	0		**End:**	08/09/23	12/31/23
Design Flow (Qe):	0.02	MGD	**Stream type:**	Small warm water sport or forage f			
Storm Sewer Dist.	0	ft	**Qs:Qe ratio:**	242.4	:1		
			Calculation Needed?	NO			

Month	Water Quality Criteria			Receiving Water Flow Rate (Qs)	Representative Highest Effluent Flow Rate (Qe)		f	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Ta (default)	Sub-Lethal WQC	Acute WQC		7-day Rolling Average (Qesl)	Daily Maximum Flow Rate (Qea)		Weekly Average	Daily Maximum	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation
	(°F)	(°F)	(°F)	(cfs)	(MGD)	(MGD)		(°F)	(°F)	(°F)	(°F)
JAN	33	49	76	30.00	0.000	0.000	0			NA	**120**
FEB	34	50	76	30.00	0.000	0.000	0			NA	**120**
MAR	38	52	77	30.00	0.000	0.000	0			NA	**120**
APR	48	55	79	30.00	0.000	0.000	0			NA	**120**
MAY	58	65	82	30.00	0.000	0.000	0			NA	**120**
JUN	66	76	84	30.00	0.000	0.000	0			NA	**120**
JUL	69	81	85	30.00	0.000	0.000	0			NA	**120**
AUG	67	81	84	30.00	0.020	0.020	0	67	67	NA	120
SEP	60	73	82	30.00	0.020	0.020	0	52	59	NA	120
OCT	50	61	80	30.00	0.000	0.000	0			NA	**120**
NOV	40	49	77	30.00	0.000	0.000	0			NA	**120**
DEC	35	49	76	30.00	0.020	0.020	0			NA	**120**

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: 09/05/2024

TO: Jennifer Jerich – SCR

FROM: Nicole Krueger – SER Nicole Krueger

SUBJECT: Technology-Based Effluent Limitations for Seneca Foods Corporation Berlin WPDES Permit No. WI-0052809-11

Technology-Based Effluent Limitations (TBELs) Recommended for Outfall 005:

Parameter	Daily Maximum	Daily Minimum	Monthly Average	Annual Average
BOD_5, Total	188 lbs/day		109 lbs/day	74 lbs/day
TSS	333 lbs/day		226 lbs/day	134 lbs/day
pH	9.0 su	6.0 su		

PART 1 – BACKGROUND INFORMATION

Seneca Foods Corporation Berlin (formerly "Leach Farms Inc.") is a vegetable farm growing celery, carrots, onions, and corn. Wastewater is generated at the main processing plant which is held in a lagoon and spray irrigated on an area of reed canary grass adjacent to the lagoon. By-product solids are landspread on Department-approved sites. Outfall 005 consists of freezer defrost water that discharges to a ditch at the west side of the facility. The freezer defrost water may contain pieces of vegetables. Freezer defrost water flows through a series of ditches and channels, along with storm water and ground water, until it reaches Willow Creek approximately 3/4 miles northwest of the facility.

PART 2 – INDUSTRIAL CATEGORIES

Chapter NR 225, Wis. Adm. Code, specifies effluent guidelines for discharges from canned and preserved fruits and vegetables categories of point sources and subcategories. Seneca would fall under the "Canned and Preserved Vegetables" subcategory as defined in s. NR 225.02, Wis. Adm. Code. These guidelines are based on federal effluent guidelines in 40 CFR Part 407 Subpart G. The permittee must meet the applicable effluent limit guidelines as described in this chapter. These effluent limit guidelines include:

- Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT) in s. NR 225.10, Wis. Adm. Code.
- Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT) in s. NR 225.11, Wis. Adm. Code.
- If determined to be a new source, new source performance standards (NSPS) in s. NR 225.12, Wis. Adm. Code.

If the calculated limits are less than or equal to the limits in the current permit, then the limits would be set equal to the recalculated limits. If the recalculated limits are less restrictive than the limits from the current permit, they cannot be increased unless the antidegradation and anti-backsliding provisions of ch. NR 207, Wis. Adm. Code, are met.

Section NR 220.13, Wis. Adm. Code, includes provisions that address cases where federal and state rule differ. Section 283.11, Wis. Stats., address compliance with federal standards. In this case, the state rules are consistent with federal rules with a few exceptions. In such cases, the permit will in all cases be based on the state rule notwithstanding the federal regulations. The omissions are described below.

- The state or federal rules do not specify a date for the definition for a new source. Therefore, it is necessary to review available federal guidance. The Boornazian memo (September 28, 2006) specifies a new source date for 40 CFR Part 407 Subparts A – H of March 21, 1974. The Department relies on the Boornazian memo to establish date of applicability for NSPS.
- State rules incorrectly list best available treatment (BAT) standards for BOD, TSS, oil & grease, fecal coliform, and pH. BAT applies to priority pollutants and nonconventional pollutants and does not apply BOD, TSS, oil & grease, fecal coliform, or pH.

- The federal standard rule lists revised BCT standards requirements. All BCT limitations are set to be the same as the best practicable control technology (BPT) standards. State rules in ch. NR 225, Wis. Adm. Code, do not list standards for BCT.

PART 3 – LEVELS OF CONTROL

In addition to the industrial categories, the applicable technology-based limits are determined based on the selected level of control. A facility may be fall under best available treatment (BAT), best practicable technology (BPT), and/or new source performance standards (NSPS) based on the date that the facility was constructed.

Seneca has processes which construction commenced after March 21, 1974. Therefore, the process wastewater from these lines is subject to NSPS standards for the "Canned and Preserved Vegetables" subcategory are applicable as specified in 40 CFR Part 407 Subpart G and ch. NR 225.12, Wis. Adm. Code. The NSPS standards are equal to the BAT standards.

PART 4 – CURRENT PRODUCTION LEVELS

The current levels of production for each subcategory are provided by Seneca.

Canned and Preserved Vegetables

Process	Material Used (lbs/month)	Material Used (lbs/day)
Blanch and freezing Celery	700,000	23,000
Blanch and freezing Beans	2,000,000	67,000

The blanch and freezing processing of celery falls under the "dehydrated vegetables" definition and the blanch and freezing of beans falls under the "snap beans" definition under 40 CFR 407.71.

PART 5 – TBEL CALCULATIONS FOR CANNED AND PRESERVED VEGETABLES

pH
Any discharge subject to BPT, BCT, or NSPS limitations or standards in this part must remain within the pH range of 6.0 to 9.0 su for Subparts A – E and a pH range of 6.0 to 9.5 su for Subparts F – H per 40 CFR Part 407.

Best Practicable Treatment (BPT)
Seneca commenced construction prior to March 21st, 1974 and is the best practicable control technology currently available, so the BPT effluent limitations of 40 CFR Part 407.72 would apply.

Dehydrated Vegetables

	BPT BOD Effluent Limitations (lbs/1000 lbs)	Calculated BOD Limits (lbs/day)[1]

Raw Material (lbs/day)	Daily Max	Monthly Average	Annual Average	Daily Max	Monthly Average	Annual Average
29,000	2.98	1.76	1.21	86	51	35
Raw Material (lbs/day)	**BPT TSS Effluent Limitations (lbs/1000 lbs)**			**Calculated TSS Limits (lbs/day)[1]**		
	Daily Max	Monthly Average	Annual Average	Daily Max	Monthly Average	Annual Average
29,000	5.3	3.65	2.21	154	106	64

Footnotes:

1. The limits (lbs/day) = total BOD input (lbs/day) / 1000 * BPT limitations

Snap Beans

Raw Material (lbs/day)	BPT BOD Effluent Limitations (lbs/1000 lbs)			Calculated BOD Limits (lbs/day)[1]		
	Daily Max	Monthly Average	Annual Average	Daily Max	Monthly Average	Annual Average
67,000	1.51	0.87	0.58	101	58	39
Raw Material (lbs/day)	**BPT TSS Effluent Limitations (lbs/1000 lbs)**			**Calculated TSS Limits (lbs/day)[1]**		
	Daily Max	Monthly Average	Annual Average	Daily Max	Monthly Average	Annual Average
67,000	2.67	1.80	1.04	179	121	70

Footnotes:

1. The limits (lbs/day) = total BOD input (lbs/day) / 1000 * BPT limitations

Best Conventional Pollutant Control (BCT)

Seneca commenced construction prior to March 21st, 1974 and is uses the best conventional pollutant control technology. Per 40 CFR Part 407.77, the BCT limitations are set to be the same as BPT standards in 40 CFR Part 407.72.

PART 6 – FINAL CALCULATED LIMITS

The total discharge limits shall be the total of the amounts calculated from all subcategories of this memo. For each production line, the most restrictive calculated set of limits are used in the calculation of the final total discharge limits.

Final Calculated Effluent Limitations				
Parameter & Units	**Daily Maximum**	**Daily Minimum**	**Monthly Average**	**Annual Average**
BOD_5	188 lbs/day		109 lbs/day	74 lbs/day
TSS	333 lbs/day		226 lbs/day	134 lbs/day
pH	9.0 su	6.0 su		

The current permit has a daily maximum pH limit of 9.0 s.u. If Seneca would like to request an increase to the existing permit limits, an assessment of their effluent data consistent with the requirements of ss. NR 207.04(1)(a) and (c), Wis. Adm. Code, must be provided. This evaluation is on a parameter by parameter basis and includes consideration of operations, maintenance and temporary upsets. Without a demonstration of need for a higher limit in accordance with s. NR 207.04, Wis. Adm. Code, the current limits should be continued in the reissued permit.

The recommendations in the WQBEL memo dated 08/27/2024 are also recommended to be included in the reissued permit along with the mass concentrations that are recommended in this TBEL memo.

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: July 9, 2024 FILE REF: 5232

TO: File

FROM: Woody Myers - WCR

SUBJECT: Seneca Foods Corporation Berlin - Groundwater Evaluation Report, WPDES Permit # WI-0052809

Site Information

The Seneca Foods Corporation Berlin facility, located in Poysippi, Waushara County is regulated as an industrial facility. Wastewater is discharged to groundwater via infiltration by way of spray irrigation. The field is located in the NE ¼ of the NE ¼ of Section 34, T19N, R13E, Town of Poysippi.

Land Treatment Effluent & Groundwater Evaluation Summary

Table 1 Land Treatment Effluent Parameters and Limits
Outfall 002 Spray Irrigation

Parameter	Current Permit WI-0052809-10-1		Proposed Permit WI-0052809-11	
	Limits and Units	Limit Type	Limits and Units	Limit Type
***Flow Rate**	0.24 MGD	Monthly Avg-LT	- MGD	
***Hydraulic Application Rate (May – Nov)**	Not Required		6,800 gal/ac/day	Monthly Limit LT
***Hydraulic Application Rate (Dec – Apr)**	Not Required		0 gal/ac/day	Monthly Limit LT
Nitrogen, Total Kjeldahl	- mg/l		- mg/l	
BOD_5	- mg/l		- mg/l	
***Nitrogen, Total**	Not Required		- mg/l	
***Nitrogen, Max Applied to Any Zone**	Not Required		165 lbs/ac/yr	Annual Total

* Proposed permit changes

Geology

The bedrock under this facility is the undivided Trempealeau, Tunnel City and Elk Mound Groups. The Trempealeau Group includes the Jordan and St. Lawrence Formations, the Tunnel City Group includes the Lone Rock Formation, and the Elk Mound Group includes the Wonewoc, Eau Claire and Mount Simon Formations . These groups are comprised of sandstone with minor occurrences of dolomite (*Bedrock Geologic Map of Wisconsin*, Wisconsin Geological and Natural History Survey (WGNHS), 1982). Bedrock is anticipated to be between 100 and 200 feet below ground surface (bgs) (*Depth to Bedrock in Wisconsin,* WGNHS, 1973). Surface soil primarily consists of the Houghton and Adrian muck (USDA NRCS Web Soil Survey).

Hydrogeology

Regional groundwater flow is anticipated to be to the northeast in this area of Waushara County (*Water Table Elevation*, Map Waushara County, WGNHS, 1981). The site is adjacent to the south of Willow Creek. There are nine wells (municipal, other than municipal, private and high-capacity) within a 1,500-foot range of this facility's groundwater discharge.

Land Treatment Loading Rates

Outfall 002 is the discharge associated with the land treatment system. The following table is the average flow (hydraulic loading) and total Kjeldahl nitrogen and BOD_5 loading summations for the land treatment system.

Table 2 Effluent Loading Summary
Outfall 002 Spray Irrigation

Averages			
Year	**Flow (MGD)**	**Nitrogen (mg/l)**	**BOD_5 (mg/l)**
2023	0.109	10.8	600
2022	0.161	20.1	1000
2021	0.240	11.0	200
2020	0.180	24.1	988
2019	0.220	21.9	1260

Proposed Groundwater Monitoring Requirements

Groundwater monitoring systems are required for industrial wastewater discharges if the volume is equal to or greater than 15,000 gallons per day. The facility exceeded 15,000 gallons per day and the concentration of the effluent could potentially impact groundwater therefore the facility is required to install a groundwater monitoring system. A minimum of three groundwater monitoring wells should be installed, and they should be sampled semi-annually for the parameters in the Table 3.

The installation of a groundwater sampling well is a reviewable activity. A plan should be submitted to the Plan Review Section.

Table 3 Proposed Groundwater Standards –Permit WI-0052809-11
Outfall 002 Spray Irrigation

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	Table 2, NR 140
Nitrogen, Nitrite + Nitrate	7.3 mg/l	10.0 mg/l	Table 1, NR140
Nitrogen, Ammonia	0.97 mg/l	9.7 mg/l	Table 1, NR 140
Nitrogen, Organic	N/A	N/A	Measured
Nitrogen, Total Kjeldahl	N/A	N/A	Measured
Total Dissolved Solids	N/A	N/A	Measured

Conclusions

Given the flow and average concentrations of the effluent to the spray irrigation system a simple groundwater monitoring system is required per s. NR 214.21(1)(b), Wis. Adm. Code. A minimum of three groundwater monitoring wells are required. Of these wells at least one should be up-gradient to

determine background ground water quality and at least one should be down-gradient of the spray irrigation field. The installed groundwater monitoring wells should be sampled semi-annually for the parameters and associated limits in Table 3.

The effluent for the spray irrigation outfall should include sampling for total nitrogen. No limit will be placed on the total nitrogen at this time.

Compliance Schedule Recommendations

The plans and specifications for the installation of the groundwater monitoring wells should be submitted to the Plan Review Section of the Wastewater Program with in 90 days of the reissuance of this permit.

The groundwater monitoring wells should be installed within 6 months of the Plan Review approval of the wells.