Permit Fact Sheet

General Information

Permit Number	WI-0050687-11-0
Permittee Name and Address	SENECA FOODS CORP Janesville La Prairie Plant 418 E CONDE ST, JANESVILLE, WI 53546-3004
Permitted Facility Name and Address	Seneca Foods Corp Janesville 418 E Conde St. Janesville, WI
Permit Term	January 01, 2026 to December 31, 2030
Discharge Location	Sections 7, 8, 17, & 18 of T2N R13 E (Spray Irrigation Fields) & South bank of the Rock River, 250 ft upstream of the Jackson St. bridge (surface water)
Receiving Water	Rock River & Groundwaters of the Lower Rock River Basin (Blackhawk Creek Watershed, LR02) in Rock County
Stream Flow ($Q_{7,10}$)	219 cfs
Stream Classification	Warm Water Sport Fish, non-public water supply & recreational use
Discharge Type	Existing, Seasonal (April – November)

Facility Description

The Seneca Foods Janesville facility processes vegetables, dry beans, and other food products. Wastewater is generated during washing and processing of the vegetables and cleanup. The facility operates year-round. Process wastewaters are discharged to the City of Janesville Wastewater Utility POTW during the non-irrigation period. Vegetable wash water, blanching water, boiler blowdown, and plant equipment cleaning wastewater is irrigated on one of six spray fields during the months of April – November. The six spray fields total 493 acres and are surrounded by a groundwater monitoring system. The monitoring system consists of six monitoring well nests (a water table well and a piezometer well) and one lone water table well. An anaerobic digester (owned and operated by the City of Janesville) receives and digests some canning process wastewaters prior to spray irrigation. Digested wastewater typically comprises approximately 10-20% of the total discharge to the spray fields. The bulk of the wastewater discharged to spray irrigation is screened and settled to remove solids but otherwise receives no treatment. Can cooling water may be discharged to the Rock River via storm sewer, discharge from this outfall (002) has not occurred since 2005.

Vegetable by-product solids, sweet corn silage leachate, and liquid vegetable canning wastewater are land applied on department approved sites.

Substantial Compliance Determination

After a desk top review of all discharge monitoring reports, groundwater monitoring reports, land application reports, compliance schedule items, and a site visit on September 4, 2024, this facility has been found to be in substantial compliance with their current permit.

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)
103	0.62 MGD (Average, 2024)	In-plant: Non-digested and digested canning process wastewater in plant. 24-hr composite sample collected prior to discharge to spray fields.
002	Discharge has not occurred since 2005	Effluent: Discharge of can cooling water to the storm sewer that leads to the Rock River.
005	24.1 MG/yr (Annual Total, 2024)	Land Treatment: Non-digested and digested canning process wastewater discharged to spray irrigation site A - 60 acres sprayed by center pivot. Located in the W1/2, SE1/4, Section 7, T2N R13E. 24-hr composite sample collected from pump house surge tank. Grab sample collected from upper tank. Magnetic flow meter located in the pump house.
006	38.8 MG/yr (Annual Total, 2024)	Land Treatment: Non-digested and digested canning process wastewater discharged to spray irrigation site B - 80 acres sprayed by center pivot. Located in the S1/2, SE1/4, Section 7 & N1/2, NE1/4, Section 18, T2N R13E. 24-hr composite sample collected from pump house surge tank. Grab sample collected from upper tank. Magnetic flow meter located at the irrigation surge tank.
007	2.8 MG/yr (Annual Total, 2024)	Land Treatment: Non-digested and digested canning process wastewater discharged to spray irrigation site C - 20 acres sprayed by traveling gun. Located in the N1/2, SE1/4, SE1/4, Section 7, T2N R13E. 24-hr composite sample collected from pump house surge tank. Grab sample collected from upper tank. Magnetic flow meter located at the irrigation surge tank.
008	37.0 MG/yr (Annual Total, 2024)	Land Treatment: Non-digested and digested canning process wastewater discharged to spray irrigation site D - 110 acres sprayed by center pivot. Row crops are often grown on this site. Located in the NW1/4, Section 8, T2N R13E. 24-hr composite sample collected from pump house surge tank. Grab sample collected from upper tank. Magnetic flow meter located in the pump house.
009	24.4 (Annual Total, 2024)	Land Treatment: Non-digested and digested canning process wastewater discharged to spray irrigation site E - 105 acres sprayed by center pivot. Row crops are often grown on this site. Located in the NW1/4, Section 17, T2N R13E. 24-hr composite sample collected from pump house surge tank. Grab sample collected from upper tank. Magnetic flow meter located at the irrigation surge tank.
010	23.4 (Annual Total, 2024)	Land Treatment: Non-digested and digested canning process wastewater discharged to spray irrigation site F - 118 acres sprayed by center pivot. Row crops are often grown on this site. Located in the SW1/4, Section 8, T2N R13E. 24-hr composite sample collected from pump house surge tank. Grab sample collected from upper tank. Magnetic flow meter located at the irrigation surge tank.
003	59,000 tons/yr	Land Application: Discharge of liquid canning factory wastewater and silage leachate to landspreading sites. Grab samples collected

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**
	(Average, 2020 – 2024)	from field transport vehicles prior to land application.
004	3,800 tons/yr (Average, 2020 – 2024)	Land Application: Landspreading of vegetable by-products on Department approved sites. Grab samples collected from field transport vehicles prior to land application.

Sample Point Designation For Groundwater Monitoring Systems			
System	**Sample Pt Number**	**Well Name**	**Comments**
Spray Irrigation	801	MW-1 (801)	Downgradient, Point of Standards, Water Table Well
	806	MW-5 (806)	Downgradient, Non-Point of Standards, Water Table Well
	807	MW-5A (807)	Downgradient, Non-Point of Standards, Piezometer Well
	808	MW-6 (808)	Downgradient, Point of Standards, Water Table Well
	809	MW-6A (809)	Downgradient, Point of Standards, Piezometer Well
	810	MW-7 (810)	Downgradient, Point of Standards, Water Table Well
	811	MW-7A (811)	Downgradient, Point of Standards, Piezometer Well
	816	MW-10 (816)	Downgradient, Point of Standards, Water Table Well
	817	MW-10A (817)	Downgradient, Point of Standards, Piezometer Well
	818	MW-8R (818)	Background/Upgradient, Non-Point of Standards, Water Table Well
	819	MW-8AR (819)	Background/Upgradient, Non-Point of Standards, Piezometer Well
	820	MW-9R (820)	Side gradient, Non-Point of Standards, Water Table Well
	821	MW-9AR (821)	Side gradient, Non-Point of Standards, Piezometer Well

Permit Requirements

1 Inplant - Monitoring and Limitations

1.1 Sample Point Number: 103- PRIOR TO SPRAY IRRIGATION

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Total Daily	Sum of all discharge sent to

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					the individual spray irrigation outfalls (005, 006, 007, 008, 009, 010)
Nitrogen, Total Kjeldahl		mg/L	Weekly	24-Hr Comp	
Chloride		mg/L	Weekly	24-Hr Comp	
Phosphorus, Total		mg/L	Monthly	24-Hr Comp	
BOD5, Total		mg/L	Monthly	24-Hr Comp	

Changes from Previous Permit:

In-plant monitoring requirements were evaluated for this permit term and the following changes were made from the previous permit.

BOD5: Monthly monitoring has been added to the permit.

Explanation of Limits and Monitoring Requirements

Monitoring at an In-Plant sample point is a typical method for land treatment facilities that utilize multiple spray fields. Monitoring parameters are typical of a spray irrigation system and needed to provide an overall water balance of the system.

BOD5: Monitoring included to assess the potential for changes in redox states and nutrient cycling in the vadose zone.

2 Surface Water - Monitoring and Limitations

2.1 Sample Point Number: 002- COOLING WTR - INACTIVE

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Total Daily	
BOD5, Total	Daily Max	20 mg/L	Weekly	24-Hr Flow Prop Comp	
BOD5, Total	Monthly Avg	10 mg/L	Weekly	24-Hr Flow Prop Comp	
BOD5, Total	Daily Max	546 lbs/day	Weekly	Calculated	
BOD5, Total	Monthly Avg	358 lbs/day	Weekly	Calculated	
BOD5, Total	Annual Avg	275 lbs/day	Weekly	Calculated	
Suspended Solids, Total	Daily Max	20 mg/L	Weekly	24-Hr Flow Prop Comp	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Suspended Solids, Total	Monthly Avg	10 mg/L	Weekly	24-Hr Flow Prop Comp	
Suspended Solids, Total	Daily Max	998 lbs/day	Weekly	Calculated	
Suspended Solids, Total	Monthly Avg	734 lbs/day	Weekly	Calculated	
Suspended Solids, Total	Annual Avg	508 lbs/day	Weekly	Calculated	
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	Weekly	24-Hr Flow Prop Comp	Monitoring to obtain a minimum of 11 samples. Monitoring may end once 11 samples are collected.
Phosphorus, Total	Monthly Avg	0.3 mg/L	Weekly	24-Hr Flow Prop Comp	
Phosphorus, Total	6-Month Avg	0.1 mg/L	Weekly	24-Hr Flow Prop Comp	
Phosphorus, Total	6-Month Avg	0.08 lbs/day	Weekly	Calculated	
Temperature	Daily Max	120 deg F	Daily	Continuous	
Halogen, Total Residual as Cl2	Daily Max	38 ug/L	Weekly	Grab	
Acute WET		TUa	See Permit Note	24-Hr Flow Prop Comp	See Whole Effluent Toxicity (WET) Testing section.

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.

The permittee must report on Outfall 002. If discharge does not occur, indicate no discharge on the report. If discharge occurs, monitoring is required.

Sample Type: The '24-Hr Comp' sample type has been changed to '24-Hr Flow Prop Comp' to reflect the type of sampler that would be used at the facility.

Flow: The sample frequency has changed from 'Weekly' to 'Daily'.

BOD5: Mass TBELs have been included.

TSS: Concentration limits and mass TBELs have been included.

pH: Monitoring and limits have been included.

Ammonia: Monitoring has been included.

Temperature: Prior to commencing discharge the permittee shall install a temperature probe to allow for daily continuous temperature sampling because of the daily maximum limit of 120 deg F.

Mercury: Monitoring has been removed.

Total Residual as Cl2: The monthly average limit has been removed.

Acute WET: Three acute tests shall be conducted during the permit term.

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 and technology-based effluent limits (TBEL) memo for the Seneca Foods Corp Janesville La Prairie dated August 8, 2025, prepared by Nicole Krueger, and used for this reissuance.

Outfall 002 has not been used since 2005. The department shall be contacted prior to commencing discharge from Outfall 002. If sampling occurs, the sample type would be 24-hr flow proportional composite. A compliant composite sampler and a flow meter would need to be installed.

BOD5 and TSS: The permit includes water quality-based effluent limits expressed as concentration limits and categorical limits that are expressed as mass limits for BOD and TSS. The categorical limits (TBELs) are applicable to pollutants or pollutant properties in discharges of process waste resulting from the production of canned fruits and vegetables. Previous permit terms did not include the TBELs, however, can cooling water is a process wastewater per s. NR 225.02, Wis. Adm. Code, and therefore TBELs are applicable.

pH: The criteria for fish and aquatic life for pH per s. NR 102.04(4)(c), Wis. Adm. Code is 6.0 to 9.0 s.u.

Ammonia: Monitoring when Outfall 002 is in use to determine reasonable potential.

PFOS and PFOA: NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. Pursuant to s. NR 106.98(3)(b), Wis. Adm. Code, the department evaluated the need for PFOS and PFOA monitoring. Based on information available at the time the proposed permit was drafted, the department has determined the permittee does not need to sample for PFOS or PFOA as part of this permit reissuance. 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.

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 parameter pH has been included in the permit with a sample frequency of 5/Week to align Seneca Janesville with facilities of similar size and type.

Expression of Limits: In accordance with the federal regulation 40 CFR 122.45(d) and s. NR 205.065, Wis. Adm. Code, limits in this permit are to be expressed as daily maximum and monthly average limits whenever practicable. Expression of limits do not apply due to the noncontinuous nature of the discharge.

3 Land Treatment – Monitoring and Limitations

3.1 Sample Point Number: 005- SITE A IRRIGATION (60 ACRES); 006- SITE B IRRIGATION (80 ACRES); 007- SITE C IRRIGATION (20 ACRES); 008- SITE D IRRIGATION (110 ACRES); 009- SITE E IRRIGATION (105 ACRES), and 010- SITE F IRRIGATION (118 ACRES)

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Total Daily	
Hydraulic Application Rate	Monthly Avg	7,000 gal/ac/day	Monthly	Calculated	April - November
Hydraulic Application Rate	Monthly Avg	0 gal/ac/day	Monthly	Calculated	December - March
Nitrogen, Max Applied On Any Zone	Annual Total	400 lbs/ac/yr	Annual	Calculated	Use the nitrogen concentration when calculating the annual total. See the Maximum Applied Nitrogen/Chloride On Any Zone section.
Chloride, Max Applied to Any Zone		lbs/ac/yr	Annual	Calculated	Use the chloride concentration when calculating the annual total. See the Maximum Applied Nitrogen/Chloride 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	

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.

Nitrogen, Total: Monitoring and reporting of this parameter has been removed from the permit to reduce redundancy in reporting. Each outfall is one zone; therefore, this information is provided through reporting the Nitrogen, Max Applied on Any Zone.

Nitrogen, Max Applied On Any Zone: The annual total limit has changed from 600 lbs/ac/yr to 400 lbs/ac/yr.

Chloride, Max Applied to Any Zone: This parameter as been added in place of 'Chloride'.

Nitrogen and Chloride, Max: The sample type changed from 'Total Annual' to 'Calculated' for reporting purposes.

Soil: Soil testing is now required to be submitted on the eDMR.

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 irrigation systems, Wis. Adm. Code. More information on the limitations can be found in the Groundwater Evaluation for Seneca Foods Janesville, dated September 5, 2025, prepared by Zach Watson, and used for this reissuance.

Nitrogen, Max Applied On Any Zone: The nitrogen loading rate for the spray fields has been reduced to 400 lb/ac/yr, consistent with the cover crop needs and the demonstrated loading rates. Permit language related to Nitrogen Loading Limitations and Nitrogen Loading Contingent on Groundwater Results has been removed as it is no longer applicable, and the limit is 400 pounds per acre per year. The Groundwater Evaluation recommended a limit of 300 lbs/ac/yr, the limits were reevaluated based on a request from the facility during the fact check period. The department determined the limit of 400 lbs/ac/yr is appropriate and protective of groundwater.

Soil testing (available nitrogen, available phosphorus, available potassium and pH) and other sources of nitrogen (ie fertilizer or manure): Annual soil monitoring of the spray field(s) is required by NR 214.14(5)(c), Wis. Adm. Code. Only one set of samples is required, but if the facility completes multiple soil tests or the department asks for additional samples for the fields/zones used under the outfall sample point there is a feature within the eDMRs that allows additional data to be recorded. It is asked that the additional sample points' field/zone(s) are identified in the form's general comments section.

4 Groundwater – Monitoring and Limitations

4.1 Groundwater Monitoring System for Spray Irrigation

Location of Monitoring system: Sections 7, 8, 17 and 18 of T2N R13E, Janesville, WI

Groundwater Monitoring Well(s) to be Sampled: MW-1 (801), MW-5 (806), MW-5A (807), MW-6 (808), MW-6A (809), MW-7 (810), MW-7A (811), MW-10 (816), MW-10A (817), MW-8R (818), MW-8AR (819), MW-9R (820), MW-9AR (821)

Groundwater Monitoring Well(s) Used to Evaluate Background Groundwater Quality: WELL #8 (Background), MW-8R (818), MW-8AR (819)

Groundwater Monitoring Well(s) Used for Point of Standards Application: MW-10A (817), MW-10 (816), MW-7A (811), MW-7 (810), MW-6A (809), MW-6 (808), MW-1 (801)

Parameter	Units	Preventative Action Limit	Enforcement Standard	Frequency
Depth To Groundwater	feet	N/A	N/A	Quarterly
Groundwater Elevation	feet MSL	N/A	N/A	Quarterly
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	15.7	15.7	Quarterly
Chloride Dissolved	mg/L	165	250	Quarterly
pH Field	su	8.5	N/A	Quarterly
Nitrogen, Organic Dissolved	mg/L	2.4	N/A	Quarterly
Nitrogen, Ammonia Dissolved	mg/L	0.97	9.7	Quarterly
Solids, Total Dissolved	mg/L	760	N/A	Quarterly

Changes from Previous Permit:

Groundwater limitations and monitoring requirements were evaluated for this permit term and the following changes were made from the previous permit.

Nitrite + Nitrate Nitrogen: The PAL and ES alternative concentration limits have been updated using data from the prior permit term.

Chloride: The PAL alternative concentration limit and ES have been updated using data from the prior permit term.

pH: The PAL has been updated using data from the prior permit term.

Organic Nitrogen: The PAL has been updated using data from the prior permit term.

Total Dissolved Solids: The PAL has been updated using data from the prior permit term.

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.

For more information, please refer to the Groundwater Evaluation for Seneca Foods Janesville, dated September 5, 2025, prepared by Zach Watson, and used for this reissuance.

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

5.1 Sample Point Number: 003- LIQUID WW/SILAGE LEACHATE

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		gpd	Daily	Total Daily	
BOD5, Total		mg/L	Monthly	Grab	
Nitrogen, Total		mg/L	Monthly	Grab	

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

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.

Flow: The sample frequency and sample type have changed to 'Daily' and 'Total Daily,' respectively, for eDMR reporting purposes.

Total Solids, Phosphorus, Water Extractable Phosphorus, and Potassium: Monitoring has been included in the permit.

Explanation of Limits and Monitoring Requirements

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

Monitoring requirements added for consistency with General Permit for Landspreading of Industrial Liquid Wastes WI-0055867-08.

The monthly monitoring frequency for BOD, Total Kjeldahl Nitrogen, and Chloride is continued in the reissued permit.

5.2 Sample Point Number: 004- VEG BY-PRODUCTS TO LANDSPREAD

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Volume		tons/day	Daily	Total Daily	
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	Quarterly	Grab Comp	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Potassium, Total Recoverable		Percent	Quarterly	Grab Comp	

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.

Volume: The parameter Volume has replaced the parameter Flow Rate. The sample frequency and sample type have changed to 'Daily' and 'Total Daily,' respectively, for eDMR reporting purposes.

Water Extractable Phosphorus and Potassium: Monitoring has been included in the permit.

Sample Type has changed from "Grab" to "Grab Composite".

Explanation of Limits and Monitoring Requirements

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

Monitoring requirements added for consistency with General Permit for Landspreading of By-Product Solids WI-0057665-7.

The monthly monitoring frequency for Total Solids, Total Kjeldahl Nitrogen, Chloride, and Total Phosphorus is continued in the reissued permit.

6 Schedules

6.1 Land Treatment Annual Report

Required Action	Due Date
Submit Annual Land Treatment Report #1: Submit the Annual Land Treatment Report by February 28th for the previous calendar year. The Annual Land Treatment Report shall include the following: Total volume per site in gallons/year Total Nitrogen per zone in pounds/acre/year Total Chloride per zone in pounds/acre/year Soil Analysis Fertilizer Used in pounds/acre/year	02/28/2026
Submit Annual Land Treatment Report #2: Submit the Annual Land Treatment Report by February 28th for the previous calendar year.	02/28/2027
Submit Annual Land Treatment Report #3: Submit the Annual Land Treatment Report by February 28th for the previous calendar year.	02/28/2028
Submit Annual Land Treatment Report #4: Submit the Annual Land Treatment Report by February 28th for the previous calendar year.	02/28/2029
Submit Annual Land Treatment Report #5: Submit the Annual Land Treatment Report by	02/28/2030

February 28th for the previous calendar year.	
Annual Land Treatment Report Required After Permit Expiration: In the event this permit is not reissued prior to the expiration date, the permittee shall continue to submit annual Land Treatment Reports by February 28 of each year covering the land treatment activities during the previous calendar year.	

Explanation of Schedule

Schedule included for tracking of required annual report, as required in the Standard Requirements section of the permit.

6.2 Chloride Source Reduction Measures (SRMs) for Groundwater Discharges

Required Action	Due Date
Chloride Reduction Plan: The permittee shall complete and submit for Department review and approval a chloride reduction plan (CRP). The CRP is an initial step toward controlling chloride and ensuring compliance with chloride limits based on applicable groundwater standards. The CRP shall evaluate all applicable source reduction measures (SRMs) and establish appropriate implementation activities for the SRMs. The CRP shall include a schedule for implementing the selected SRMs.	02/28/2026
Annual Progress Report: Once the chloride reduction plan (CRP) is approved by the Department, the permittee shall submit an annual progress report, under the authority of s. NR 205.07(1)(h), Wis. Adm. Code. If a SRM implementation date of an approved CRP is not met, this may constitute a violation of the permit. Submittal of the first annual progress report is required by the Date Due.	02/28/2027
Second Annual Progress Report: Submit progress report in implementing the chloride reduction plan (CRP).	02/28/2028
Third Annual Progress Report: Submit progress report in implementing the chloride reduction plan (CRP).	02/28/2029
Fourth Annual Progress Report: Submit progress report in implementing the chloride reduction plan (CRP).	02/28/2030
Annual Progress Report Required After Permit Expiration: In the event this permit is not reissued prior to the expiration date, the permittee shall continue to submit Annual Progress Reports by February 28 of each year covering the implementation of the chloride reduction plan during the previous calendar year.	

Explanation of Schedule

The permittee has been discharging elevated levels of chloride in the effluent, resulting in elevated levels of chloride in the groundwater downgradient from the land treatment system. The permittee shall develop and implement a chloride reduction plan and submit annual progress reports by the due date.

6.3 Land Treatment Management Plan

A management plan is required for the land treatment system.

Required Action	Due Date
Land Treatment Management Plan: Submit an update to the management plan to optimize the land treatment system performance and demonstrate compliance with Wisconsin Administrative Code NR 214.	12/31/2029

Explanation of Schedule

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

6.4 Land Application Management Plan

A management plan is required for the land application system.

Required Action	Due Date
Land Application Management Plan: Submit an update to the management plan to optimize the land application system performance and demonstrate compliance with Wisconsin Administrative Code NR 214.	12/31/2029

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.

Attachments

Categorical Limits (TBEL) Calculations Memo, dated August 8, 2025

Water Quality Based Effluent Limits Memo, dated August 8, 2025

NR 140 Groundwater Evaluation Report, dated September 5, 2025

Justification Of Any Waivers From Permit Application Requirements

No waivers requested or granted as part of this permit reissuance.

Prepared By: BetsyJo Howe, Wastewater Specialist **Date:** 11/14/2025

CORRESPONDENCE/MEMORANDUM

DATE: September 5, 2025 FILE REF: FIN 5484

TO: File

FROM: Zach Watson Hydrogeologist - SCR

SUBJECT: Groundwater Evaluation for Seneca Foods Janesville WI-0050687

General Information and Treatment System Description

The Seneca Foods Janesville facility processes vegetables, dry beans, and other food products in Janesville, Wisconsin. Wastewater is generated during washing and processing of the vegetables and cleanup. Process wastewater is irrigated on one of six sprayfields during the months of April – November. The six sprayfields (outfalls 005 – 010, fields A – F) total 493 acres and are shown on **Figure 1**. The sprayfields are surrounded by a groundwater monitoring system that contains six monitoring well nests (a water table well and a piezometer well) and one lone water table well. An anaerobic digester receives some process wastewater for the generation of energy for the facility. Following treatment at the digester, this wastewater is redirected back to the sprayfield for final discharge. Digested wastewater typically comprises approximately 10 – 20% of the total discharge sent to the sprayfields on a normal day. The primary change in the wastewater chemical composition is the reduction of BOD during digestion. Otherwise, no significant change in chemical composition occurs. The bulk of the wastewater sent to the spray irrigation fields is just screened and settled to remove solids but otherwise receives no treatment.

Table 1 – Monitoring Requirements and Limitations – Sampling Point 103 (Prior to Spray Irrigation)

Parameter	Current and Proposed Permit WI-0050687-10 and WI-0050687-11		
	Limit Type	Limits and Units	Sample Frequency
Flow Rate		MGD	Daily
Total Kjeldahl Nitrogen		mg/l	Weekly
Chloride		mg/l	Weekly
Total Phosphorus		mg/l	Monthly
***BOD5**		**mg/l**	**Monthly**

***Recommended changes for upcoming permit**

Table 2 – Monitoring Requirements and Limitations – Outfalls 005 – 010 (Sites A – F)

Parameter	Current and Proposed Permit WI-0050687-10 and WI-0050687-11		
	Limit Type	Limits and Units	Sample Frequency
Flow Rate		MGD	Daily
Hydraulic Application Rate (Apr – Nov)	Monthly Avg	7,000 gal/ac/day	Monthly
Hydraulic Application Rate (Dec – Mar)	Monthly Avg	0 gal/ac/day	Monthly
Total Nitrogen		Lbs/ac/yr	Annual

Nitrogen, Max Applied on any Zone	***300 lbs/ac/yr**	Annual	
Chloride	Lbs/ac/yr	Annual	

***Recommended changes for upcoming permit**

Table 3 –Spray Irrigation Groundwater Monitoring System

Sample Point	Well Name	Current Permit and Proposed WI-0050687-10 and WI-0050687-11		
		Well Location	Well Designation	Well Type
801	MW-1	Downgradient	Point of Standards	Water Table
806	MW-5	Downgradient	Non-Point of Standards	Water Table
807	MW-5A	Downgradient	Non-Point of Standards	Piezometer
808	MW-6	Downgradient	Point of Standards	Water Table
809	MW-6A	Downgradient	Point of Standards	Piezometer
810	MW-7	Downgradient	Point of Standards	Water Table
811	MW-7A	Downgradient	Point of Standards	Piezometer
816	MW-10	Downgradient	Point of Standards	Water Table
817	MW-10A	Downgradient	Point of Standards	Piezometer
818	MW-8R	Background/Upgradient	Non-Point of Standards	Water Table
819	MW-8AR	Background/Upgradient	Non-Point of Standards	Piezometer
820	MW-9R	Sidegradient	Non-Point of Standards	Water Table
821	MW-9AR	Sidegradient	Non-Point of Standards	Piezometer

Table 4 – Spray Irrigation (Outfall 001) Groundwater Standards

Parameter	Current Permit WI-0050687-10		Proposed Permit WI-0050687-11	
	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
Nitrite+nitrate Dissolved	15.1 mg/l	15.1 mg/l	***15.7 mg/l**	***15.7 mg/l**
Chloride Dissolved	270 mg/l	270 mg/l	***165 mg/l**	***250 mg/l**
pH Field	6.4 – 8.4 su	N/A	***6.5 – 8.5 su**	N/A
Organic Nitrogen Dissolved	2.2 mg/l	N/A	***2.4 mg/l**	N/A
Ammonia Dissolved	0.97 mg/l	9.7 mg/l	0.97 mg/l	9.7 mg/l
Total Dissolved Solids	870 mg/l	N/A	***760 mg/l**	N/A

***Recommended changes for upcoming permit**

Geology

The bedrock underlying the Seneca Foods Janesville spray irrigation fields is the Cambrian-aged Trempealeau Formation which is comprised of quartz sandstones, dolomitic siltstones, and sandy and silty dolomite. The depth to bedrock at this specific location is unknown. A deep valley in the bedrock extends throughout Rock County and through Janesville where the depth to bedrock can be anywhere from 50 to 300 feet below ground surface. The unconsolidated lithology, as reported on the boring logs for monitoring wells MW-8AR and MW-9AR which were drilled in 2015, was described as a two-foot layer of organic soils, three feet of lean clay followed by well sorted fine to coarse grained sands with occasional silt and gravel. These sands extended to at least the base of these piezometers at depths of 110.5’ (MW-8AR), 106’ (MW-9AR) and 107’

(MW-10A). Bedrock was not encountered during installation of these monitoring wells. The surface topography is generally flat throughout the sprayfields.

Hydrogeology

Depth to groundwater is approximately 60 – 80 feet below ground surface and shown to vary up to a few feet between quarterly monitoring events. Groundwater elevation falls between 767 – 787 feet above mean sea level (**Figure 6**). The groundwater monitoring system at the site is comprised of six monitoring well nests and one lone water table monitoring well (MW-1). The groundwater monitoring nests consist of one water table monitoring well and one piezometer monitoring well (**Table 3**). The water table wells and piezometers are installed to depths of approximately 75 – 85 feet and 105 – 115 feet below ground surface, respectively. Vertical hydraulic gradients are small and variable, but most often downward and on the order of 0.001 – 0.05 ft/ft. Fluctuations in groundwater elevations are consistent between nested monitoring wells and the groundwater monitoring system. Groundwater flow is to the southwest (**Figure 2**).

Land Treatment Effluent Quality and Loading Rates

The annual average concentration of chloride has exhibited a sharp increase over the past two years increasing from less than 500 mg/l to over 1,200 mg/l (**Table 5, Figure 3**). The average concentration of total Kjeldahl nitrogen has remained relatively stable between an annual average of 40 – 51 mg/l (**Table 5, Figure 4**). Similarly, phosphorus has remained stable at 8 – 13 mg/l (**Table 5, Figure 6**). Total annual wastewater discharge to the sprayfields ranged between 150 – 235 MG/yr (**Table 6**). The nitrogen loading rates all fell below 300 lbs/ac/yr during the past four years (**Table 7**). Chloride annual loading rates were most often between 1,000 – 3,000 lbs/ac/yr (**Table 8**).

Table 5 – Spray Irrigation (Sampling Point 103) Annual Average Concentrations (mg/l)

Year	Total Kjeldahl Nitrogen (mg/l)	Phosphorus (mg/l)	Chloride (mg/l)
2021	40	10	449
2022	51	13	496
2023	47	10	489
2024	49	12	999
***2025**	49	8	1,238

*Through July 2025.

Table 6 – Spray Irrigation (Outfalls 005 – 010) Annual Total Discharge (MG/yr)

Outfall	Field	2021	2022	2023	2024
005	**A**	49.6	33.8	39.0	24.1
006	**B**	52.7	41.1	40.6	38.8
007	**C**	6.7	6.2	2.1	2.8
008	**D**	48.2	43.0	44.6	37.0
009	**E**	45.6	38.3	41.8	24.4
010	**F**	32.1	45.6	14.9	23.4
Annual Total		234.9	208	183	150.5

Table 7 – Spray Irrigation (Outfalls 005 – 010) Annual Nitrogen Loading Rates (lbs/ac/yr)

Outfall	Field	2021	2022	2023	2024
005	**A**	278	266	287	189
006	**B**	221	228	211	206
007	**C**	112	122	40	63
008	**D**	157	169	158	142
009	**E**	156	164	163	110
010	**F**	101	149	49	89

Table 8 – Spray Irrigation (Outfalls 005 – 010) Annual Chloride Loading Rates (lbs/ac/yr)

Outfall	Field	2021	2022	2023	2024
005	**A**	3,095	2,729	3,000	3,369
006	**B**	2,465	2,305	2,210	4,241
007	**C**	1,248	1,298	420	1,291
008	**D**	1,639	1,487	1,650	2,497
009	**E**	1,627	1,506	1,710	1,702
010	**F**	1,019	1,562	520	1,479

Background Groundwater Quality

Background groundwater quality is defined by the results from samples collected at MW-8R and MW-8AR. The concentration of chloride is higher and more variable at MW-8R relative to MW-8AR. The concentration of chloride at MW-8AR is very stable at approximately 30 – 40 mg/l. The average concentration of chloride at MW-8R was 100 mg/l during the past five years. There is no increasing or decreasing trends in the concentration of chloride at either well. The average concentration of nitrite+nitrate during the past five years at MW-8R and MW-8AR was 9.9 and 12.3 mg/l, respectively. Again, there is no clear trend for either monitoring well. The results for ammonia nitrogen are non-detect at both MW-8R and MW-8AR.

Downgradient Groundwater Quality

The results for chloride at MW-5, MW-6 and MW-10 have exhibited an increasing trend over the past ten years (**Figure 7**). The average concentration during the past five years at MW-5, MW-6 and MW-10 has been 130 mg/l, 317 mg/l and 230 mg/l, respectively. Most of the downgradient monitoring wells, either water table wells or piezometers, show slightly increasing concentrations of chloride. The results for chloride are generally lower than those observed at the water table wells (**Figure 7** and **8**). As shown on **Figure 9** and **10**, the results for nitrite+nitrate are higher and more stable at the piezometer monitoring wells. The results for nitrite+nitrate at the water table wells are lower and more variable relative to the piezometers. A decreasing trend in the concentration of nitrite+nitrate can be seen at MW-1, MW-6, and MW-10 (**Figure 9**). Ammonia nitrogen is non-detect at all the downgradient monitoring wells (**Figure 11**). Most of the results for total dissolved solids fall between 400 – 700 mg/l but can be elevated along with elevated chloride concentrations (i.e., MW-6 and MW-10) (**Figure 12**).

Treatment System Impact to Groundwater Quality

Fields A and B have received the highest load of chloride (**Table 7**) and the results for chloride are highest at the monitoring wells downgradient of these fields (i.e., MW-6 and MW-10) (**Figure 7**). The significant increases in chloride observed in 2024 and 2025 are expected to result in continued increases in the concentration of chloride at downgradient monitoring wells and exceedances of the groundwater standards. The nitrogen loading rates for the six sprayfields most often fell between 100 – 300 lbs/ac/yr. These nitrogen

loading rates should not cause significant increases in the concentration of dissolved nitrogen species in groundwater. The discharge to the sprayfields has not resulted in any ammonia discharged to groundwater. It is difficult to determine how much nitrite+nitrate observed at the monitoring wells may be due to the discharge as nitrite+nitrate is elevated at the background monitoring wells. The results for nitrite+nitrate have decreased at monitoring wells MW-6 and MW-10 while the concentration of chloride has increased. The organic load sent to the sprayfield in terms of BOD is unknown as this parameter is not monitored in the discharge. Overall, chloride is the primary concern in terms of the impact of the discharge on groundwater quality.

Indicator Parameter PALs

Indicator Parameter Preventive Action Limits (PALs) are developed following the procedures described in s. NR 140.20(2), Wis. Adm. Code and "Calculating Preventive Action Limits and Evaluating Groundwater Quality Exemptions for Groundwater Dischargers". 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 PAL.

- ∑ [Background groundwater quality + (Standard Deviation of results x 3)]
- ∑ [Background groundwater quality + Minimum Increase (NR 140.20 Table 3)]

Indicator parameter PALs for the current permit term were calculated using monitoring data from WT-01B during the prior permit term. The indicator parameter PALs for use in the upcoming permit WI-0050687-11 are presented in **Table 4** and were calculated using results from MW-08R (September 1, 2020 - August 30, 2025). The anomalous result for total dissolved solids on March 27, 2024 was omitted from the calculation of the total dissolved solids PAL (**Table 9**).

Alternative Concentration Limits

Alternative concentration Limits (ACLs) can be developed and provided for a groundwater monitoring system to replace the PAL or ES (s. NR 140.28, Wis. Adm. Code). ACLs are provided if the conditions at the background monitoring well(s) indicate that it is appropriate. The methodology and considerations for developing and providing ACLs are outlined in the guidance document "Calculating Preventive Action Limits and Evaluating Groundwater Quality Exemptions for Groundwater Dischargers". Individual ACLs for chloride and nitrite+nitrate were calculated using results from MW-08R (September 1, 2020 - August 30, 2025, **Table 9**). The result for chloride on March 27, 2024 is considered anomalous and was omitted from the calculation of the chloride ACL.

Table 9 – Alternative Concentration Limit and Preventative Action Limit Calculations

Date	Nitrite+Nitrate (mg/l)	Chloride (mg/l)	Total Dissolved Solids (mg/l)
10/29/20	13.2	90.4	528
3/11/21	13.8	21	410
6/2/21	12.9	63.8	580
8/26/21	15.7	67.1	568
11/9/21	14.1	22.9	458
3/2/22	11.3	17.3	444
6/28/22	10.0	102	586
8/31/22	9.8	65.2	568
12/1/22	9.4	96.9	554
3/22/23	10.1	54.3	460
6/7/23	9.0	48.9	468
8/18/23	8.9	37.4	500
12/6/23	7.4	169	628
3/27/24	3.8	[1]**568**	[1]**1230**
6/27/24	6.7	181	714
9/30/24	8.3	68.1	486
12/27/24	8.7	64.1	406
3/26/25	7.1	118	576
6/2/25	7.5	52.8	482
Average	9.9	74.5	523
Standard Deviation	2.9	44.6	78
Calculated ACL/PAL	**15.7**	**165**	**760**

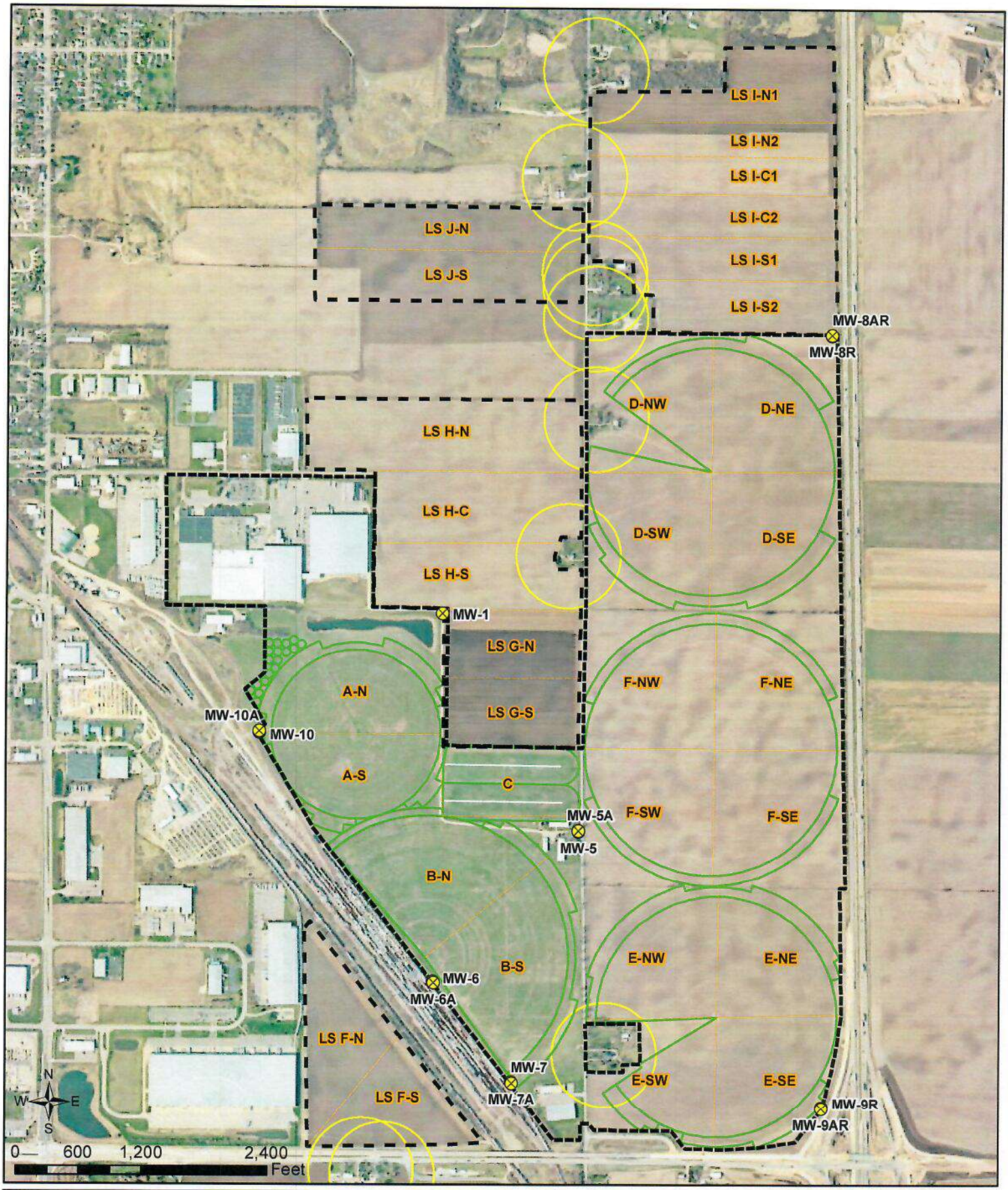
[1]The March 27, 2024 results for chloride and total dissolved solids were not used in the calculation of the ACL/PAL.

The calculated ACL/PALs are rounded up to the nearest 0 or 5 for both chloride and total dissolved solids.

Conclusions, Recommendations and Schedule Requirements

- Seneca Janesville is currently discharging too much chloride to their sprayfields, and they should work towards identifying and implementing solutions that reduce the amount of chloride discharged. A compliance schedule should be included for Seneca Janesville to submit annual chloride reduction reports.
- Seneca Janesville should submit an updated Land Treatment Management Plan during the next permit term.
- The nitrogen loading rate for the sprayfields should be reduced to 300 lbs/ac/yr, consistent with the cover crop needs and Seneca Janesville's demonstrated loading rates.
- Add BOD5 to the monitoring requirements for the sprayfield discharge to assess the potential for changes in redox states and nutrient cycling in the vadose zone.

Figure 1 – Site Map



Monitoring Well/Piezometer
Soil Sample Areas
Irrigation Site Boundary
Landspread Site Boundary
500ft Setback

APPLIED SCIENCE, INC.
SCIENCE • ENGINEERING • MANAGEMENT
1601 Airport Rd | Ste 110 | Waukesha | WI 53188
414-897-9933 | AS@AppliedScienceInc.com

SOIL SAMPLE AREAS

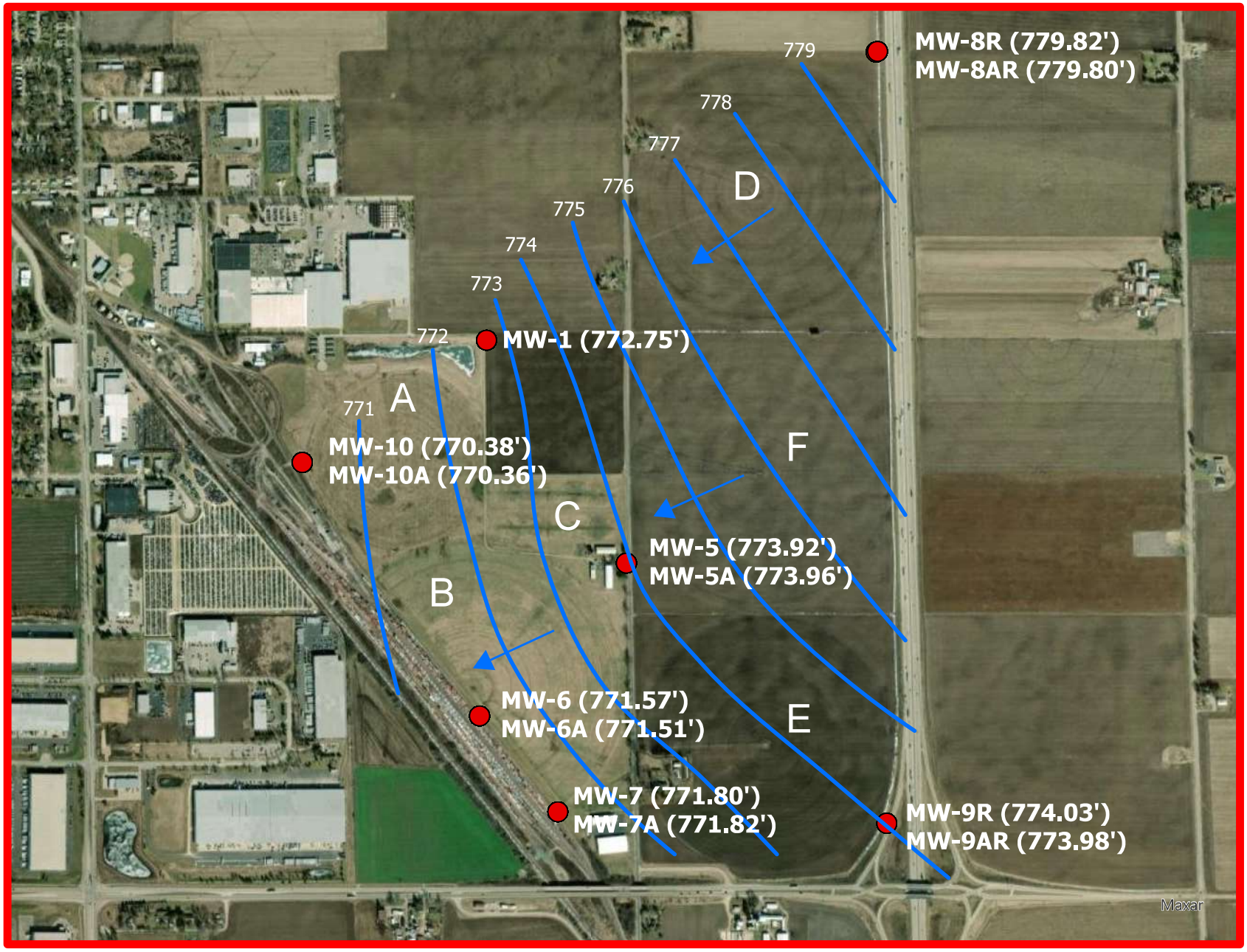
SENECA FOODS CORPORATION
JANESVILLE, WISCONSIN

FIGURE NO. A

DRAWN	CHECKED	APPROVED	REVISED	PROJECT NO.	FILE
ARD	NPH	NPH	01/07/25	C01415	Fig3_SiteMap

Figure 2 – Groundwater Flow Map – June 2, 2025

Water Table Elevations June 2, 2025 - Seneca Foods Janesville



Site Location

418 E Conde St.
Janesville WI 53546

Legend

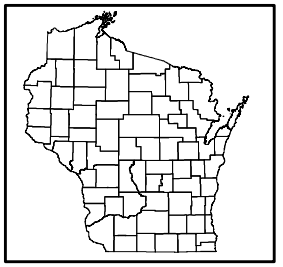
Water Table Contour (6/2/2025 - 1' FAMSL)

Groundwater Flow Direction

Notes

Water table contours are hand drawn using the reported elevations in feet above mean sea level collected on June 2nd, 2025. The elevations reported at the piezometers were not used for water table contours.

Created By: watsoz
Date: 8/29/2025



0 450 900 1,350 1,800 2,250 2,700 Feet

1:16,000

Figure 3

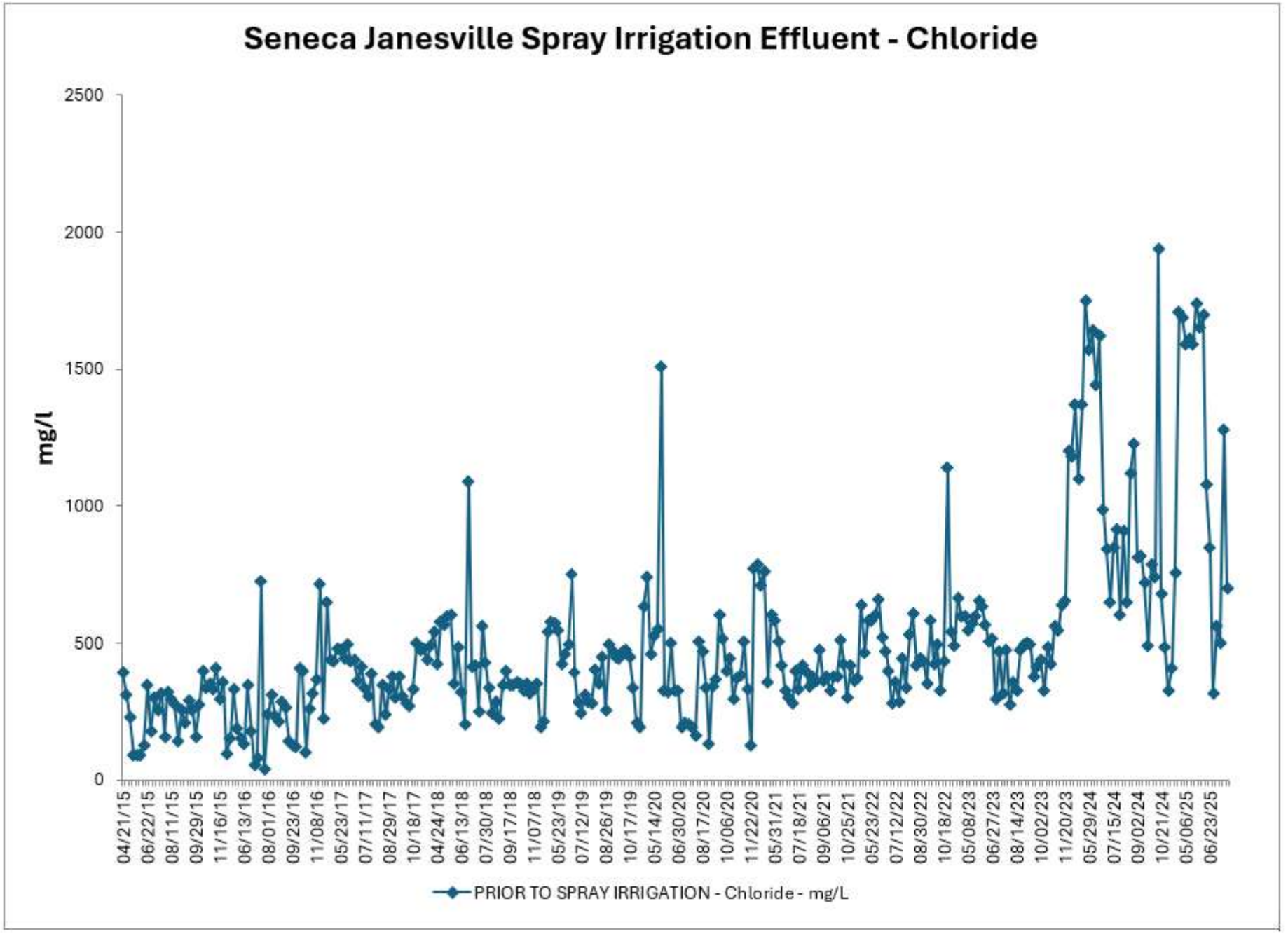

Seneca Janesville Spray Irrigation Effluent - Chloride
mg/l
2500
2000
1500
1000
500
0
04/21/15
06/22/15
08/11/15
09/29/15
11/16/15
06/13/16
08/01/16
09/23/16
11/08/16
05/23/17
07/11/17
08/29/17
10/18/17
04/24/18
06/13/18
07/30/18
09/17/18
11/07/18
05/23/19
07/12/19
08/26/19
10/17/19
05/14/20
06/30/20
08/17/20
10/06/20
11/22/20
05/31/21
07/18/21
09/06/21
10/25/21
05/23/22
07/12/22
08/30/22
10/18/22
05/08/23
06/27/23
08/14/23
10/02/23
11/20/23
05/29/24
07/15/24
09/02/24
10/21/24
05/06/25
06/23/25
PRIOR TO SPRAY IRRIGATION - Chloride - mg/L

Figure 4

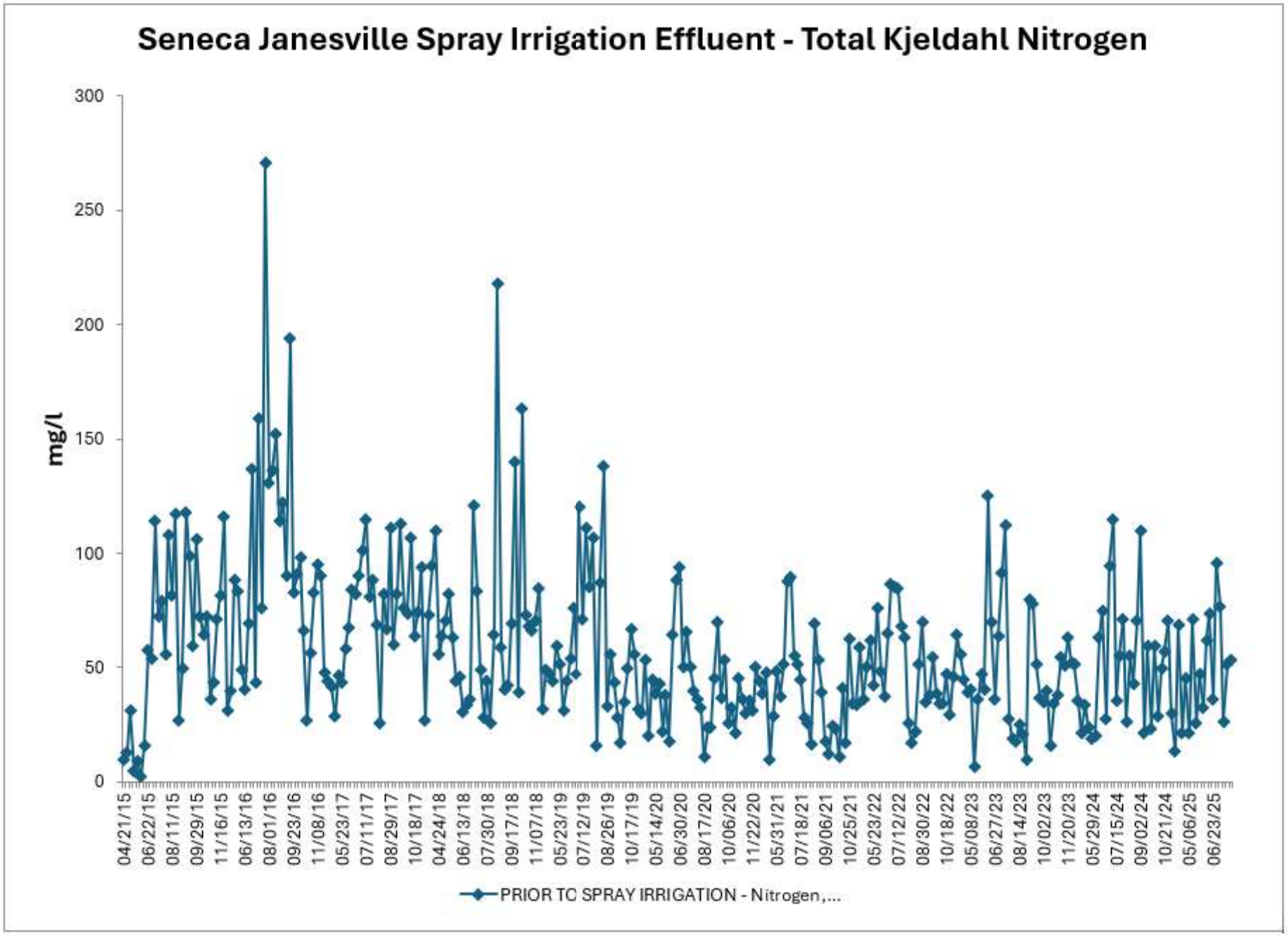

Seneca Janesville Spray Irrigation Effluent - Total Kjeldahl Nitrogen
mg/l
300
250
200
150
100
50
0
04/21/15
06/22/15
08/11/15
09/29/15
11/16/15
06/13/16
08/01/16
09/23/16
11/08/16
05/23/17
07/11/17
08/29/17
10/18/17
04/24/18
06/13/18
07/30/18
09/17/18
11/07/18
05/23/19
07/12/19
08/26/19
10/17/19
05/14/20
06/30/20
08/17/20
10/06/20
11/22/20
05/31/21
07/18/21
09/06/21
10/25/21
05/23/22
07/12/22
08/30/22
10/18/22
05/08/23
06/27/23
08/14/23
10/02/23
11/20/23
05/29/24
07/15/24
09/02/24
10/21/24
05/06/25
06/23/25
PRIOR TC SPRAY IRRIGATION - Nitrogen,...

Figure 5

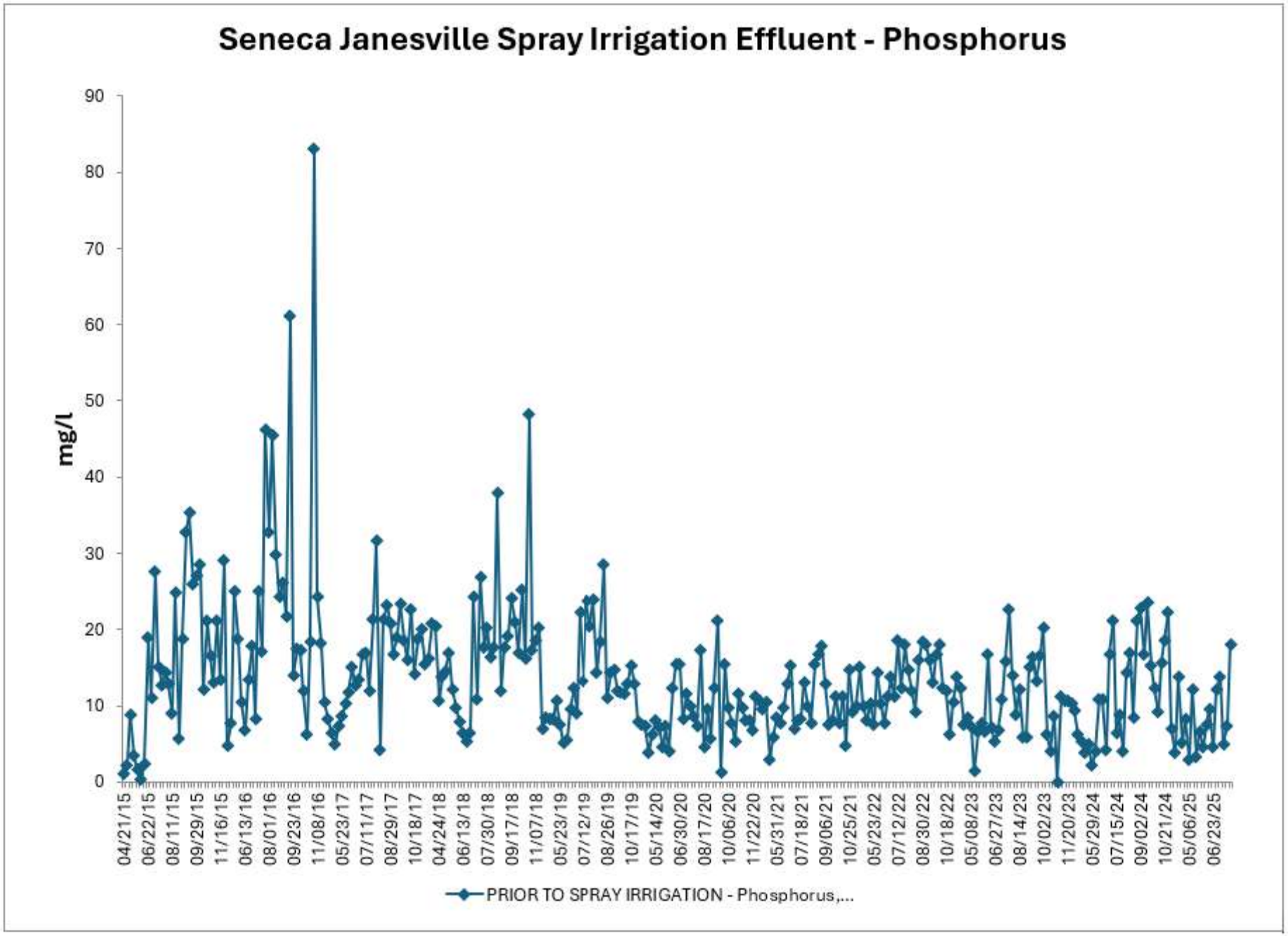

Seneca Janesville Spray Irrigation Effluent - Phosphorus
mg/l
90
80
70
60
50
40
30
20
10
0
04/21/15
06/22/15
08/11/15
09/29/15
11/16/15
06/13/16
08/01/16
09/23/16
11/08/16
05/23/17
07/11/17
08/29/17
10/18/17
04/24/18
06/13/18
07/30/18
09/17/18
11/07/18
05/23/19
07/12/19
08/26/19
10/17/19
05/14/20
06/30/20
08/17/20
10/06/20
11/22/20
05/31/21
07/18/21
09/06/21
10/25/21
05/23/22
07/12/22
08/30/22
10/18/22
05/08/23
06/27/23
08/14/23
10/02/23
11/20/23
05/29/24
07/15/24
09/02/24
10/21/24
05/06/25
06/23/25
PRIOR TO SPRAY IRRIGATION - Phosphorus,...

Figure 6

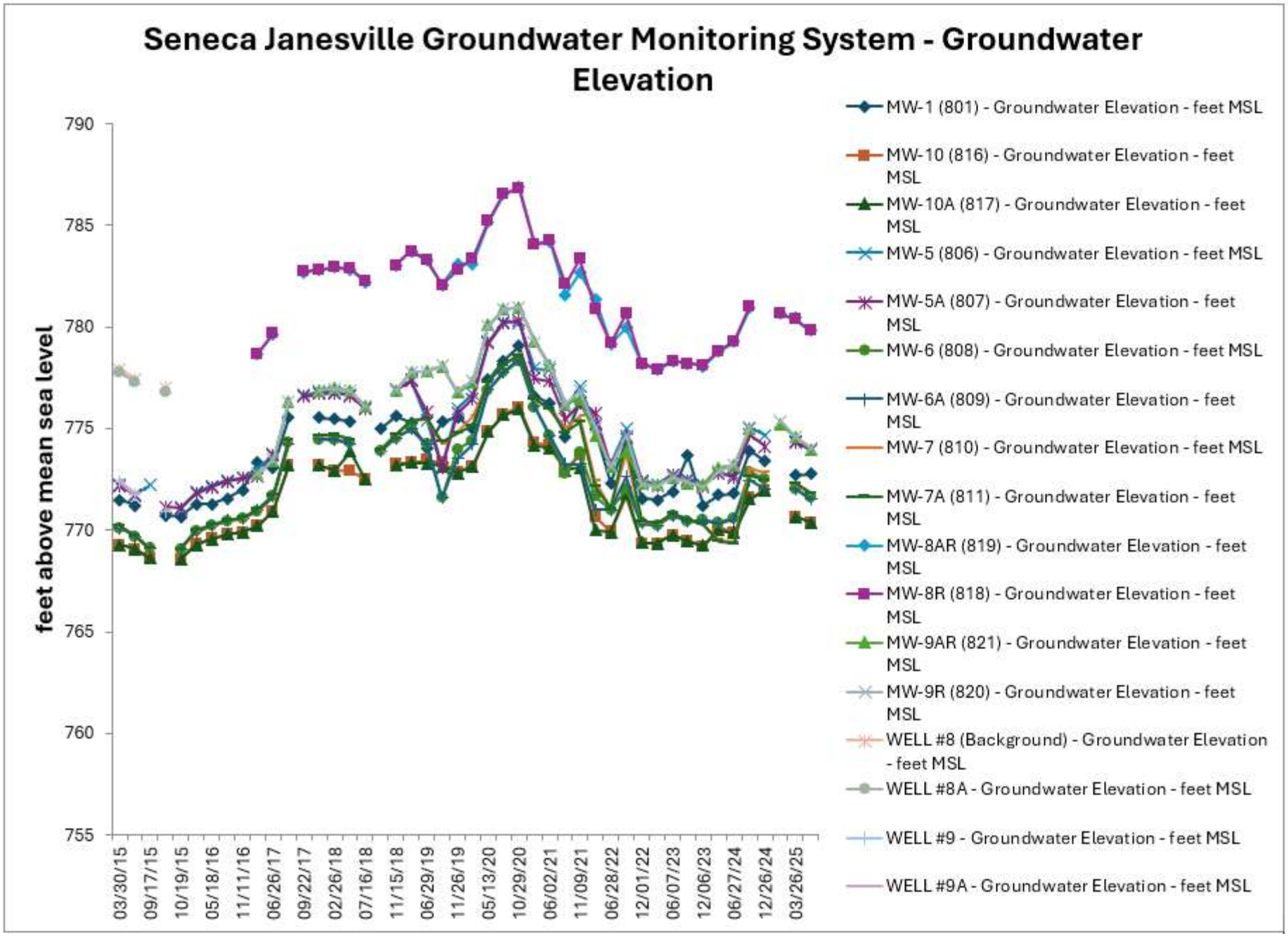

Seneca Janesville Groundwater Monitoring System - Groundwater Elevation
feet above mean sea level
790
785
780
775
770
765
760
755
03/30/15
09/17/15
10/19/15
05/18/16
11/11/16
06/26/17
09/22/17
02/26/18
07/16/18
11/15/18
06/29/19
11/26/19
05/13/20
10/29/20
06/02/21
11/09/21
06/28/22
12/01/22
06/07/23
12/06/23
06/27/24
12/26/24
03/26/25
MW-1 (801) - Groundwater Elevation - feet MSL
MW-10 (816) - Groundwater Elevation - feet MSL
MW-10A (817) - Groundwater Elevation - feet MSL
MW-5 (806) - Groundwater Elevation - feet MSL
MW-5A (807) - Groundwater Elevation - feet MSL
MW-6 (808) - Groundwater Elevation - feet MSL
MW-6A (809) - Groundwater Elevation - feet MSL
MW-7 (810) - Groundwater Elevation - feet MSL
MW-7A (811) - Groundwater Elevation - feet MSL
MW-8AR (819) - Groundwater Elevation - feet MSL
MW-8R (818) - Groundwater Elevation - feet MSL
MW-9AR (821) - Groundwater Elevation - feet MSL
MW-9R (820) - Groundwater Elevation - feet MSL
WELL #8 (Background) - Groundwater Elevation - feet MSL
WELL #8A - Groundwater Elevation - feet MSL
WELL #9 - Groundwater Elevation - feet MSL
WELL #9A - Groundwater Elevation - feet MSL

Figure 7

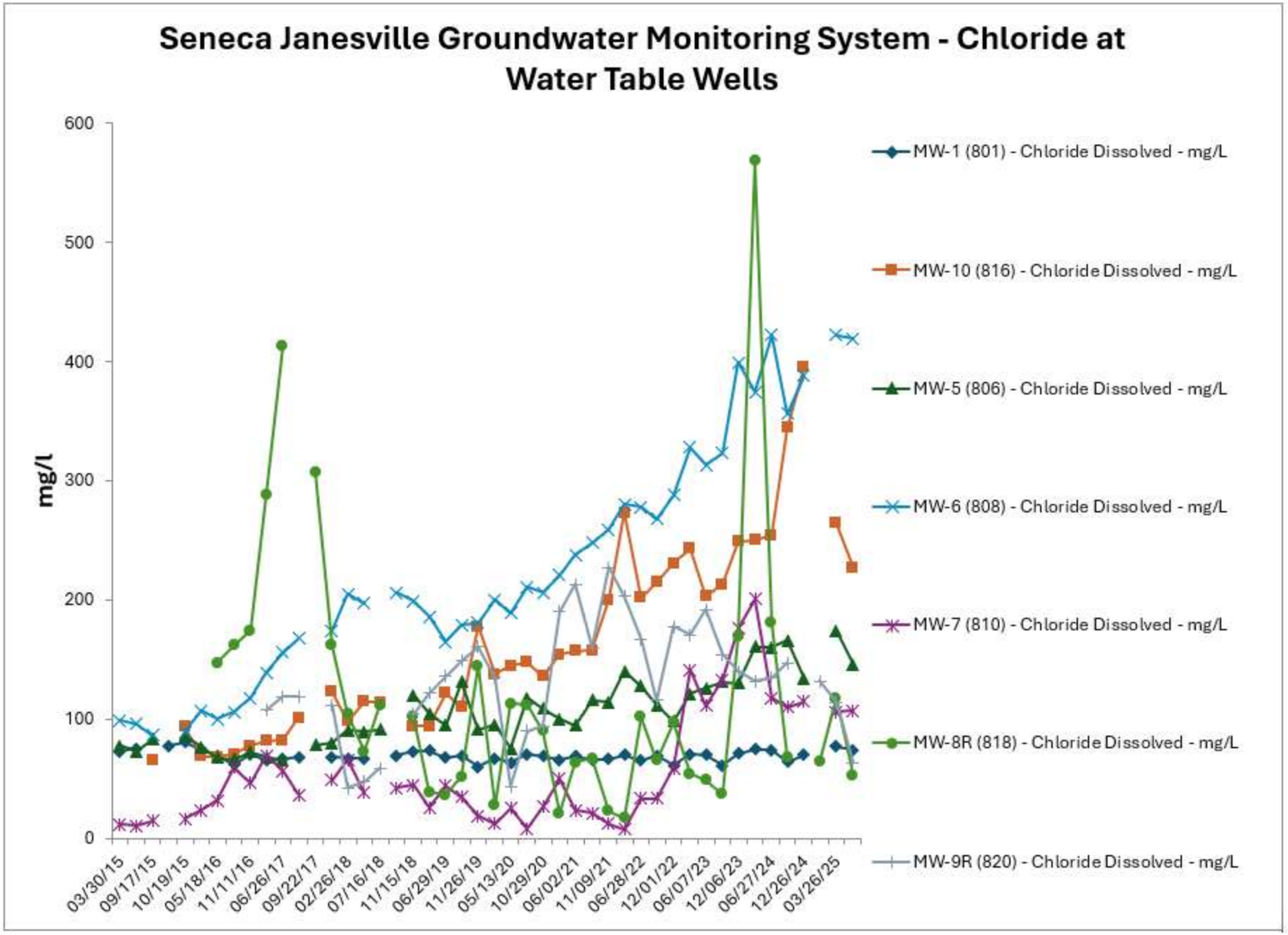

Seneca Janesville Groundwater Monitoring System - Chloride at Water Table Wells
mg/l
600
500
400
300
200
100
0
03/30/15
09/17/15
10/19/15
05/18/16
11/11/16
06/26/17
09/22/17
02/26/18
07/16/18
11/15/18
06/29/19
11/26/19
05/13/20
10/29/20
06/02/21
11/09/21
06/28/22
12/01/22
06/07/23
12/06/23
06/27/24
12/26/24
03/26/25
MW-1 (801) - Chloride Dissolved - mg/L
MW-10 (816) - Chloride Dissolved - mg/L
MW-5 (806) - Chloride Dissolved - mg/L
MW-6 (808) - Chloride Dissolved - mg/L
MW-7 (810) - Chloride Dissolved - mg/L
MW-8R (818) - Chloride Dissolved - mg/L
MW-9R (820) - Chloride Dissolved - mg/L

Figure 8

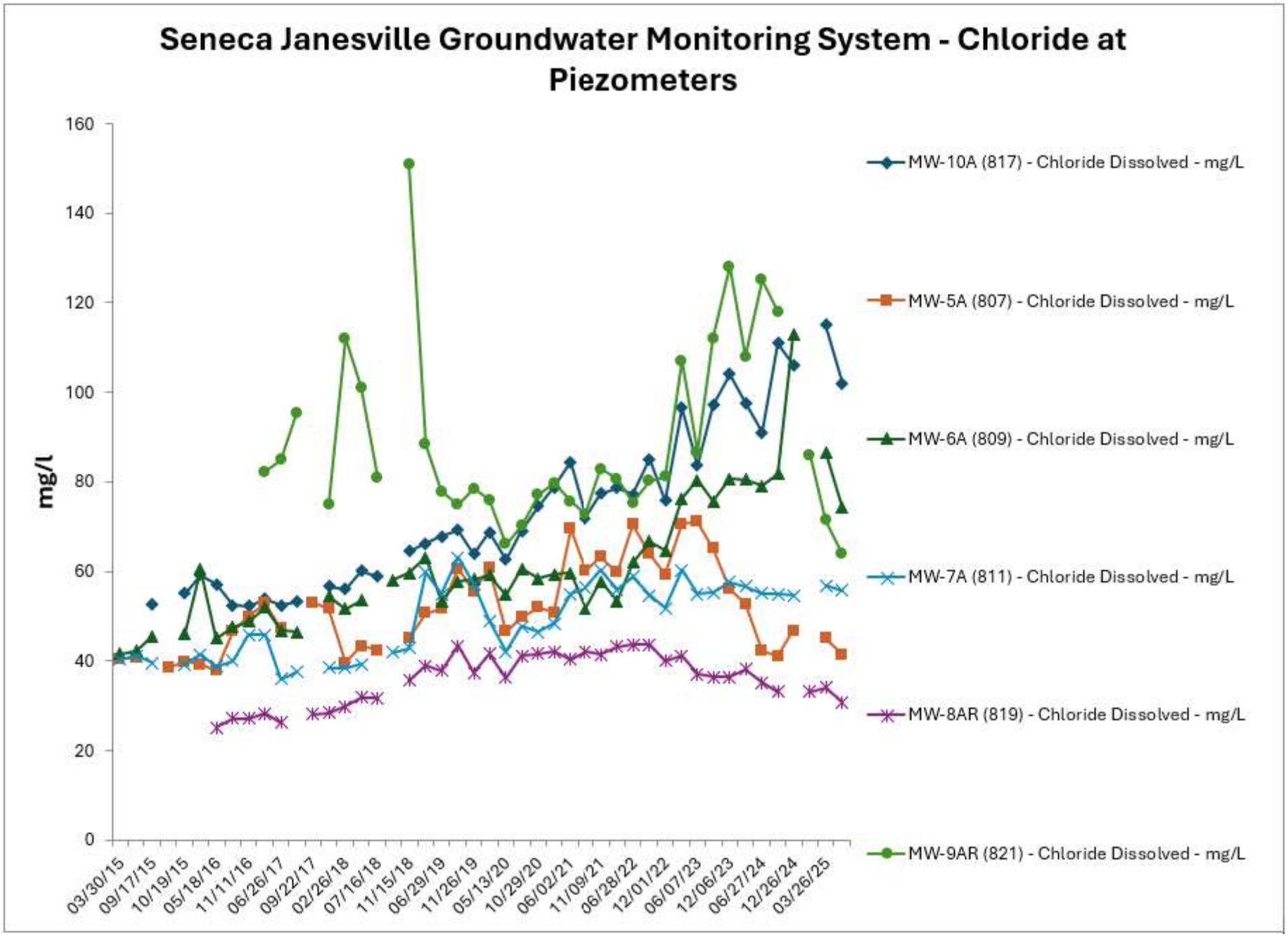

Seneca Janesville Groundwater Monitoring System - Chloride at Piezometers
mg/l
160
140
120
100
80
60
40
20
0
03/30/15
09/17/15
10/19/15
05/18/16
11/11/16
06/26/17
09/22/17
02/26/18
07/16/18
11/15/18
06/29/19
11/26/19
05/13/20
10/29/20
06/02/21
11/09/21
06/28/22
12/01/22
06/07/23
12/06/23
06/27/24
12/26/24
03/26/25
MW-10A (817) - Chloride Dissolved - mg/L
MW-5A (807) - Chloride Dissolved - mg/L
MW-6A (809) - Chloride Dissolved - mg/L
MW-7A (811) - Chloride Dissolved - mg/L
MW-8AR (819) - Chloride Dissolved - mg/L
MW-9AR (821) - Chloride Dissolved - mg/L

Figure 9

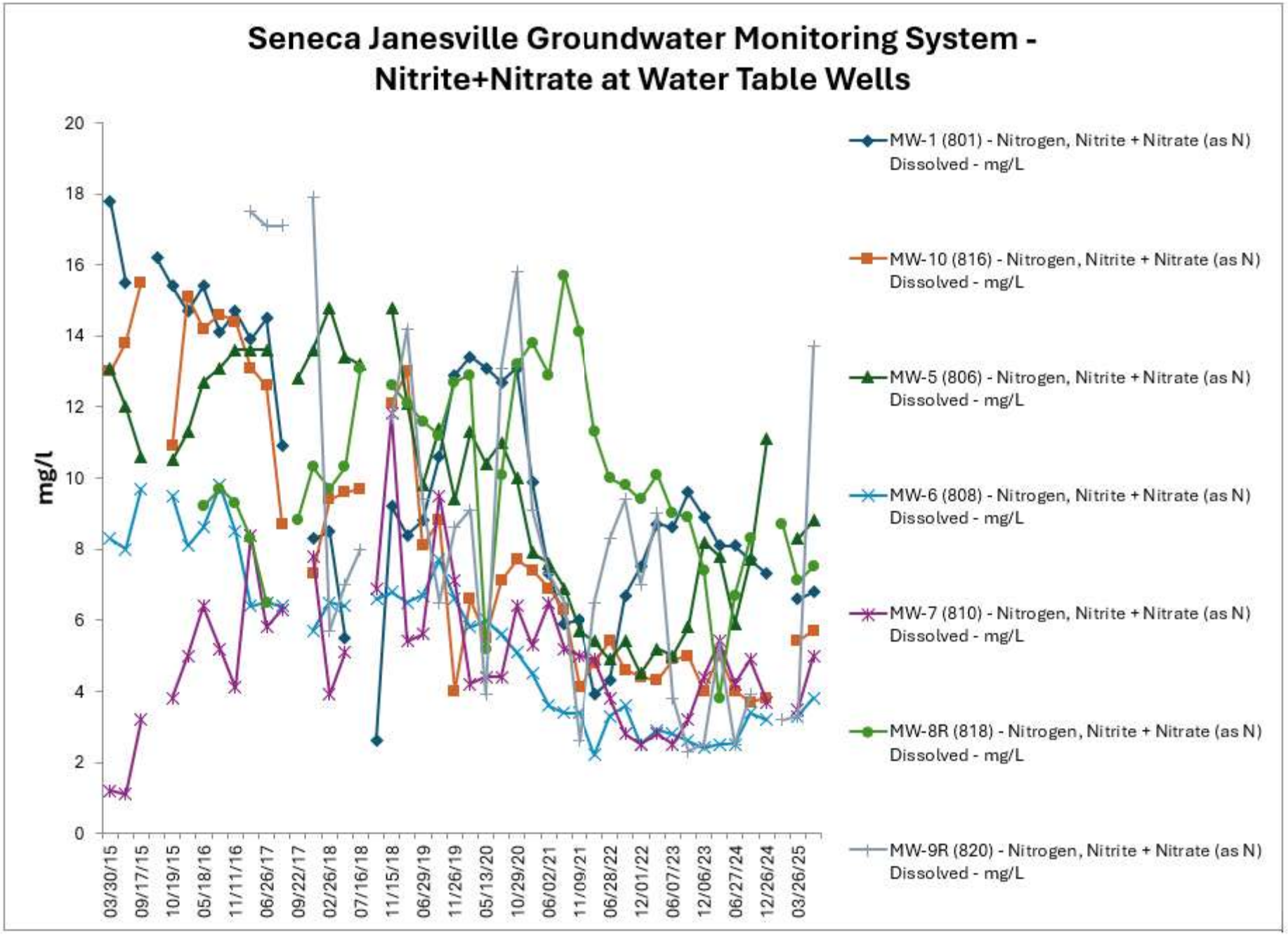

Seneca Janesville Groundwater Monitoring System -
Nitrite+Nitrate at Water Table Wells
mg/l
0
2
4
6
8
10
12
14
16
18
20
03/30/15
09/17/15
10/19/15
05/18/16
11/11/16
06/26/17
09/22/17
02/26/18
07/16/18
11/15/18
06/29/19
11/26/19
05/13/20
10/29/20
06/02/21
11/09/21
06/28/22
12/01/22
06/07/23
12/06/23
06/27/24
12/26/24
03/26/25
MW-1 (801) - Nitrogen, Nitrite + Nitrate (as N) Dissolved - mg/L
MW-10 (816) - Nitrogen, Nitrite + Nitrate (as N) Dissolved - mg/L
MW-5 (806) - Nitrogen, Nitrite + Nitrate (as N) Dissolved - mg/L
MW-6 (808) - Nitrogen, Nitrite + Nitrate (as N) Dissolved - mg/L
MW-7 (810) - Nitrogen, Nitrite + Nitrate (as N) Dissolved - mg/L
MW-8R (818) - Nitrogen, Nitrite + Nitrate (as N) Dissolved - mg/L
MW-9R (820) - Nitrogen, Nitrite + Nitrate (as N) Dissolved - mg/L

Figure 10

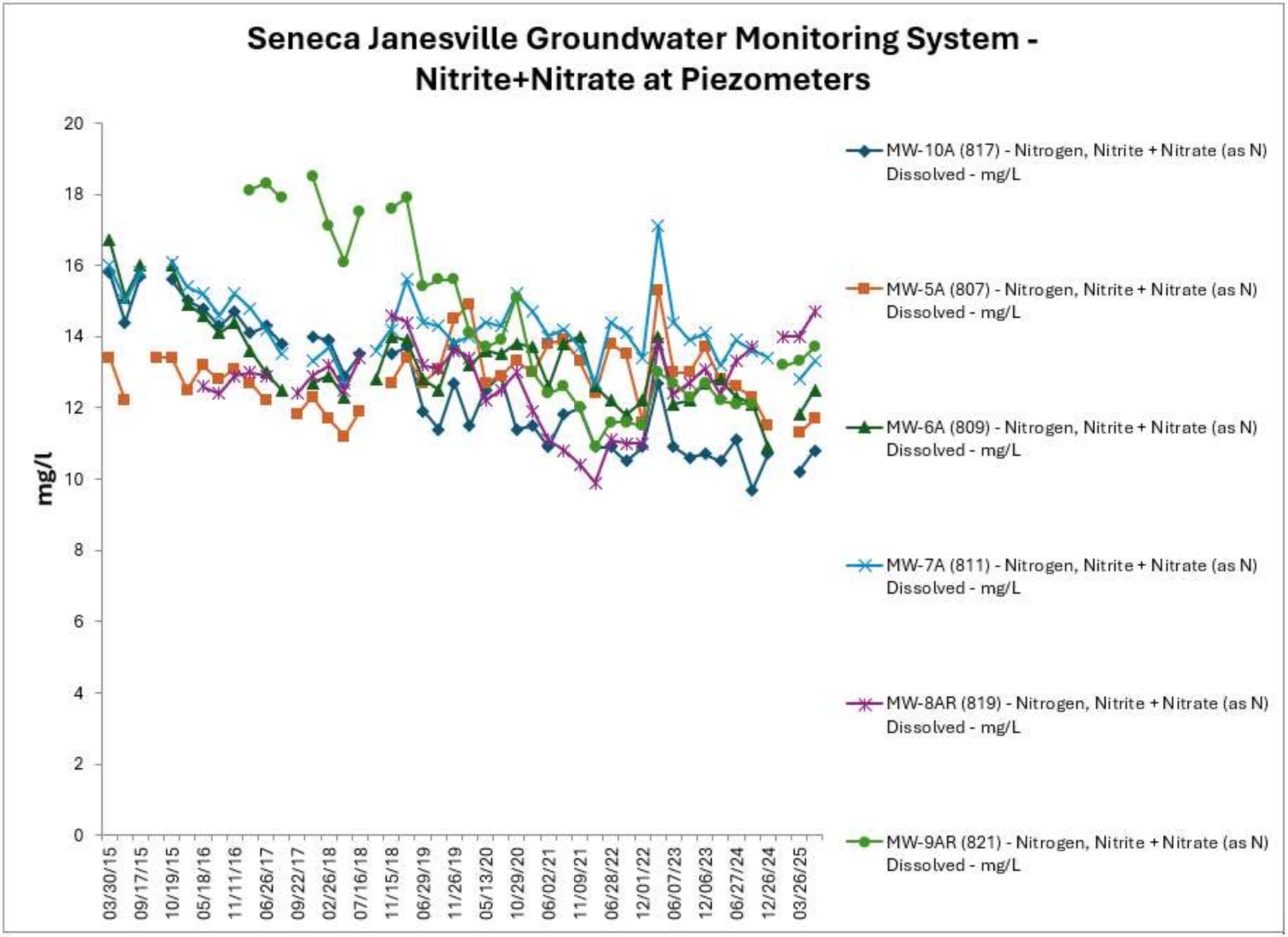

Seneca Janesville Groundwater Monitoring System - Nitrite+Nitrate at Piezometers
mg/l
20
18
16
14
12
10
8
6
4
2
0
03/30/15
09/17/15
10/19/15
05/18/16
11/11/16
06/26/17
09/22/17
02/26/18
07/16/18
11/15/18
06/29/19
11/26/19
05/13/20
10/29/20
06/02/21
11/09/21
06/28/22
12/01/22
06/07/23
12/06/23
06/27/24
12/26/24
03/26/25
MW-10A (817) - Nitrogen, Nitrite + Nitrate (as N) Dissolved - mg/L
MW-5A (807) - Nitrogen, Nitrite + Nitrate (as N) Dissolved - mg/L
MW-6A (809) - Nitrogen, Nitrite + Nitrate (as N) Dissolved - mg/L
MW-7A (811) - Nitrogen, Nitrite + Nitrate (as N) Dissolved - mg/L
MW-8AR (819) - Nitrogen, Nitrite + Nitrate (as N) Dissolved - mg/L
MW-9AR (821) - Nitrogen, Nitrite + Nitrate (as N) Dissolved - mg/L

Figure 11

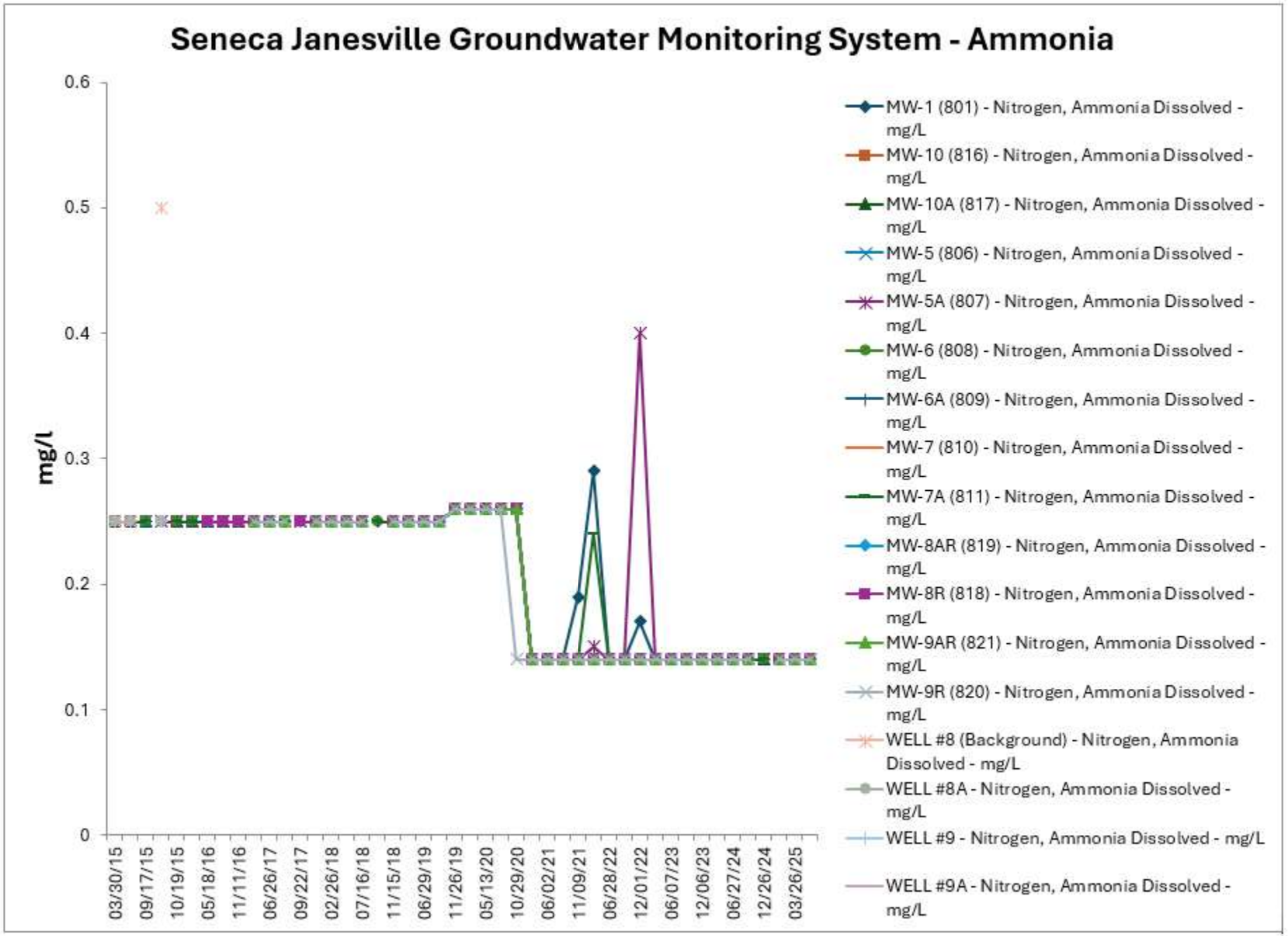
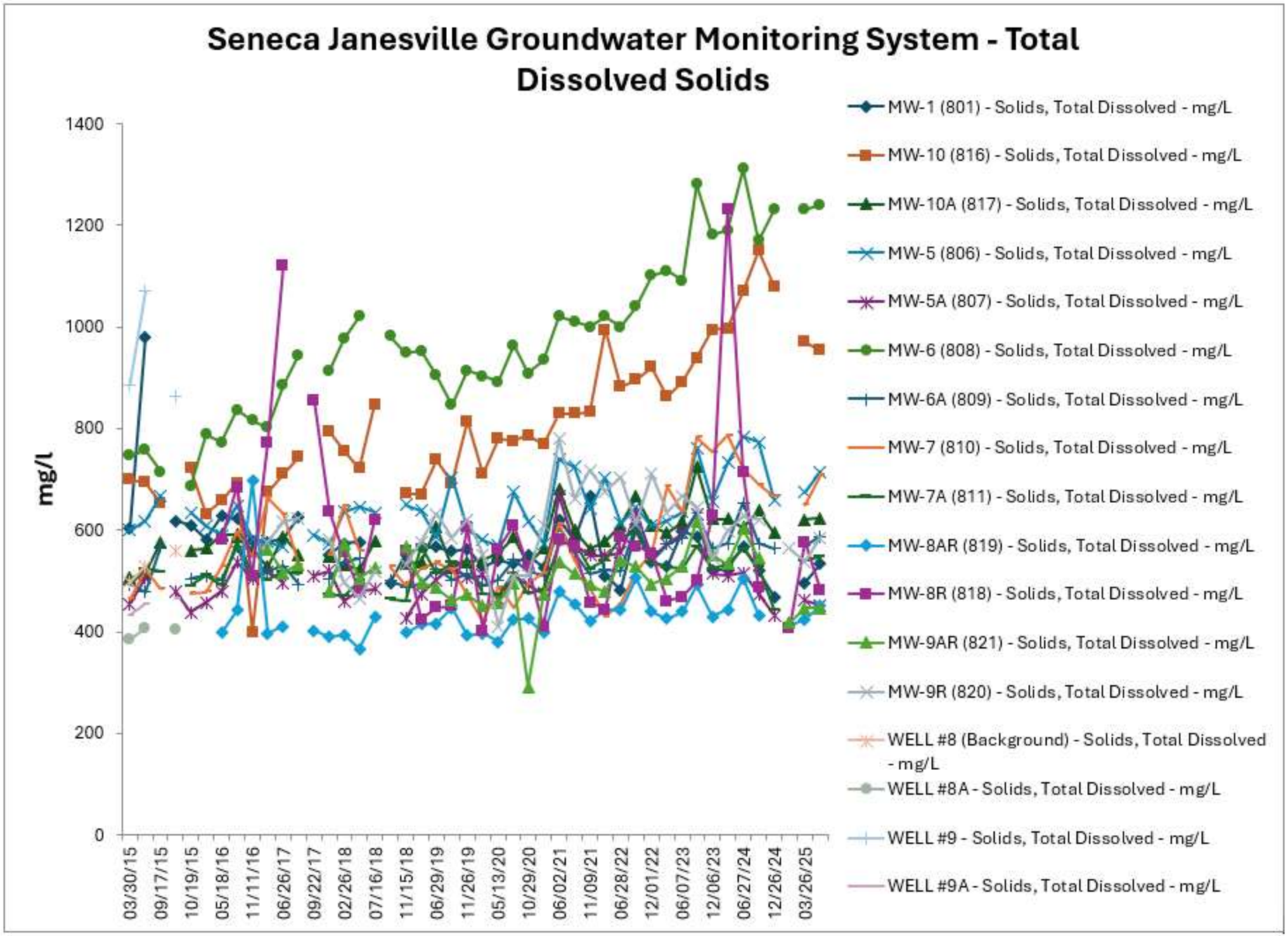

Seneca Janesville Groundwater Monitoring System - Ammonia
mg/l
0.6
0.5
0.4
0.3
0.2
0.1
0
03/30/15
09/17/15
10/19/15
05/18/16
11/11/16
06/26/17
09/22/17
02/26/18
07/16/18
11/15/18
06/29/19
11/26/19
05/13/20
10/29/20
06/02/21
11/09/21
06/28/22
12/01/22
06/07/23
12/06/23
06/27/24
12/26/24
03/26/25
MW-1 (801) - Nitrogen, Ammonia Dissolved - mg/L
MW-10 (816) - Nitrogen, Ammonia Dissolved - mg/L
MW-10A (817) - Nitrogen, Ammonia Dissolved - mg/L
MW-5 (806) - Nitrogen, Ammonia Dissolved - mg/L
MW-5A (807) - Nitrogen, Ammonia Dissolved - mg/L
MW-6 (808) - Nitrogen, Ammonia Dissolved - mg/L
MW-6A (809) - Nitrogen, Ammonia Dissolved - mg/L
MW-7 (810) - Nitrogen, Ammonia Dissolved - mg/L
MW-7A (811) - Nitrogen, Ammonia Dissolved - mg/L
MW-8AR (819) - Nitrogen, Ammonia Dissolved - mg/L
MW-8R (818) - Nitrogen, Ammonia Dissolved - mg/L
MW-9AR (821) - Nitrogen, Ammonia Dissolved - mg/L
MW-9R (820) - Nitrogen, Ammonia Dissolved - mg/L
WELL #8 (Background) - Nitrogen, Ammonia Dissolved - mg/L
WELL #8A - Nitrogen, Ammonia Dissolved - mg/L
WELL #9 - Nitrogen, Ammonia Dissolved - mg/L
WELL #9A - Nitrogen, Ammonia Dissolved - mg/L

Figure 12


Seneca Janesville Groundwater Monitoring System - Total Dissolved Solids
mg/l
1400
1200
1000
800
600
400
200
0
03/30/15
09/17/15
10/19/15
05/18/16
11/11/16
06/26/17
09/22/17
02/26/18
07/16/18
11/15/18
06/29/19
11/26/19
05/13/20
10/29/20
06/02/21
11/09/21
06/28/22
12/01/22
06/07/23
12/06/23
06/27/24
12/26/24
03/26/25
MW-1 (801) - Solids, Total Dissolved - mg/L
MW-10 (816) - Solids, Total Dissolved - mg/L
MW-10A (817) - Solids, Total Dissolved - mg/L
MW-5 (806) - Solids, Total Dissolved - mg/L
MW-5A (807) - Solids, Total Dissolved - mg/L
MW-6 (808) - Solids, Total Dissolved - mg/L
MW-6A (809) - Solids, Total Dissolved - mg/L
MW-7 (810) - Solids, Total Dissolved - mg/L
MW-7A (811) - Solids, Total Dissolved - mg/L
MW-8AR (819) - Solids, Total Dissolved - mg/L
MW-8R (818) - Solids, Total Dissolved - mg/L
MW-9AR (821) - Solids, Total Dissolved - mg/L
MW-9R (820) - Solids, Total Dissolved - mg/L
WELL #8 (Background) - Solids, Total Dissolved - mg/L
WELL #8A - Solids, Total Dissolved - mg/L
WELL #9 - Solids, Total Dissolved - mg/L
WELL #9A - Solids, Total Dissolved - mg/L

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: 08/08/2025

TO: Jennifer Jerich – SCR

FROM: Nicole Krueger – SER Nicole Krueger

SUBJECT: Water Quality-Based Effluent Limitations for the Seneca Foods Corp Janesville La Prairie WPDES Permit No. WI-0050687-11-0

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 Corp Janesville La Prairie Plant in Rock County. This industrial facility discharges to the Rock River via a storm sewer, located in the Blackhawk Creek Watershed in the Lower Rock River Basin. This discharge is located in the Rock River Total Maximum Daily Load (TMDL) area but was not given a TMDL allocation in the report approved by EPA on 09/28/2011.

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 002:

Parameter	Daily Maximum	Daily Minimum	Monthly Average	Six-Month Average	Annual Average	Footnotes
Flow Rate						1,2
BOD_5 TBEL	20 mg/L 546 lbs/day		10 mg/L 358 lbs/day		275 lbs/day	3
TSS	20 mg/L 998 lbs/day		10 mg/L 734 lbs/day		508 lbs/day	3
pH	9.0 s.u.	6.0 s.u.				3
Ammonia Nitrogen						2
Phosphorus			0.30 mg/L	0.10 mg/L 0.08 lbs/day		1,4
Temperature	120 deg F					1
Halogen, Total Residual as Cl_2	38 µg/L					-
Acute WET						5

Footnotes:

1. No changes from the current permit.
2. Monitoring only.
3. The mass limits are categorical limits based on ch. NR 225, Wis. Adm. Code. These limits are addressed in a separate memo.
4. The phosphorus mass limit is required in accordance with the waste load allocations specified in the Rock River TMDL
5. 3x/permit term acute WET testing is recommended. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in rotating quarters, to collect seasonal information about this discharge. 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.

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.

If ch. NR 207, Wis. Adm. Code, is updated, the limits recommended in this memo may change. Antidegradation may apply if the discharge from Outfall 002 commences because the new draft code requires an analysis for current discharge conditions compared to the recommended permit limits.

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 (2) – Narrative & Outfall Map

PREPARED BY: Nicole Krueger, Water Resources Engineer – SER

E-cc: Zach Watson, Hydrogeologist – SCR
Lisa Creegan, Regional Wastewater Supervisor – SCR
Diane Figiel, Water Resources Engineer – WY/3
Nate Willis, Wastewater Engineer – WY/3

Attachment #1

Water Quality-Based Effluent Limitations for
Seneca Foods Corp Janesville La Prairie Plant

WPDES Permit No. WI-0050687-11-0

Prepared by: Nicole Krueger

PART 1 – BACKGROUND INFORMATION

Facility Description

Seneca Foods cans various vegetables throughout the growing season. This facility operates 24 hours a day, 7 days a week. Operation usually starts mid-May and continues into November each year. Process wastewater is discharged to the groundwater of the Rock River Drainage Basin via a spray irrigation system and a land spreading system. Currently, there is not a surface water discharge on site. However, can cooling water and noncontact cooling water were previously discharged to the surface water, and this discharge may resume in the future.

Attachment #2 is a map of the area showing the approximate location of Outfall 002.

Existing Permit Limitations

The current permit, expiring on 09/30/2025, includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Flow Rate						1
BOD_5	20 mg/L			10 mg/L		2
TSS						1,2
Phosphorus, Total				0.3 mg/L	0.1 mg/L 0.08 lbs/day	3
Temperature	120 deg F					
Mercury, Total Recoverable						1
Halogen, Total Residual as C_{12}	38 mg/L			38 mg/L		-
Acute WET						4

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.
3. The phosphorus limits are effective immediately when Outfall 002 is active.
4. 2/permit term acute WET testing is required.

Receiving Water Information

- Name: Rock River via storm sewer
- Waterbody Identification Code (WBIC): 788800

- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Warm Water Sport Fish (WWSF) community, non-public water supply and recreational use.
- 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 05430500 at Afton in Rock County, downstream of where Outfall 002 is located.

  7-Q_{10} = 219 cubic feet per second (cfs)
  7-Q_2 = 418 cfs
  90-Q_{10} = 353 cfs
  Harmonic Mean Flow = 856 cfs using a drainage area of 3315 mi^2

  The Harmonic Mean has been estimated based on average flow and the 7-Q_{10} using an equation from U.S. EPA's *Technical Support Document for Water Quality-Based Toxics Control* (March 1991, EPA/505/2-90-001, pgs. 88-89).
- Hardness = 281 mg/L as $CaCO_3$. This value represents the geometric mean of data from chronic WET testing at Janesville Wastewater Treatment Facility from 02/02/2021 – 11/05/2024.
- % 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: The background metals and chloride concentrations given in the tables below are from the Rock River at Afton (Station ID 543001).
- Multiple dischargers: There are several other dischargers to the Rock River; however, they are not in the immediate vicinity and the mixing zones do not overlap. Therefore, the other dischargers do not impact this evaluation.
- Impaired water status: The Rock River is 303(d) listed as impaired for PCBs, total phosphorus, and total suspended solids (TSS) at the point of discharge. The phosphorus and TSS impairments are addressed in the Rock River TMDL.

Effluent Information

- Flow rate(s):

  Annual average = 0.216 million gallons per day (MGD)

  This is the maximum 12-month rolling average from May 1999 – November 2005. Discharge from the surface water outfall has not occurred since 2005.
- Hardness = 350 mg/L as $CaCO_3$. This value is the average reported for drinking water from Janesville Water Utility which is the source of water for Seneca.
- 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 supply: City of Janesville Water Utility
- Additives: Seneca has included 4 additives in the permit application that have the potential to be present in Outfall 002. These additives are listed below:
  - ChemTreat FlexPro CL5684 – Scale and corrosion inhibitor
  - ChemTreat CL49 – Biocide (bromine)
  - ChemTreat CL41 – Biocide (chlorine)
  - ChemStation CHLORSAN 12.5% - Biocide (sodium hypochlorite)
  - The need for any limits or use restrictions for these additives is evaluated in Part 8 of this evaluation.
- Effluent characterization: Outfall 002 is currently inactive so there is limited effluent data. Below is a summary of effluent characterization from May 1999 to November 2005.

PART 2 – pH

Seneca does not currently have pH limits. The criteria for fish and aquatic life for pH per s. NR 102.04(4)(c), Wis. Adm. Code is 6.0 to 9.0 s.u. Therefore, it is recommended that **pH limits of 6.0 s.u. as a daily minimum and 9.0 s.u. as a daily maximum be included in the reissued permit.**

PART 3 – 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, 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 = 175 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**
Chlorine		19.0		38.1
Arsenic		340	8.36	680
Cadmium	350	43.4	0.154	86.7
Chromium		16.0	3.33	32.0
Copper	350	50.6	3.77	101
Lead	350	359	10.1	717
Mercury (ng/L)		830	0.99	1660
Nickel	268	1080	1.72	2161
Zinc	333	345	3.93	689
Chloride (mg/L)		757	36	1514

* 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 = 54.75 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
Chlorine		7.28		1200
Arsenic		152	8.36	23716
Cadmium	175	3.82	0.154	604
Chromium	301	326	3.33	50204
Copper	314	27.5	3.77	3513
Lead	314	84.5	10.07	10877
Mercury (ng/L)		440	0.99	72358
Nickel	268	120	1.72	19527
Zinc	314	327	3.93	48327
Chloride (mg/L)		395	36	59206

* 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

Attachment #1

Monthly Average Limits based on Wildlife Criteria (WC)

RECEIVING WATER FLOW = 88.8 cfs (¼ of the 90-Q_{10}), as specified in s. NR 106.06(4), Wis. Adm. Code

SUBSTANCE	WC	MEAN BACK-GRD.	MO'LY AVE. LIMIT
Mercury (ng/L)	1.3	0.99	83.6

Monthly Average Limits based on Human Threshold Criteria (HTC)

RECEIVING WATER FLOW = 213.9 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HTC	MEAN BACK-GRD.	MO'LY AVE. LIMIT
Cadmium	370	0.15	237052
Chromium (+3)	3818000	3.33	2447133350
Lead	140	10.07	83291
Mercury (ng/L)	1.5	0.99	328
Nickel	43000	1.72	27559620

Monthly Average Limits based on Human Cancer Criteria (HCC)

RECEIVING WATER FLOW = 213.9 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HCC	MEAN BACK-GRD.	MO'LY AVE. LIMIT
Arsenic	13.3	1.30	7693

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.** Limits and/or monitoring recommendations are made in the paragraphs below:

Total Halogens as Residual Chlorine – Because chlorine is added at the facility, effluent limitations are recommended. Specifically, **a daily maximum limit of 38 µg/L is required.** The current permit has daily maximum and monthly average limits of 38 mg/L which were typos. **Expression of limits do not apply due to the noncontinuous nature of the discharge,** so a monthly average limit is not needed. The currently effective monthly average limit of 38 mg/L may be removed per antidegradation and antibacksliding requirements in ch. NR 207, Wis. Adm. Code because the Outfall hasn't discharged when this limit has been effective and the daily maximum WQBEL of 38 µg/L is much more stringent.

Mercury – Mercury monitoring is in the current permit. However, the calculated limits are high which the effluent is unlikely to exceed. Therefore, **monitoring is not recommended to continue in the reissued permit.**

PFOS and PFOA – The need for PFOS and PFOA monitoring is evaluated in accordance with s. NR 106.98(2), Wis. Adm. Code. Available monitoring sample data from Janesville Water Utility (15401276) is provided in the table below:

Water Supply PFAS Data

Sample Date	Sample ID	Well #	PFOS (ng/L)	PFOA (ng/L)
11/01/2022	1347212	-	0.49	ND
11/01/2022	1347210	BG809	0.63	0.42
11/01/2022	1347208	BG808	ND	ND
11/01/2022	1347217	-	ND	ND
11/01/2022	1347215	-	0.55	ND
05/18/2022	620745001	-	ND	ND
05/18/2022	620795001	BG809	ND	ND
05/18/2022	620746001	-	ND	ND
05/18/2022	620751001	-	ND	ND
05/18/2022	620750001	BG808	ND	ND
		Average =	0.167	0.042

Based on the type of discharge and known levels of PFOS/PFOA in the source water, **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 4 – 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 Janesville La Prairie does not currently have ammonia nitrogen limits, the need for limits is evaluated at this time.

There is no available ammonia data from when Outfall 002 was discharging to surface water. Therefore, ammonia data from Seneca Foods Corporation – Clyman prior to 2021 (single pass canned cooling water) is used in this evaluation because it is expected to be similar to what would be expected at the Janesville La Prairie plant. All ammonia data from 2018 at Clyman was nondetect. Therefore, **no ammonia limits are recommended. Monitoring only is recommended for Outfall 002 when it is in use** to determine reasonable potential.

PART 5 – 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.

Since Seneca has phosphorus limits in effect that are more stringent than 1.0 mg/L, the need for a TBEL will not be considered further.

Water Quality-Based Effluent Limits (WQBEL)

Revisions to administrative rules regulating phosphorus took effect on December 1, 2010. These rule revisions include additions to s. NR 102.06, Wis. Adm. Code, which establish phosphorus standards for surface waters. Subchapter III of NR 217, Wis. Adm. Code, establishes procedures for determining WQBELs for phosphorus, based on the applicable standards in ch. NR 102, Wis. Adm. Code.

Section NR 102.06(3)(a), Wis. Adm. Code, specifically names river segments for which a phosphorus criterion of 0.100 mg/L applies. For other stream segments that are not specified in s. NR 102.06(3)(a), Wis. Adm. Code, s. NR 102.06(3)(b), Wis. Adm. Code, specifies a phosphorus criterion of 0.075 mg/L. The phosphorus criterion of 0.100 mg/L applies for the Rock River.

The conservation of mass equation is described in s. NR 217.13(2)(a), Wis. Adm. Code, for phosphorus WQBELs and includes variables of water quality criterion (WQC), receiving water flow rate (Qs), effluent flow rate (Qe), and upstream phosphorus concentrations (Cs) provided below.

$$\text{Limitation} = [(WQC)(Qs+(1-f)\ Qe) - (Qs-f\ Qe)\ (Cs)]/Qe$$

Where:

WQC = 0.100 mg/L for the Rock River
Qs = 100% of the 7-Q_2 of 418 cfs
Cs = background concentration of phosphorus in the receiving water pursuant to s. NR 217.13(2)(d), Wis. Adm. Code
Qe = effluent flow rate = 0.216 MGD = 0.334 cfs
f = the fraction of effluent withdrawn from the receiving water = 0

Section NR 217.13(2)(d), Wis. Adm. Code, specifies that the background phosphorus concentration used in the limit calculation formula shall be calculated as a median using the procedures specified in s. NR 102.07(1)(b) to (c), Wis. Code. All representative data from the most recent 5 years shall be used, but data from the most recent 10 years may be used if representative of current conditions.

A previous evaluation resulted in a WQBEL of 0.1 mg/L because the phosphorus concentration in the Rock River exceeds the criteria and is listed on the 303(d) impaired waters for phosphorus impairment. Section NR 217.13(2)(d), Wis. Adm. Code, states that the determination of upstream concentrations shall be evaluated at each permit reissuance. Additional data were considered in estimating the background phosphorus concentration.

A review of all available in stream total phosphorus data from 20 data points between 05/21/2003 to 10/14/2019 stored in the Surface Water Integrated Monitoring System database indicates the median background total phosphorus concentration in the Rock River at Afton (SWIMS station ID 543275, 543280, and 543001) is 0.261 mg/L. This location is approximately 5.75 miles downstream of Outfall 002.

Substituting a background concentration above criteria into the limit calculation equation above would result in a calculated limit that is less than the applicable criterion of 0.100 mg/L. However, s. NR 217.13(7), Wis. Adm. Code, specifies that "if the water quality-based effluent limitation calculated pursuant to the procedures in this section is less than the phosphorus criterion specified in s. NR 102.06, Wis. Adm. Code, for the water body, the effluent limit shall be set equal to the criterion."

Limit Expression
According to s. NR 217.14 (2), Wis. Adm. Code, because the calculated WQBEL is less than or equal to 0.3 mg/L, the effluent limit of 0.100 mg/L may be expressed as a six-month average. If a concentration limitation expressed as a six-month average is included in the permit, a monthly average concentration limitation of 0.300 mg/L equal to three times the WQBEL calculated under s. NR 217.13, Wis. Adm. Code shall also be included in the permit. The six-month average should be averaged during the months of May – October and November – April.

Mass Limits
Because the Rock River is an impaired water, a mass limitation must also be included in the WPDES permit pursuant to s. NR 217.14(1)(a)3. This final mass limit shall be 0.100 mg/L × 8.34 × 0.216 MGD = 0.180 lbs/day expressed as a six-month average. This is greater than the limit that is in the current permit, so **it is recommended that the current six-month average phosphorus mass limit, 0.08 lbs/day, continues in the reissued permit.** Because this limit is in effect in the current permit, the permittee would need to complete a successful antidegradation evaluation under s. NR 207.04, Wis. Adm. Code, to get an increased limit.

The current mass limit was based upon the concentration limit of 0.10 mg/L and the peak monthly flow rate of 0.098 MGD. These limitations are consistent with the reduction goals specified in the Rock River TMDL for Reach 76 since Seneca Foods Janesville was not given an allocation in the Rock River TMDL because of the seasonal discharge of can cooling water and noncontact cooling water. For reference, Seneca Foods Janesville is located on Reach 76 of the Rock River from Bass Creek to Mile 183, which has a phosphorus load reduction target of 88% for wastewater discharges.

PART 6 – TOTAL SUSPENDED SOLIDS

TMDL Limit
The Rock River Total Daily Maximum Load specifies percent reductions for total suspended solids. The total suspended solids (TSS) load reduction target from wastewater discharges for Reach #76 is 26%. Seneca Foods Janesville is not believed to be a significant source of TSS to the Rock River because of the seasonal discharge of can cooling water and noncontact cooling water. Because the surface water outfall is inactive and there is no past TSS data for Outfall 002, **mass monitoring is recommended if the surface water discharge commences.**

Concentration limit
Concentration TSS limits are generally established as the same concentrations as BOD_5 limitations. Therefore, **TSS concentration limits of 20 mg/L as a daily maximum and 10 mg/L as a monthly average are recommended in the reissued permit.**

PART 7 – 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 05/11/1999 - 11/23/2005.

Monthly Temperature Effluent Data & Limits

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)
JAN	108	108	NA	120
FEB			NA	120
MAR	64	64	NA	120
APR			NA	120
MAY	116	116	NA	120
JUN	118	118	NA	120
JUL	120	120	NA	120
AUG	128	**128**	NA	120
SEP	116	116	NA	120
OCT	120	120	NA	120
NOV	100	108	NA	120
DEC	88	88	NA	120

* NA denotes "not applicable" when the calculated weekly average limit is greater than or equal to 120 °F.

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

Comparing the representative highest effluent temperature to the calculated effluent limits determines the reasonable potential of exceeding the effluent limits. The months in which limitations are recommended are highlighted. Based on this analysis, daily maximum temperature limits are needed for the month of

August.

The current permit has a daily maximum limit of 120° F for every month of the year, and this is recommended to be continued in the reissued permit.

PART 8 – 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, that ratio is approximately 655:1. With this amount of dilution, there is believed to be little potential for chronic toxicity effects in the Rock River 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.
- Shown below is a tabulation of all available WET data for Outfall 002. Efforts are made to ensure that decisions about WET monitoring and limits are made based on representative data, as specified in s. NR 106.08(3), Wis. Adm Code. Data which is not believed to be representative of the discharge was not included in reasonable potential calculations. The table below differentiates between tests used and not used when making WET determinations.

WET Data History

Date Test Initiated	Acute Results LC_{50} %			
	C. dubia	Fathead minnow	Pass or Fail?	Used in RP?
06/27/2001	>100	>100	Pass	Yes
09/10/2003	>100	>100	Pass	Yes

- According to s. NR 106.08, Wis. Adm. Code, WET reasonable potential is determined by multiplying the highest toxicity value that has been measured in the effluent by a safety factor, to predict the likelihood (95% probability) of toxicity occurring in the effluent above the applicable WET limit. The safety factor used in the equation changes based on the number of toxicity detects in the dataset. The fewer detects present, the higher the safety factor, because there is more uncertainty surrounding the predicted value. **WET limits must be given, according to s. NR 106.08(6), Wis. Adm. Code, whenever the applicable Reasonable Potential equation results in a value greater than 1.0.**

Acute Reasonable Potential = [(TUa effluent) (B)(AMZ)]

According to s. NR 106.08(6)(d), Wis. Adm. Code, TUa and TUc effluent values are equal to zero whenever toxicity is not detected (i.e. when the LC_{50}, IC_{25} or $IC_{50} \geq 100\%$).

Acute Reasonable Potential = 0 < 1.0, reasonable potential is not shown, and a limit is not required.

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	2 tests used to calculate RP – older than 5 years No tests failed. **5 Points**
Effluent Variability	Little variability, no violations or upsets, consistent WWTF operations. **0 Points**
Receiving Water Classification	WWSF **5 Points**
Chemical-Specific Data	Reasonable potential for limits will be assessed when/if discharge commences. **0 Points**
Additives	3 Biocides and 1 Water Quality Conditioners added. **10 Points**
Discharge Category	NCCW **0 Points**
Wastewater Treatment	No Treatment **10 Points**
Downstream	No impacts known

Attachment #1

	Acute
Impacts	**0 Points**
Total Checklist Points:	**30 Points**
Recommended Monitoring Frequency (from Checklist):	3 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, **3x/permit term acute WET tests are recommended in the reissued permit. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in rotating quarters, to collect seasonal information about this discharge.**

PART 9 – ADDITIVE REVIEW

Unlike the metals and toxic substances evaluated in Part 2, most additives have not undergone the amount of toxicity testing needed to calculate water quality criteria. Instead, in cases where the minimum data requirements necessary to calculate a WQC are not met, a secondary value can be used to regulate the substance, according to s. NR 105.05, Wis. Adm. Code. Whenever an additive is discharged directly into a surface water without receiving treatment or an additive is used in the treatment process and is not expected to be removed before discharge, a review of the additive is needed. Secondary values should be derived according to s. NR 105.05, Wis. Adm. Code. Guidance related to conducting an additive review can be found in *Water Quality Review Procedures for Additives* (2022)
https://dnr.wisconsin.gov/topic/Wastewater/Additives.html

Additive Parameters

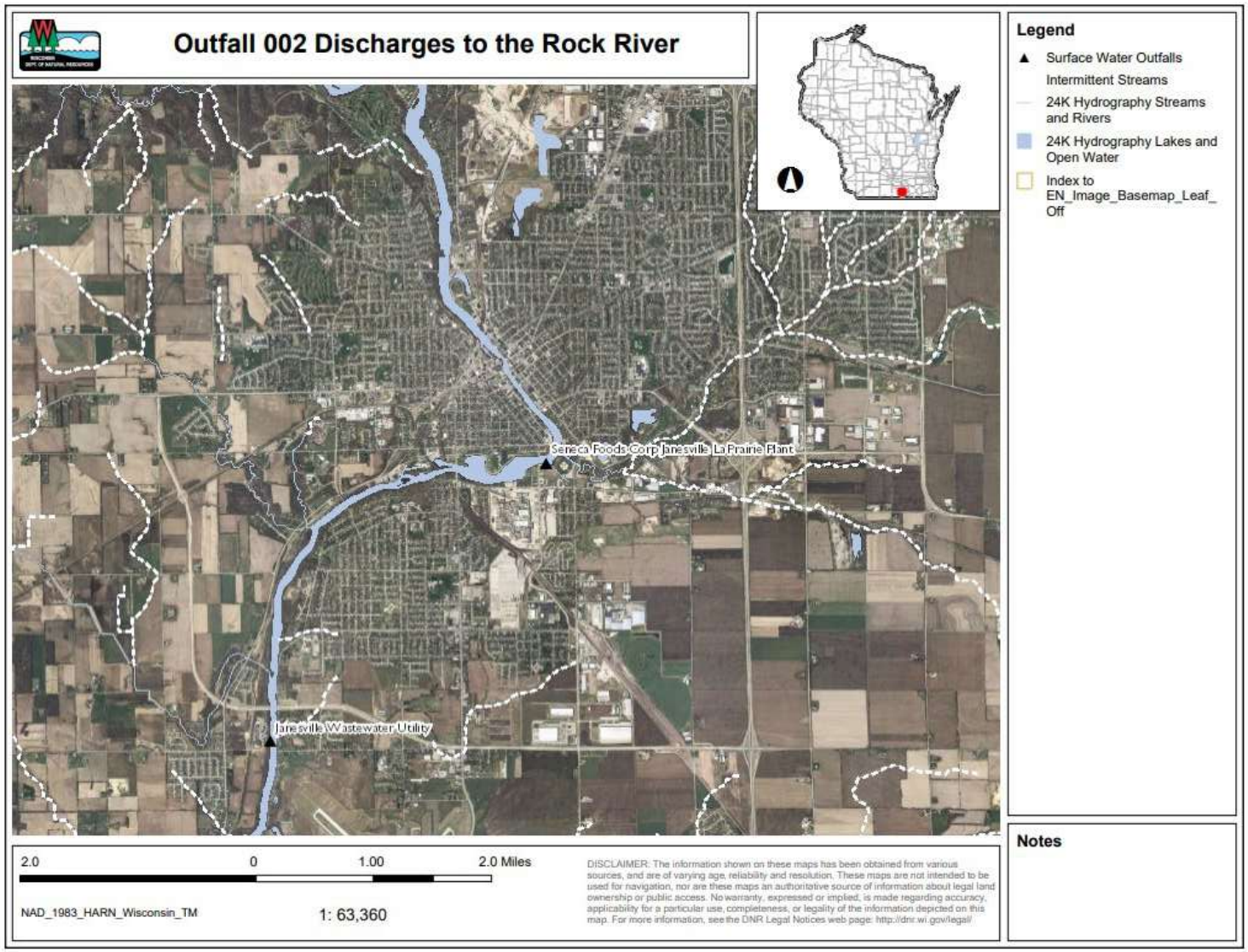
Additive Name	Manufacturer	Purpose of Additive including where added	Intermittent or Continuous Feed	Frequency of Use		Estimated Effluent Concentration	Potential Use Restriction mg/L[1]	Is Additive Authorized in Current Permit?
				Months per/yr.	Days/ week			
FlexPro CL5684	ChemTreat	Scale & corrosion inhibitor	C	6	7	50 mg/L	359	Yes
CL49	ChemTreat	Biocide	C	6	7	<100 µg/L	292 µg/L	No
CL41	ChemTreat	Biocide	C	6	7	<100 µg/L	588	No
CHLORSAN 12.5%[2]	ChemStation	Biocide	C	6	7	<100 µg/L	Halogen limit	No

1. Calculated based on toxicity data provided.
2. Evaluation are not necessary for additives that have active ingredients consisting only of chlorine, caustic soda (sodium hydroxide), hypochlorite, sulfuric acid, hydrochloric acid.

CHLORSAN is comprised of chlorine which will be controlled by the total halogen limit. An additive review is not needed for this product. CL5684, CL49, and CL41 are approved for use at the proposed

dosage rates because the estimated effluent concentration is estimated to be below the potential use restrictions.

Attachment #2



CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: 08/08/2025

TO: Jennifer Jerich – SCR

FROM: Nicole Krueger – SER Nicole Krueger

SUBJECT: Technology-Based Effluent Limitations for Seneca Foods Corporation Janesville La Prairie WPDES Permit No. WI-0050687

Technology-Based Effluent Limitations (TBELs) Recommended for Outfall 002:

Parameter	Daily Maximum	Daily Minimum	Monthly Average	Annual Average
BOD_5, Total	546 lbs/day		358 lbs/day	275 lbs/day
TSS	998 lbs/day		734 lbs/day	508 lbs/day
pH	9.0 su	6.0 su		

PART 1 – BACKGROUND INFORMATION

Seneca Foods cans various vegetables throughout the growing season. This facility operates 24 hours a day, 7 days a week. Operation usually starts mid-May and continues into November each year. Process wastewater is discharged to the groundwater of the Rock River Drainage Basin via a spray irrigation system and a land spreading system. Currently, there is not a surface water discharge on site. However, can cooling water and noncontact cooling water were previously discharged to the surface water, and this discharge may resume in the future.

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. For the canned and preserved vegetables subcategory, all point sources must meet the best practicable control technology (BPT) limits.

PART 4 – CURRENT PRODUCTION LEVELS

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

Canned and preserved vegetables

Commodity	Material Used (lbs/day)*
Snap beans	86,250
Corn	3,801,025
Peas	894,103
Potatoes	924,830
Carrots	566,474

*Average from 2020 – 2024 seasons

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 Control Technology (BPT) Limits

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
86,250 (snap beans)	1.51	0.87	0.58	**130**	**75**	**50**
3,801,025 (corn)	0.71	0.48	0.38	**2699**	**1824**	**1444**
894,103 (peas)	2.42	1.50	1.08	**2164**	**1341**	**966**
924,830 (potatoes)	0.90	0.66	0.55	**832**	**610**	**509**
566,474 (carrots)	1.76	1.11	0.82	**997**	**629**	**465**

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
86,250 (snap beans)	2.67	1.80	1.04	**230**	**155**	**90**
3,801,025 (corn)	1.32	1.00	0.73	**5017**	**3801**	**2775**
894,103 (peas)	4.36	3.11	2.02	**3898**	**2781**	**1806**
924,830 (potatoes)	1.64	1.23	0.87	**1517**	**1138**	**805**
566,474 (carrots)	3.19	2.30	1.54	**1807**	**1303**	**872**

Footnotes:

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

Final Calculated Limits

Commodity	Daily Max BOD (lbs/day)	Monthly Average BOD (lbs/day)	Annual Average BOD (lbs/day)	Daily Max TSS (lbs/day)	Monthly Average TSS (lbs/day)	Annual Average TSS (lbs/day)
Snap beans	130	75	50	230	155	90
Corn	2699	1824	1444	5017	3801	2775
Peas	2164	1341	966	3898	2781	1806
Potatoes	832	610	509	1517	1138	805
Carrots	997	629	465	1807	1303	872
Total	6822	4480	3433	12470	9177	6348
Total (8%)	**546**	**358**	**275**	**998**	**734**	**508**

The total maximum annual average flow of non-digested and digested canning process wastewater that is spray irrigated through Outfalls 005, 006, 007, 008, 009, and 010 plus the expected flow from Outfall 002 is 2.7 MGD. If reactivated, the flow from Outfall 002 would be approximately 8% of the total discharge of process wastewater. Therefore, the TBELs above are multiplied by 8%.

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	546		358	275
TSS	998		734	508
pH	9.0 su	6.0 su		

The daily maximum and monthly average concentration limits in the WQBEL memo are also recommended to be included in the reissued permit along with the mass concentrations that are recommended in this TBEL memo.

Although the recommended daily maximum pH limit in Subpart G is recommended to be 9.5 s.u. However, per s. NR 102.04(4)(c), Wis. Adm. Code, recommends a daily maximum of 9.0 s.u. which is recommended in the WQBEL memo.