

Permit Fact Sheet

General Information

Permit Number:	WI-0026620-08-0
Permittee Name:	Seneca Foods Corporation Cambria West
Address:	PO Box 237
City/State/Zip:	Cambria WI 53923
Discharge Location:	Spray fields discharging to the groundwaters of the Upper Wisconsin River
Receiving Water:	Groundwaters of the Upper Wisconsin River
Discharge Type:	Existing, Seasonal

Facility Description

Seneca Foods Cambria West is a seasonal canning facility that typically operates June – October, 24-hours a day, 7-days a week. The facility cans approximately 100,000 tons of peas, corn, and snap beans each year. Process waters, cooling waters and vegetable by-products are generated throughout the vegetable canning process. Process water is generated from wash, floor and other contact streams and stored in a wastewater holding tank and/or a wastewater lagoon. The process water is then directed to either the Wastewater Lagoon (during prohibitive weather), Morgan Road Sprayfield, Albrecht Sprayfield or Hahn Sprayfield. Contact cooling water is generated from cooling major equipment and cans of vegetables. The cooling water flows by gravity to the 14 MG Can Cooling Lagoon located northwest of the plant where it is stored and then directed to the sprayfields. Each sprayfield (or lagoon) is surrounded by its respective groundwater monitoring system to monitor groundwater quality.

The permittee notified the department during the permit reissuance process that the facility will no longer discharge any can cooling water to surface water. Vegetable by-product solids are hauled off site under normal conditions. No vegetable by-product solids are taken to manure storage facilities. Industrial sludge from the process water lagoon and holding tank due to settling are spread on department approved sites.

Substantial Compliance Determination

After a desk top review of all discharge monitoring reports, land treatment reports, land app reports, compliance schedule items, and a site visit on July 26, 2023, this facility has been found to be in substantial compliance with their current permit.

Sample Point Designation		
Sample Point Number	Discharge Flow, Units, and Averaging Period	Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)
103		In-Plant: Composite samples of can cooling water taken directed to any spray irrigation system. Composite sampler and flow meter located in the southwest corner of the can cooling water lagoon.
107		In-Plant: Composite samples of process wastewater taken prior to being directed to any spray irrigation system. Composite sampler, grab sample and flow meter located at the slurrystore tank.

Sample Point Designation		
Sample Point Number	Discharge Flow, Units, and Averaging Period	Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)
108		In-Plant: Composite samples of can cooling water and process wastewater taken prior to being directed to the spray irrigation system. Composite sampler, grab sample and flow meter located at the slurrystore tank.
002	Inactivated, no discharge permitted.	Effluent: Composite and Grab samples of Can Cooling Water taken from the North Lagoon discharged to an unnamed tributary to the North Branch of Duck Creek. Flow meter located in the Southwest corner of the can cooling lagoon at the pump discharge. Department approval required to active outfall. A permit modification is required to activate outfall. Monitoring and limits will apply upon activation.
023	Not in use since wastewater lagoon was constructed in this site.	Land Treatment: Cooling Water 1 (formerly Site 003). Fixed system 500 ft west of the can cooling water lagoon. 6 acres. Can Cooling Water Only.
024	0 MG/yead (2023)	Land Treatment: Cooling Water 2 (formerly Site 004). Immediately south of can cooling water lagoon. 9 acres. Rarely used as a backup spray irrigation site. Process Wastewater.
025	11.5 MG/year (2022 per application)	Land Treatment: Morgan Road 1 (formerly Site 005). Center pivot spray irrigation located 1000 ft south of Outfall 023, adjacent to Morgan Road. 32 acres.
027	26.3 MG/year (2022 per application)	Land Treatment: Albrecht 1 (formerly Site 007). Center pivot spray irrigation located adjacent to Morgan Road, 2000 ft west of the Prairie Road intersection. 74 acres.
028	1.4 MG/year (2022 per application)	Land Treatment: Albrecht 2 (formerly Site 008). Center pivot spray irrigation located 500 ft northwest of Albrecht 1. 6 acres.
029	Inactived, Combined to Sample Point 043.	Land Treatment: Site 009. Fixed set spray irrigation. Narrow set running north to south, just north of Outfall 030. 2.54 acres.
030	Inactived, Combined to Sample Point 043.	Land Treatment: Site 010. Fixed set spray irrigation located along the northeast perimeter of Outfall 027. 3.1 acres.
031	Inactived, Combined to Sample Point 043.	Land Treatment: Site 011. Fixed set spray irrigation located along the southeast perimeter of Outfall 027, adjacent to Morgan Road. 5 acres.
032	Inactived, Combined to Sample Point 043.	Land Treatment: Site 012. Fixed set spray irrigation located along the southwest perimeter of Outfall 027, adjacent to Morgan Road. 5.18 acres.
033	Inactived, Combined to Sample Point 043.	Land Treatment: Site 013A. Fixed set spray irrigation located along the northwest perimeter of Outfall 027, between Outfall 027 and Outfall 028. 3.25 acres.

Sample Point Designation		
Sample Point Number	Discharge Flow, Units, and Averaging Period	Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)
034	Inactivated, Combined to Sample Point 043.	Land Treatment: Site 013B. Fixed set spray irrigation located along the northern perimeter of Outfall 028. 1 acre.
035	Inactivated, Combined to Sample Point 043.	Land Treatment: Site 014. Fixed set spray irrigation located immediately east of Outfall 028. 7.9 acres.
036	40.0 MG/year (2022 per application)	Land Treatment: Morgan Road 2 (formerly Site 015). North of outfall spray field Morgan 1. 29.2 acres.
037	9.8 MG/year (2022 per application)	Land Treatment: Hahn 2 (formerly Site 016). Center pivot spray irrigation located in the Northwest corner of Hahn Field. 31.5 acres.
038	20.3 MG/year (2022 per application)	Land Treatment: Hahn 3 (formerly Site 017). Center pivot spray irrigation located in the southwest corner of Hahn Field. 20.3 acres.
039	24.3 MG/year (2022 per application)	Land Treatment: Hahn 1 (formerly Site 018). Center pivot spray irrigation of Hahn field. 97.2 acres.
042		Land Treatment: Morgan Road 3 (formerly Site 006), Pivot spray irrigation located beside the perimeter of Morgan 1. 9 acres.
043	New Sample Point for Combined fields.	Land Treatment: Albrecht 3 (combination of former sites 009, 010, 011, 012, 013A, 013B, and 014). Fixed set spray irrigation fields on the perimeter of Albrecht 1. 27.9 acres.
010	Hauled to another facility. No land application.	Land Application: The permittee's vegetable by-product solids are hauled to another facility. The permittee is required to submit form 3400-52 'Other Methods of Disposal or Distribution Report' by January 31 following each year the vegetable by-product solids are hauled off site. Vegetable by-product solids. Hauled to another facility reported on the 3400-52 'Other Methods of Disposal or Distribution Report' by January 31 following each year the vegetable by-product solids are hauled off site.
014	Not used per application	Land Application: Industrial Sludge from the wastewater lagoon and the slurrystore tank. Sample taken from spreader vehicle when land application occurs.

Sample Point Designation For Groundwater Monitoring Systems			
System	Sample Pt Number	Well Name	Comments
Hahn Field	835	HMW-1 (835)	Downgradient, Non-Point of Standards
Hahn Field	840	HMW-6 (840)	Sidegradient, Non-Point of Standards

Sample Point Designation For Groundwater Monitoring Systems

System	Sample Pt Number	Well Name	Comments
Hahn Field	841	HMW-7 (841)	Downgradient, Point of Standards
Hahn Field	842	HMW-8 (842)	Downgradient, Point of Standards
Hahn Field	843	HMW-2R (843)	Upgradient, Non-point of Standards
Lagoon - north of plant	824	WC-1 (824)	Downgradient, Non-point of Standards
Can Cooling Lagoon	825	WC-1P (825)	Downgradient, Non-point of Standards
Can Cooling Lagoon	826	WC-2 (826)	Abandon, see schedule
Can Cooling Lagoon	827	WC-3 (827)	Downgradient, Non-point of Standards
Can Cooling Lagoon	828	WC-4 (828)	Downgradient, Non-point of Standards
Can Cooling Lagoon	829	WC-5 (829)	Downgradient, Non-point of Standards
Can Cooling Lagoon	830	WC-6 (830)	Downgradient, Point of Standards
Can Cooling Lagoon	831	WC-7 (831)	Abandon, see schedule
Can Cooling Lagoon	832	WC-8R (832)	Abandon, see schedule
Can Cooling Lagoon	802	MW-2 (802)	Upgradient, Background
Can Cooling Lagoon	805	MW-5 (805)	Downgradient, Non-Point of Standards
Morgan Road	815	MW-15 (815)	Upgradient, Background
Morgan Road	834	MW-16R (834)	Downgradient, Non-Point of Standards
Morgan Road	844	MW-17R (844)	Downgradient, Non-Point of Standards
Albrecht Field	821	A-1 (821)	Upgradient, Background
Albrecht Field	823	A-3 (823)	Downgradient, Non-point of Standards
Albrecht Field	833	A-2R (833)	Downgradient, Non-point of Standards

1 Inplant - Monitoring and Limitations

Sample Point Number: 103- Can Cooling Water

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		gpd	Daily	Total Daily	
Chloride		mg/L	Weekly	Composite	
Nitrogen, Total Kjeldahl		mg/L	Weekly	Composite	
BOD5, Total		mg/L	Weekly	Composite	

Changes from Previous Permit:

No changes required.

Explanation of Limits and Monitoring Requirements

In-Plant sampling point to characterize can cooling water. Water from this sampling point is sent directly to Outfall 023, spray field Cooling Water 1 (formerly Site 003), with no process wastewater mixed.

Sample Point Number: 107- Process Wastewater and 108- Cooling & Process Mixture

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		gpd	Daily	Total Daily	
Chloride		mg/L	Weekly	Composite	
Nitrogen, Total Kjeldahl		mg/L	Weekly	Composite	
BOD5, Total		mg/L	Weekly	Composite	
Phosphorus, Total		mg/L	Annual	Composite	

Changes from Previous Permit:

No changes were required.

Explanation of Limits and Monitoring Requirements

In-Plant sampling point 107 is for process water flows. In-plant sampling point 108 is for the mixture of can cooling water and process water. When flow from multiple in-plant sample points is directed to a spray irrigation site, the loading calculations for that site shall be done by using the flow rate (total daily) and concentrations for each in-plant sampling point.

2 Surface Water - Monitoring and Limitations

Sample Point Number: 002- Can Cooling Water

Changes from Previous Permit

Sampling Point inactivated. No surface water discharge authorized.

Explanation of Limits and Monitoring Requirements

This outfall is inactive at the request of the permittee. No surface water discharge is authorized. The permittee cannot currently meet the total phosphorus limit of 0 lbs/day and therefore has elected to cease discharge from outfall 002 to the North Branch of Duck Creek. The department has inactivated this outfall but retained the outfall for this permit term. To discharge from this Outfall, the permittee is required to request a permit modification a minimum of 6 month prior to the desired commencement of discharge. A public notice period is required and update Water Quality Based Effluent Limits (WBQELs) will be determined at that time. This may include increased sampling or more restrictive limits than in previous permit terms depending on the regulations at the time of activation of the surface water outfall.

3 Land Treatment – Monitoring and Limitations

Sample Point Number: 023- Cooling Water 1

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		gpd	Daily	Total Daily	
Hydraulic Application Rate	Monthly Avg	27,500 gal/ac/day	Monthly	Calculated	May through October
Hydraulic Application Rate	Monthly Avg	0 gal/ac/day	Monthly	Calculated	November through April
Chloride		lbs/ac/yr	Annual	Total Annual	
Nitrogen, Max Applied On Any Zone	Annual Total	400 lbs/ac/yr	Annual	Total Annual	

Changes from Previous Permit:

No changes to monitoring or limits were required. The permittee requested updates to the naming system for all spray fields. Outfall 023 is the Cooling Water 1 field that was formerly called Spray Site 003. A zero (0) Hydraulic Application Rate limit for November through April is included.

Explanation of Limits and Monitoring Requirements

Requirements for land treatment of industrial wastewater are determined in accordance with ch. NR 214, Wis. Adm. Code. The limits for this outfall are based on can cooling water being the only discharge to this site and therefore a higher hydraulic application rate than the other spray fields is authorized.

The permittee discharges to the Land Treatment system May through October. A zero (0) hydraulic application rate limit is in place November through April. The permittee will report 'no discharge' on the eDMR the months that discharge does not occur. For days no flow occurs the permittee shall report zero (0) for that day.

Sample Point Number: 024- Cooling Water 2; 025- Morgan Road 1; 027- Albrecht 1; 028- Albrecht 2; 3; 036- Morgan Road 2; 037- Hahn 2; 038- Hahn 3; 039- Hahn 1, and 042- Morgan Road 3; 043- Albrecht 3

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		gpd	Daily	Total Daily	
Hydraulic Application Rate	Monthly Avg	10,000 gal/ac/day	Monthly	Calculated	May through October
Hydraulic Application Rate	Monthly Avg	0 gal/ac/day	Monthly	Calculated	November through April
Chloride		lbs/ac/yr	Annual	Total Annual	
Nitrogen, Max Applied On Any Zone	Annual Total	400 lbs/ac/yr	Annual	Total Annual	

Changes from Previous Permit:

No changes were required to sampling of any spray fields. The permittee requested the combination of Samples Points 029, 030, 031, 032, 033, 034, and 035. These spray fields have been combined to the new Sampling Point 043- Albrecht 3. A zero (0) Hydraulic Application Rate limit for November through April is included.

The permittee also requested renaming of the Spray Sites from the numerical system to a naming system that is used at the treatment plant. The sample point descriptions have been updated for this permit term to include both the new name and the number. In future permit terms the spray fields will be described using the field names only.

Explanation of Limits and Monitoring Requirements

Requirements for land treatment of industrial wastewater are determined in accordance with ch. NR 214, Wis. Adm. Code. The spray fields listed above are process wastewater or a combination of process wastewater and can cooling water.

The permittee discharges to the Land Treatment system May through October. A zero (0) hydraulic application rate limit is in place November through April. The permittee will report 'no discharge' on the eDMR the months that discharge does not occur. For days no flow occurs the permittee shall report zero (0) for that day.

4 Groundwater – Monitoring and Limitations

4.1 Groundwater Monitoring System for Can Cooling Water Lagoon (formerly Lagoon - north of plant)

Location of Monitoring system: North of Plant

Wells to be Monitored: WC-1 (824), WC-1P (825), WC-3 (827), WC-4 (828), WC-5 (829), WC-6 (830)

Well Used To Calculate PALs: MW-2 (802)

Point of Standards Application Well(s): WC-6 (803)

Parameter	Units	Preventative Action Limit	Enforcement Standard	Frequency
Depth To Groundwater	feet	*****	N/A	Quarterly
Groundwater Elevation	feet MSL	*****	N/A	Quarterly
Chloride Dissolved	mg/L	125	250	Quarterly
Nitrogen, Ammonia Dissolved	mg/L	0.97	9.7	Quarterly

Changes from Previous Permit:

Changes are highlighted above.

Nitrogen, Nitrite + Nitrate, pH, COD and Total Dissolved Solids monitoring removed.

Well system 004 has been combined with the Can Cooling Lagoon system adding well 805 (MW-5) to this groundwater monitoring system. This eliminates the need for the groundwater monitoring system for Site 004 that was in previous permits.

The groundwater monitoring system name has been updated to ‘Can Cooling Lagoon’ to better reflect the permittees internal naming system and improve clarity. All the well names have been changed to have the well number first and the sample point number second.

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.

4.2 Groundwater Monitoring System for Albrecht Field (formerly Sites 007 - 014)

Location of Monitoring system: Spray irrigation to Albrecht Field (Albrecht 1, Albrecht 2, and Albrecht 3).

Wells to be Monitored: A-1 (821), A-3 (823), A-2R (833)

Well Used To Calculate PALs: A-1 (821)

Point of Standards Application Well(s): None

Parameter	Units	Preventative Action Limit	Enforcement Standard	Frequency
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Groundwater Elevation	feet MSL	*****	N/A	Quarterly
Depth To Groundwater	feet	*****	N/A	Quarterly
Chloride Dissolved	mg/L	125	250	Quarterly
Nitrogen, Ammonia Dissolved	mg/L	0.97	9.7	Quarterly
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	12.2	12.2	Quarterly
Nitrogen, Organic Dissolved	mg/L	2.2	N/A	Quarterly
pH Field	su	8.7	N/A	Quarterly
COD, Filtered	mg/L	33	N/A	Quarterly
Solids, Total Dissolved	mg/L	615	N/A	Quarterly

Changes from Previous Permit:

Changes are highlighted above.

Updated PAL limits for Nitrogen, Nitrite + Nitrate, pH, COD and Total Solids updated. ES limit for Nitrogen, Nitrite + Nitrate updated.

The naming system for this groundwater well system has been updated to 'Albrecht Field'. All the well names have been changed to have the well number first and the sample point number second.

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.

4.3 Groundwater Monitoring System for Morgan Rd Field

Location of Monitoring system: Spray irrigation sites 005 & 006

Wells to be Monitored: MW-2 (802), MW-5 (805), MW-15 (815), MW-16R (834), MW-17R (844)

Well Used To Calculate PALs: MW-15 (815)

Point of Standards Application Well(s): None

Parameter	Units		Preventative Action Limit	Enforcement Standard	Frequency
Groundwater Elevation	feet MSL		*****	N/A	Quarterly
Depth To Groundwater	feet		*****	N/A	Quarterly
Chloride Dissolved	mg/L		125	250	Quarterly
Nitrogen, Ammonia Dissolved	mg/L		0.97	9.7	Quarterly
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L		2.0	10	Quarterly

Nitrogen, Organic Dissolved	mg/L		2.2	N/A	Quarterly
pH Field	su		8.7	N/A	Quarterly
COD, Filtered	mg/L		33	N/A	Quarterly
Solids, Total Dissolved	mg/L		595	N/A	Quarterly

Changes from Previous Permit:

Changes have been highlighted above.

Updated PAL limits for Nitrogen, Nitrite + Nitrate, pH, COD and Total Solids updated. ES limit for Nitrogen, Nitrite + Nitrate updated.

The groundwater monitoring system previously associated with Site 004 has been combined with the Morgan Road Field groundwater monitoring system due to changes at the Can Cooling Lagoon groundwater monitoring system and for permit simplification. This change moved wells MW-2 (802) and MW-5 (805) into the Morgan Road Field groundwater monitoring system.

The naming system for this groundwater well system has been updated to 'Morgan Road Field'. All the well names have been changed to have the well number first and the sample point number second.

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.

4.4 Groundwater Monitoring System for Hahn field

Location of Monitoring system: Hahn field

Wells to be Monitored: HMW-2R (843), HMW-1 (835), HMW-6 (840), HMW-7 (841), HMW-8 (842)

Well Used To Calculate PALs: HMW-2R (843)

Point of Standards Application Well(s): HMW-7 (841), HMW-8 (842)

Parameter	Units	Preventative Action Limit	Enforcement Standard	Frequency
Depth To Groundwater	feet	*****	N/A	Quarterly
Groundwater Elevation	feet MSL	*****	N/A	Quarterly
Chloride Dissolved	mg/L	125	250	Quarterly
Nitrogen, Ammonia Dissolved	mg/L	0.97	9.7	Quarterly
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	11.3	11.3	Quarterly
Nitrogen, Organic Dissolved	mg/L	2.4	N/A	Quarterly
pH Field	su	8.4	N/A	Quarterly
COD, Filtered	mg/L	41	N/A	Quarterly
Solids, Total Dissolved	mg/L	690	N/A	Quarterly

Changes from Previous Permit:

Changes highlighted above.

Updated PAL limits for Nitrogen, Nitrite + Nitrate, Organic Nitrogen, pH, COD and Total Solids updated. ES limit for Nitrogen, Nitrite + Nitrate updated. An Alternative Concentration Limit (ACL) of 11.3 mg/L has been established for Nitrite + Nitrate, Nitrogen.

All the well names have been changed to have the well number first and the sample point number second.

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.

4.5 Groundwater Monitoring System for Site 004

Groundwater monitoring system for Site 004 has been eliminated and is now combined with the Morgan Road groundwater monitoring system. The permittee requested the combination of these two groundwater systems. After evaluation the department determined that the two systems should be one system.

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

Sample Point Number: 010- vegetable by-product solids

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		tons/day	Daily	Total Daily	
Solids, Total		Percent	Annual	Grab	
Nitrogen, Total Kjeldahl		Percent	Annual	Grab	

Changes from Previous Permit:

No changes required.

Explanation of Limits and Monitoring Requirements

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

Sample Point Number: 014- Wastewater Settlings Sludge

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Hydraulic Application Rate		tons/day	Annual	Grab	
Solids, Total		Percent	Annual	Grab	
Chloride		Percent	Annual	Grab	
Nitrogen, Total Kjeldahl		Percent	Annual	Grab	
Phosphorus, Total		Percent	Annual	Grab	
Nitrogen, Ammonia (NH ₃ -N) Total		Percent	Annual	Grab	
Nitrogen, Organic Total		Percent	Annual	Grab	
Potassium, Total Recoverable		Percent	Annual	Grab	
pH Field		su	Annual	Grab	
Lead Dry Wt		mg/kg	Annual	Grab	
Zinc Dry Wt		mg/kg	Annual	Grab	
Copper Dry Wt		mg/kg	Annual	Grab	
Nickel Dry Wt		mg/kg	Annual	Grab	
Cadmium Dry Wt		mg/kg	Annual	Grab	
PFOA + PFOS		µg/kg	Annual	Calculated	Report the sum of PFOA and PFOS. See PFAS Permit Sections for more information.
PFAS Dry Wt			Annual	Grab	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information. <i>(Populated by picklist)</i>

Changes from Previous Permit:

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

Explanation of Limits and Monitoring Requirements

Monitoring only required if land application occurs which is unlikely in this permit term. Requirements for land application of industrial sludge are determined in accordance with ch. NR 214, Wis. Adm. Code.

PFAS- The presence and fate of PFAS in municipal and industrial sludges is an emerging public health concern. EPA is currently developing a risk assessment to determine future land application rates and expects to release this risk assessment by the end of 2024. In the interim, the department has developed the “Interim Strategy for Land Application of Biosolids and Industrial Sludges Containing PFAS”.

Collecting sludge data on PFAS concentrations from a wide range of wastewater treatment facilities will help protect public health from exposure to elevated levels of PFAS and determine the department’s implementation of EPA’s recommendations. To quantitate this risk, PFAS sampling has been included in the proposed WPDES permit pursuant to ss. NR 214.18(5)(b) and NR 204.06(2)(b)9, Wis. Adm. Code.

6 Schedules

6.1 Land Treatment Management Plan

A management plan is required for the land treatment system.

Required Action	Due Date
Land Treatment Management Plan: Submit an update to the management plan to optimize the land treatment system performance and demonstrate compliance with Wisconsin Administrative Code NR 214.	12/31/2024

Explanation of Schedules

An updated Land Treatment Management Plan is required.

6.2 Groundwater Well Abandonment

Required Action	Due Date
Groundwater Well Abandonment: Submit monitoring well abandonment forms and report for wells WC-2, WC-7 and WC-8. This report shall include documentation of abandonment of Wells WC-2, WC-7 and WC-8.	12/31/2025

Explanation of Schedules

The permittee has requested to abandon the use of wells WC-2, WC-7 and WC-8 from the Can Cooling Lagoon groundwater monitoring system. The department is in agreement that these wells can be removed from the monitoring system. This schedule requires the permittee complete abandonment of these three wells.

6.3 Land Application Management Plan

A management plan is required for the land application system.

Required Action	Due Date
Land Application Management Plan: Submit a land application management plan to optimize the land application system performance and demonstrate compliance with Wisconsin Administrative Code NR 214. This plan is only required if land application is proposed. The plan is due 60 days prior to land application.	

Explanation of Schedules

An updated Land Application Management Plan is required only if the permittee needs to land apply waste.

Special Reporting Requirements

None

Other Comments:

See GW Evaluation for additional notifications that the permittee should be aware of.

Attachments:

NR 140 Groundwater Evaluation Report dated 8/10/2023

Expiration Date:

March 31, 2029

Justification Of Any Waivers From Permit Application Requirements

None

Prepared By: Jennifer Jerich, Wastewater Specialist

Date: 1/31/2024, 3/1/2024, 3/19/24

Revision date post fact check: 4/4/2024

Revision date post public notice & hearing:

DATE: August 10, 2023 FILE REF: FIN 6147

TO: File

FROM: Zach Watson Hydrogeologist - SCR

SUBJECT: Groundwater Evaluation for Seneca Foods Corporation, Cambria West 0026620-07-1

General Information and Treatment System Description

Seneca Foods Cambria Plant West is a seasonal vegetable canning facility. Vegetable processing takes place June through October. Process wastewater, cooling waters and vegetable by-products are generated at the plant through the vegetable canning process. At the beginning of this permit, Seneca Foods sent their cooling water to the Lagoon and then to Duck Creek (Outfall 002) and their process waters to the sprayfields (Sites 004 – 018). Seneca Foods Cambria West slowly decommissioned their surface water discharge to Duck Creek and now send all their cooling and process wastewaters to the sprayfields. There are a total of five groundwater monitoring systems surrounding four spray irrigation treatment systems and a lagoon.

Table 1A – Monitoring Requirements and Limitations – Process Wastewater (Sampling Point 107) and Cooling & Process Mixture (Sampling Point 108)

Parameter	Current Permit WI-0026620-07-1		Proposed Permit WI-0026620-08	
	Limit and Units	Sample Frequency	Limits and Units	Sample Frequency
Flow Rate	gpd	Daily	gpd	Daily
Chloride	mg/l	Weekly	mg/l	Weekly
Nitrogen, Total Kjeldahl	mg/l	Weekly	mg/l	Weekly
BOD5, Total	mg/l	Weekly	mg/l	Weekly
Phosphorus, Total	mg/l	Annual	mg/l	Annual

No recommended changes from current permit

Table 1B – Loading Limitations – Sprayfield Sites 004 - 018

Parameter	Current Permit WI-0026620-07-1		Proposed Permit WI-0026620-08	
	Limits and Units	Limit Type	Limits and Units	Limit Type
Flow Rate	gpd	Daily	gpd	Daily
Hydraulic Application Rate	10,000 gal/ac/day	Monthly Average	10,000 gal/ac/day	Monthly Average
Chloride	lbs/ac/yr	Annual Total	lbs/ac/yr	Annual Total
Nitrogen, Max Applied On Any Zone	400 lbs/ac/yr	Annual Total	400 lbs/ac/yr	Annual Total

No recommended changes from current permit

Table 2 - Groundwater Monitoring System - Lagoon

Sample Point	Well Name	Current Permit WI-0026620-07-1	Proposed Permit WI-0026620-08
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		Well Location	Well Designation	Well Location	Well Designation
802	MW-2	Upgradient	Background	Upgradient	Background
824	WC-1	Downgradient	Non-point of Standards	Downgradient	Non-point of Standards
825	WC-1P	Downgradient	Non-point of Standards	Downgradient	Non-point of Standards
826	WC-2	Downgradient	Non-point of Standards	Downgradient	Non-point of Standards
827	WC-3	Downgradient	Non-point of Standards	Downgradient	Non-point of Standards
828	WC-4	Downgradient	Non-point of Standards	Downgradient	Non-point of Standards
829	WC-5	Downgradient	Non-point of Standards	Downgradient	Non-point of Standards
830	WC-6	Downgradient	Point of Standards	Downgradient	Point of Standards
831	WC-7	Downgradient	Point of Standards	Downgradient	Point of Standards
832	WC-8R	Downgradient	Point of Standards	Downgradient	Point of Standards

No recommended changes from current permit

Table 3 - Groundwater Monitoring System – Sites 007 – 014

Sample Point	Well Name	Current Permit WI-0026620-07-1		Proposed Permit WI-0026620-08	
		Well Location	Well Designation	Well Location	Well Designation
821	A-1	Upgradient	Background	Upgradient	Background
823	A-3	Downgradient	Non-point of Standards	Downgradient	Non-point of Standards
833	A-2R	Downgradient	Non-point of Standards	Downgradient	Non-point of Standards

No recommended changes from current permit

Table 4 - Groundwater Monitoring System – Sites 005 and 006

Sample Point	Well Name	Current Permit WI-0026620-07-1		Proposed Permit WI-0026620-08	
		Well Location	Well Designation	Well Location	Well Designation
815	MW-15	Upgradient	Background	Upgradient	Background
834	MW-16R	Downgradient	Non-point of Standards	Downgradient	Non-point of Standards
817	MW-17	Downgradient	Non-point of Standards	Downgradient	Non-point of Standards

No recommended changes from current permit

Table 5 - Groundwater Monitoring System – Site 004

Sample Point	Well Name	Current Permit WI-0026620-07-1	Proposed Permit WI-0026620-08
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		Well Location	Well Designation	Well Location	Well Designation
802	MW-2	Upgradient	Background	Upgradient	Background
805	MW-5	Downgradient	Non-Point of Standards	Downgradient	Non-Point of Standards

No recommended changes from current permit

Table 6 - Groundwater Monitoring System – Hahn Site

Sample Point	Well Name	Current Permit WI-0026620-07-1		Proposed Permit WI-0026620-08	
		Well Location	Well Designation	Well Location	Well Designation
835	HMW-1	Insufficient Data	Insufficient Data	*Downgradient	*Non-Point of Standards
840	HWM-6	Insufficient Data	Insufficient Data	*Sidegradient	*Non-Point of Standards
841	HMW-7	Insufficient Data	Insufficient Data	*Downgradient	*Point of Standards
842	HMW-8	Insufficient Data	Insufficient Data	*Downgradient	*Point of Standards
843	HMW-2R	Insufficient Data	Insufficient Data	*Upgradient	*Background

***Recommended changes from current permit**

Table 7 - Groundwater Standards - Lagoon

Parameter	Current Permit WI-0026620-07-1		Proposed Permit WI-0026620-08	
	PAL	ES	PAL	ES
Depth to Groundwater	N/A	N/A	N/A	N/A
Groundwater Elevation	N/A	N/A	N/A	N/A
Chloride	125 mg/l	250 mg/l	125 mg/l	250 mg/l
Nitrogen, Ammonia	0.97 mg/l	9.7 mg/l	0.97 mg/l	9.7 mg/l
Nitrogen, Nitrite + Nitrate	3.2 mg/l (ACL)	10 mg/l	*2 mg/l	10 mg/l
Nitrogen, Organic	2.3 mg/l	N/A	2.3 mg/l	N/A
pH	6.1 – 8.1 su	N/A	*6.8 – 8.8 su	N/A
Chemical Oxygen Demand	34 mg/l	N/A	*33 mg/l	N/A
Total Dissolved Solids	600 mg/l	N/A	*615 mg/l	N/A

***Recommended changes from current permit**

Table 8 - Groundwater Standards – Sites 007 - 014

Parameter	Current Permit WI-0026620-07-1		Proposed Permit WI-0026620-08	
	PAL	ES	PAL	ES
Depth to Groundwater	N/A	N/A	N/A	N/A
Groundwater Elevation	N/A	N/A	N/A	N/A
Chloride	125 mg/l	250 mg/l	125 mg/l	250 mg/l
Nitrogen, Ammonia	0.97 mg/l	9.7 mg/l	0.97 mg/l	9.7 mg/l

Nitrogen, Nitrite + Nitrate	15.6 mg/l (ACL)	15.6 mg/l (ACL)	*12.2 mg/l	*12.2 mg/l
Nitrogen, Organic	2.2 mg/l	N/A	2.2 mg/l	N/A
pH	6.3 – 8.3 su	N/A	*6.7 – 8.7 su	N/A
Chemical Oxygen Demand	34 mg/l	N/A	*33 mg/l	N/A
Total Dissolved Solids	650 mg/l	N/A	*615 mg/l	N/A

***Recommended changes from current permit**

Table 9 - Groundwater Standards – Sites 005/006

Parameter	Current Permit WI-0026620-07-1		Proposed Permit WI-0026620-08	
	PAL	ES	PAL	ES
Depth to Groundwater	N/A	N/A	N/A	N/A
Groundwater Elevation	N/A	N/A	N/A	N/A
Chloride	125 mg/l	250 mg/l	125 mg/l	250 mg/l
Nitrogen, Ammonia	0.97 mg/l	9.7 mg/l	0.97 mg/l	9.7 mg/l
Nitrogen, Nitrite + Nitrate	2.6 mg/l (ACL)	10 mg/l	*2 mg/l	10 mg/l
Nitrogen, Organic	2.2 mg/l	N/A	2.2 mg/l	N/A
pH	6.2 – 8.2 su	N/A	*6.7 – 8.7 su	N/A
Chemical Oxygen Demand	36 mg/l	N/A	*33 mg/l	N/A
Total Dissolved Solids	990 mg/l	N/A	*595 mg/l	N/A

***Recommended changes from current permit**

Table 10 – Site 004

Parameter	Current Permit WI-0026620-07-1		Proposed Permit WI-0026620-08	
	PAL	ES	PAL	ES
Depth to Groundwater	N/A	N/A	N/A	N/A
Groundwater Elevation	N/A	N/A	N/A	N/A
Chloride	125 mg/l	250 mg/l	125 mg/l	250 mg/l
Nitrogen, Ammonia	0.97 mg/l	9.7 mg/l	0.97 mg/l	9.7 mg/l
Nitrogen, Nitrite + Nitrate	3.2 mg/l (ACL)	10 mg/l	*2 mg/l	10 mg/l
Nitrogen, Organic	2.3 mg/l	N/A	2.3 mg/l	N/A
pH	6.1 – 8.1 su	N/A	*6.8 – 8.8 su	N/A
Chemical Oxygen Demand	34 mg/l	N/A	*33 mg/l	N/A
Total Dissolved Solids	600 mg/l	N/A	*615 mg/l	N/A

***Recommended changes from current permit**

Table 11 – Hahn Site

Parameter	Current Permit WI-0026620-07-1		Proposed Permit WI-0026620-08	
	PAL	ES	PAL	ES
Depth to Groundwater	N/A	N/A	N/A	N/A
Groundwater Elevation	N/A	N/A	N/A	N/A

Chloride	125 mg/l	250 mg/l	125 mg/l	250 mg/l
Nitrogen, Ammonia	0.97 mg/l	9.7 mg/l	0.97 mg/l	9.7 mg/l
Nitrogen, Nitrite + Nitrate	2 mg/l	10 mg/l	*11.3 mg/l (ACL)	*11.3 mg/l (ACL)
Nitrogen, Organic	N/A	N/A	*2.4 mg/l	N/A
pH	N/A	N/A	*6.4 – 8.4 su	N/A
Chemical Oxygen Demand	N/A	N/A	*41 mg/l	N/A
Total Dissolved Solids	N/A	N/A	*690 mg/l	N/A

***Recommended changes from current permit**

Geology

The sprayfields are located near the border of two types of bedrock; the Cambrian aged sandstones (Trempleau Formation, Franconia, Galesville, Eau Claire and Mount Simon) and the Ordovician aged Prairie du Chien Group which is mostly dolomite (Trotta and Borman, 1978). The unconsolidated sediment overlying the bedrock is the Holy Hill Formation/Horicon Member (ground moraine) and is believed to have a thickness of approximately 50 feet (Hooyer et. al., 2021, Trotta and Borman, 1978).

Hydrogeology

Groundwater elevation ranges between approximately 830 – 900 feet above mean sea level throughout the five groundwater monitoring systems. There was no significant change in groundwater elevation during the current permit term. Depth to water is shallowest at the Lagoon where it is typically no more than 12 feet from top of casing. For the Hahn Site, depth to water increases east to west from 15-20 feet from top of casing at HMW-2R to nearly 140 feet below top of casing at HMW-8. Groundwater regionally flows towards the Duck Creek and groundwater is shallowest at the Lagoon due to its proximity to the Duck Creek. Groundwater flow for Sites 005, 006, 015 and the Lagoons show that flow is to the ravine east of these fields and then north towards the tributary of Duck Creek. Flow at the Hahn Site is shown to be radial out to the west southwest. Groundwater flow maps are presented for the 005, 006 and 015 sites and the Hahn Site (**Figure 1** and **2**). Horizontal hydraulic gradients ranged from approximately 0.008 ft/ft at the Lagoons and 007/008 Sites and up to approximately 0.025 ft/ft at the Hahn Site.

Land Treatment Effluent Quality and Loading Rates

As mentioned earlier, the wastewater sent to the sprayfields has evolved during this current permit term. Cooling waters are now sent to the sprayfields along with process wastewater. This transition began in 2021 and was finalized in 2022. The process wastewater (including cooling water in 2021 and 2022) chloride concentrations were most often in the range of 100 mg/l. However, significant variability was observed throughout the permit. The highest reported concentration of chloride was 883 mg/l during the current permit term (**Figure 3**). The concentration of BOD5 averaged 2,800 mg/l and was variable throughout the permit term. As shown on **Figure 4**, cooling water contributes a negligible amount to the total concentration of BOD5. The average concentration of total kjeldahl nitrogen in the sprayfield discharge was approximately 60 mg/l with some variability (**Figure 5**). The annual loading rates for the individual sprayfield sites during the years 2019 – 2022 are provided in the tables below. There were no violations associated with nitrogen loading at the sprayfields during the current permit term.

Table 4 – Sprayfield Sites Nitrogen Loading Rates (lbs/ac/yr)

	005	006	007	008	015	016	017	018
2019	98	--	52	103	--	--	--	--
2020	323	--	257	255	--	--	--	--

2021	197	165	201	136	253	205	163	145
2022	164	75	167	112	64	189	188	119

lbs/ac/yr = pounds per acre per year

-- = No Sprayfield operation

Table 4 – Sprayfield Sites Chloride Loading Rates (lbs/ac/yr)

	005	006	007	008	015	016	017	018
2019	492	--	262	517	--	--	--	--
2020	635	--	506	503	--	--	--	--
2021	252	212	258	175	324	263	210	186
2022	453	209	462	310	177	522	520	330

Background Groundwater Quality

Sprayfield 004

Sprayfield 004 was not utilized during the current permit term. No groundwater data for this system is evaluated.

Lagoon

Background groundwater quality for the Lagoon and Sites 004 are defined by the results from samples collected at MW-2. Monitoring well MW-2 was only sampled during the period of first quarter 2019 – third quarter 2021 due to it being dry during October 2021 – December 2022. The results for chloride at MW-2 averaged 7.3 mg/l. The results for nitrite+nitrate, nitrogen are also generally low, averaging 1 mg/l. However, the most recent sample result for nitrite+nitrate, nitrogen at MW-2 was 4.4 mg/l (August 19, 2021). The results for ammonia and organic nitrogen were generally non-detect.

Sprayfield 005 and 006

Background groundwater quality is defined by the results from samples collected at monitoring well MW-15. The results for chloride are variable, most likely due to the proximity of this monitoring well to a road that is salted during the winter months. The results for chloride at MW-15 ranged up to 77.6 mg/l. The results for nitrite+nitrate, nitrogen are low at background monitoring well MW-15 and ranged up to 1.1 mg/l during the current permit term. The results for ammonia and organic nitrogen were generally non-detect.

Sprayfield 007 and 008

Background groundwater quality is defined by the results from samples collected at monitoring well A-1. The results for chloride are stable and typically fall between 20 – 40 mg/l. The results for nitrite+nitrate, nitrogen are elevated at background monitoring well A-1 and fell between 2 – 10 mg/l during the current permit term. The results for ammonia and organic nitrogen were generally non-detect.

Sprayfield 016, 017 and 018 (Hahn Site)

Monitoring of the Hahn Site began prior to sprayfield utilization. The results from samples collected at these monitoring wells indicate an elevated presence of nitrite+nitrate, nitrogen in groundwater. The results for chloride are low except for at monitoring well HMW-8 where concentrations are generally at 325 mg/l. A background groundwater monitoring well for the Hahn Site was not defined prior to the issuance of this permit. The results from samples collected at the monitoring wells associated with this site indicate that monitoring well HMW-2R is the monitoring well that should be utilized for the characterization of background groundwater quality due to it being located furthest upgradient (i.e., having the highest groundwater elevation). The results for chloride are elevated and averaged 50.5 mg/l at HMW-2R. The results

for nitrite+nitrate, nitrogen are also elevated and averaged 8.1 mg/l. The results for ammonia and organic nitrogen were generally non-detect.

Downgradient Groundwater Quality

Lagoon

The results for chloride at downgradient monitoring wells are variable and range up to approximately 230 mg/l (**Figure 6**). The results for nitrite+nitrate, nitrogen at downgradient monitoring wells are generally non-detect or less than 1 mg/l. The concentration of ammonia nitrogen at downgradient monitoring wells is elevated and range up to more than 25 mg/l (WC-4). In general, the concentration of ammonia nitrogen has slowly declined at monitoring wells WC-1, WC-1P, WC-3, during the past twenty years of monitoring and remained effectively unchanged at monitoring wells WC-4, WC-5, WC-6, WC-7 and WC-8R (**Figure 7**). Monitoring well WC-7 is the only monitoring well considered downgradient of the lagoons that does not have results above the NR 140 PAL (i.e., 0.97 mg/l).

Sprayfield 005 and 006

Monitoring well MW-17 was accidentally damaged following the second quarter sampling event in 2021. Therefore, there is no data from this well for the third and fourth quarters of 2021. MW-17 was abandoned and replaced with monitoring well MW-17R on March 17, 2022. The results for chloride at downgradient monitoring well MW-17/MW-17R are elevated relative to background conditions and ranged up to 155 mg/l during the current permit term. The results for chloride at MW-16R are generally stable and low, averaging 14.1 mg/l during the current permit term (**Figure 8**). The concentration of nitrite+nitrate, nitrogen at monitoring well MW-16R exhibited a decreasing trend during the current permit term from a concentration of approximately 25 mg/l down to 5 mg/l. The concentration of nitrite+nitrate, nitrogen ranged from 3.5 – 11 mg/l at MW-17 during the current permit term (**Figure 9**). The results for ammonia and organic nitrogen are generally non-detect.

Sprayfield 007 and 008

The results for chloride at downgradient monitoring wells A-2R and A-3 are elevated relative to background conditions and ranged between 36.1 – 176 mg/l during the current permit term (**Figure 10**). The results for nitrite+nitrate, nitrogen were lower than those observed at the background monitoring well A-1 but still typically above the NR 140 PAL (**Figure 11**). The results for ammonia and organic nitrogen are generally non-detect.

Sprayfield 016, 017, and 018

The results for chloride are generally low (i.e., < 25 mg/l) except for the results at MW-1 which were most often around 60 mg/l with one anomalous result of 208 mg/l in August 2021 (**Figure 12**). The results for nitrite+nitrate, nitrogen are elevated throughout the monitoring system. The concentration of nitrite+nitrate, nitrogen is lowest at HMW-8 (~4 mg/l) and highest at HMW-1 (~20 mg/l) (**Figure 13**). The results for ammonia and organic nitrogen were generally non-detect.

Exceedance Review

An exceedance review is not provided here as there was one site not utilized (Site 004), two sites without any point of standards application wells (Sites 005 and 006 and Sites 007 and 008), one site without both background and point of standards application wells (Hahn Site) and the ammonia nitrogen contamination adjacent and downgradient of the lagoons has been well defined in prior evaluations and the situation has changed little.

Treatment System Impact to Groundwater Quality

Lagoon

The impact from the Lagoon on groundwater quality is made evident by the concentration of ammonia nitrogen at the monitoring wells. While progress has slowly been made over the past twenty years regarding ammonia nitrogen concentrations, these results are still far above the NR 140 PAL. The concentration of ammonia nitrogen does appear to decrease as you move away from the lagoons and towards Duck Creek. Given that the lagoon contained just cooling water prior to the elimination of the surface water outfall and that cooling water is generally low in chloride (i.e. < 50 mg/l), it is unlikely that the lagoon is a significant contributor to the observed chloride concentrations at downgradient monitoring wells. Additionally, it could be hypothesized that as groundwater regionally migrates towards Duck Creek that chloride concentrations are generally higher.

Sprayfield 005 and 006

The concentration of nitrite+nitrate, nitrogen at MW-16R saw a significant decrease from approximately 25 mg/l to 5 mg/l. The concentration of nitrite+nitrate, nitrogen at MW-17 and MW-17R remained effectively stable. The results from downgradient monitoring wells indicate a source for nitrite+nitrate, nitrogen and chloride. However, the highest results for chloride are observed at MW-17 where the highest results for nitrite+nitrate, nitrogen are observed at MW-16R indicating that these two contaminants are not necessarily tied to one specific source (i.e., the sprayfield activities).

Sprayfield 007 and 008

The results for chloride at downgradient monitoring wells may be due to wastewater application at sprayfields 007 and 008. However, the concentration of chloride at monitoring wells is sometimes greater than those observed in the sprayfield discharge. It is likely that the chloride observed at these downgradient wells is due to sprayfield activities and additional outside anthropogenic sources. The concentration of nitrite+nitrate, nitrogen is lower at downgradient monitoring wells and therefore the loading of nitrogen at these fields results in an acceptable environmental impact.

Sprayfield 016, 017, and 018

Given that sprayfield activities having only occurred during 2021 and 2022 there is difficult to assess the potential impact from the sprayfield activities at the Hahn site on local groundwater quality.

Indicator Parameter PALs

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

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

Alternative Concentration Limits

Alternative concentration Limits (ACLs) can be developed and provided for a groundwater monitoring system utilizing the procedures described in s. NR 140.28, Wis. Adm. Code. For example, if a high percentage of results from samples collected at the background monitoring well(s) exceed the NR 140 PAL, if there are multiple results exceeding the NR 140 ES, or if there is a pattern of PAL exceedances (i.e., seasonal variation), calculation of an ACL may be appropriate. The concentrations at a background well should not necessarily act

as a minimum expectation of groundwater quality at downgradient wells, especially if those established concentrations at a background well are in exceedance of an NR 140 ES. ACLs are calculated using the results from samples collected at the background monitoring well(s) during the current permit term for the upcoming permit term using whichever of the two following methods provides the more restrictive ACL.

- $\sum [\text{Standard Deviation of Results} + \text{Average of Results} + \text{PAL}] = \text{ACL}$
- $\sum [(\text{Standard Deviation of Results} \times 3) + \text{PAL}] = \text{ACL}$

Groundwater ACLs and indicator parameter PALs for the current permit term were calculated using monitoring data from MW-2 (Lagoon and Site 004), MW-15 (Sites 005/006), A-1 (Sites 007 - 014) during the prior permit term. The indicator parameter PALs and ACLs for use in the upcoming permit WI-0026620-08 are calculated using results from MW-2 (Lagoon and Site 004), MW-15 (Sites 005/006), A-1 (Sites 007 - 014) and HMW-2R (Hahn Site) during the current permit term (January 1, 2019 – June 30, 2022). Given the date of the installation of HMW-2R, the dataset for this well includes the sample events from 2021 – Second Quarter 2023.

Conclusions, Recommendations and Schedule Requirements

- The annual nitrogen loading rates reported during the current permit term were most often less than half of the 400 lbs/ac/yr loading limit. Overall, the spray irrigation treatment systems appear to provide adequate treatment to the discharged wastewater, especially when the nitrogen loading rates are well below the limit. There are areas of elevated nitrogen (i.e., greater than the NR 140 PAL) that are either related to prior Lagoon activity or a combination of the spray irrigation treatment system activities and upgradient/background conditions.
- Seneca Cambria West should work to identify the reason for the periodically elevated concentrations of chloride in their sprayfield discharge and work to reduce these occurrences.
- Monitoring well designations for the Hahn Site are made in **Table 6**. Groundwater Standards for the Hahn Site are provided in **Table 11**.
- The Lagoon currently functions as a contingency for wastewater storage prior to discharge to the sprayfield which is beneficial for both the facility and for compliance with wastewater discharge in the event of technical difficulties. However, abandonment of the Lagoon might reduce the concentration of ammonia observed in samples collected at downgradient monitoring wells. Therefore, it would be beneficial for Seneca to put in writing their justification of retaining the Lagoon for use instead of abandonment.
- During the Site Inspection on July 12, 2023, Seneca proposed to combine sample point numbers 029 – 034 (i.e., Sites 009 – 014) into one sample point for the upcoming permit. Given that all sprayfields currently have the same hydraulic application rate and loading limitations, the combination of these sample points does not have any impact on the actual contribution of wastewater to these fields. Therefore, the request to combine sample points 029 – 034 is acceptable.
- Provide an updated Land Treatment Management Plan and Land Application Management Plan by June 30, 2024.

- Seneca Cambria West should ensure that monitoring wells are given enough time following purging to supply groundwater for samples. If the amount of water in the monitoring well is insufficient for sample collection at 24 hours following purging, this well should be considered “dry”.

Figure 1 – Groundwater Flow Map – Sites 005, 006, and 015 – February 28, 2023

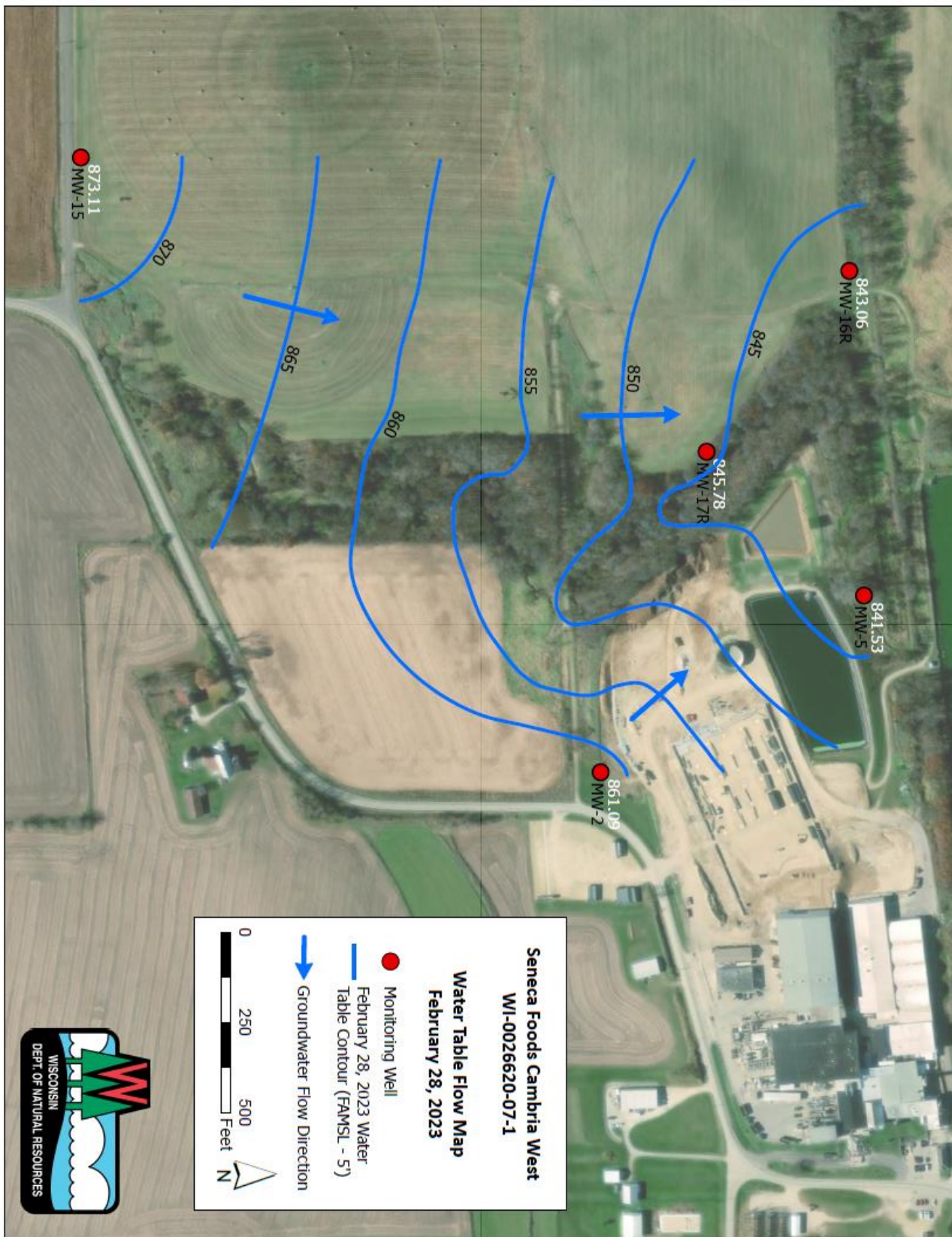


Figure 2 – Groundwater Flow Map – Hahn Site – February 28, 2023

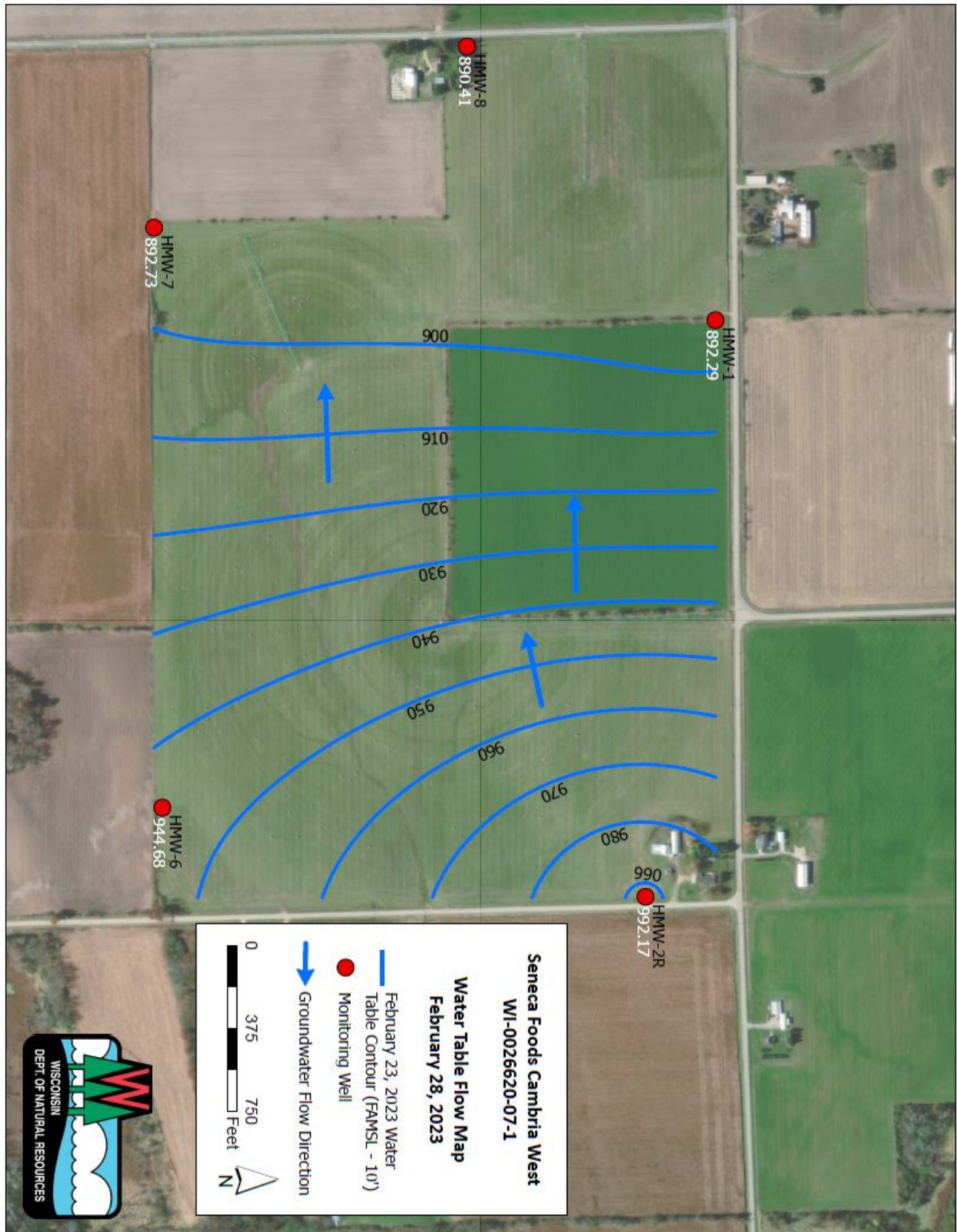


Figure 3 – Sprayfield Chloride Concentrations

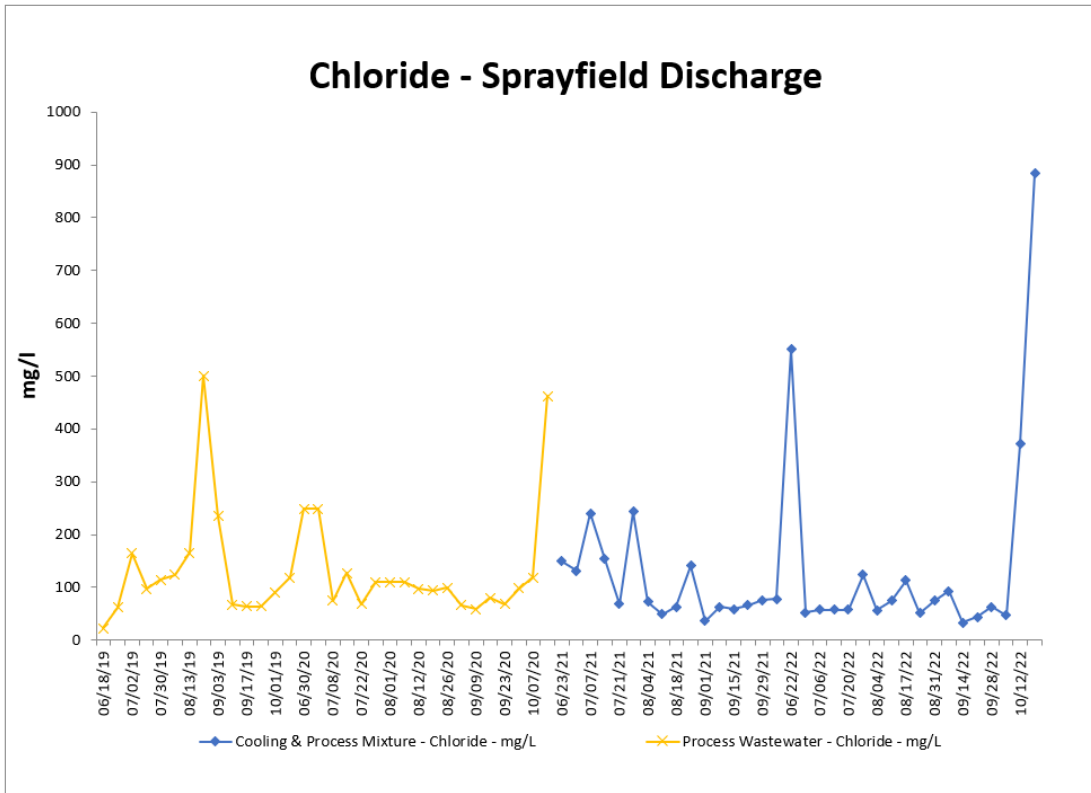


Figure 4 – Sprayfield BOD5 Concentrations

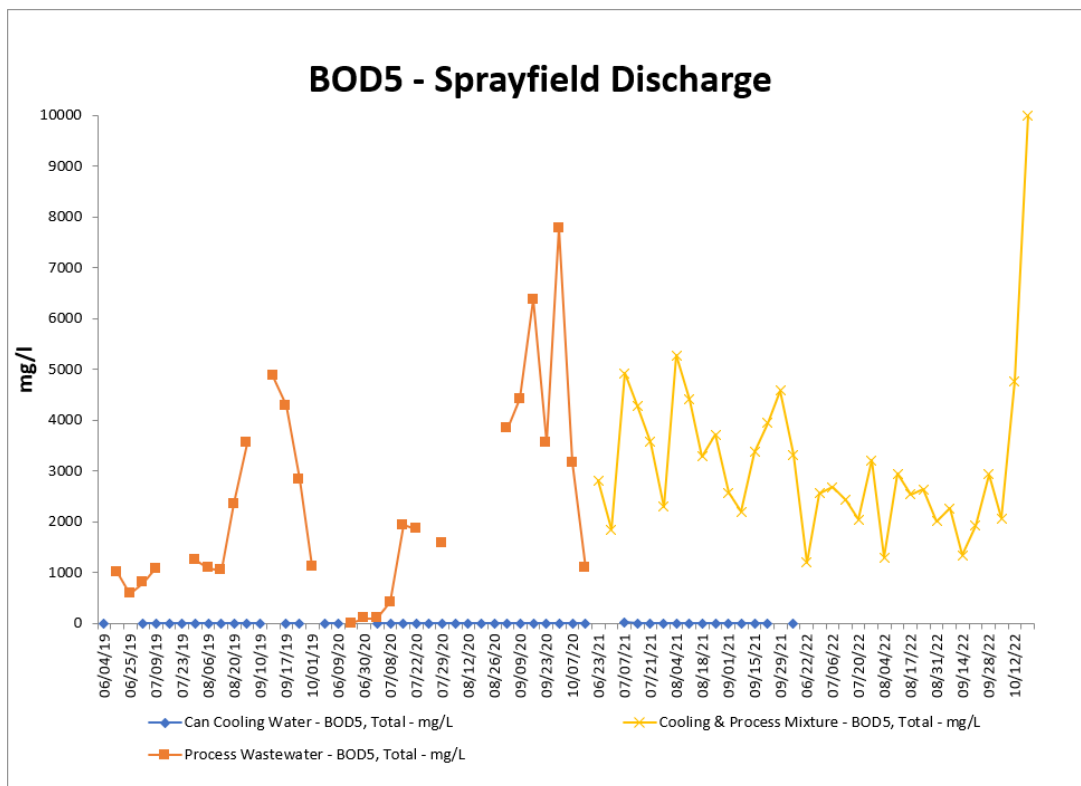


Figure 5 – Sprayfield Total Kjeldahl Nitrogen Concentrations

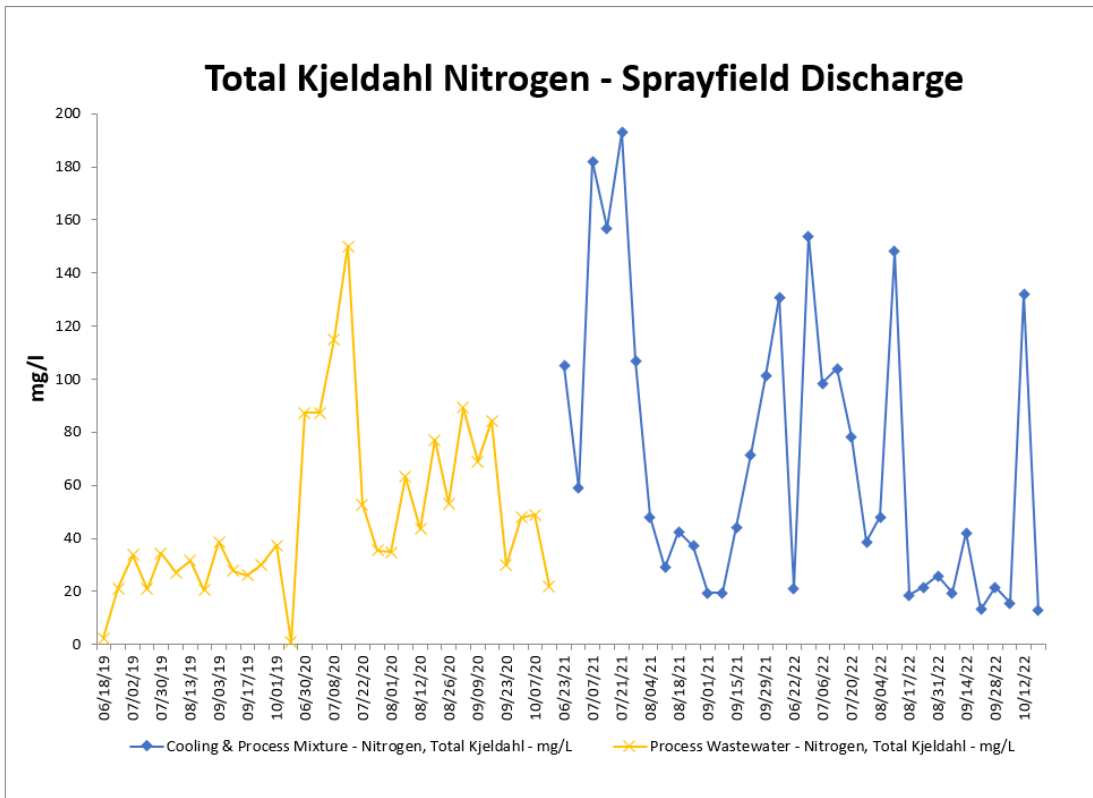


Figure 6 – Chloride at Lagoon Monitoring Wells

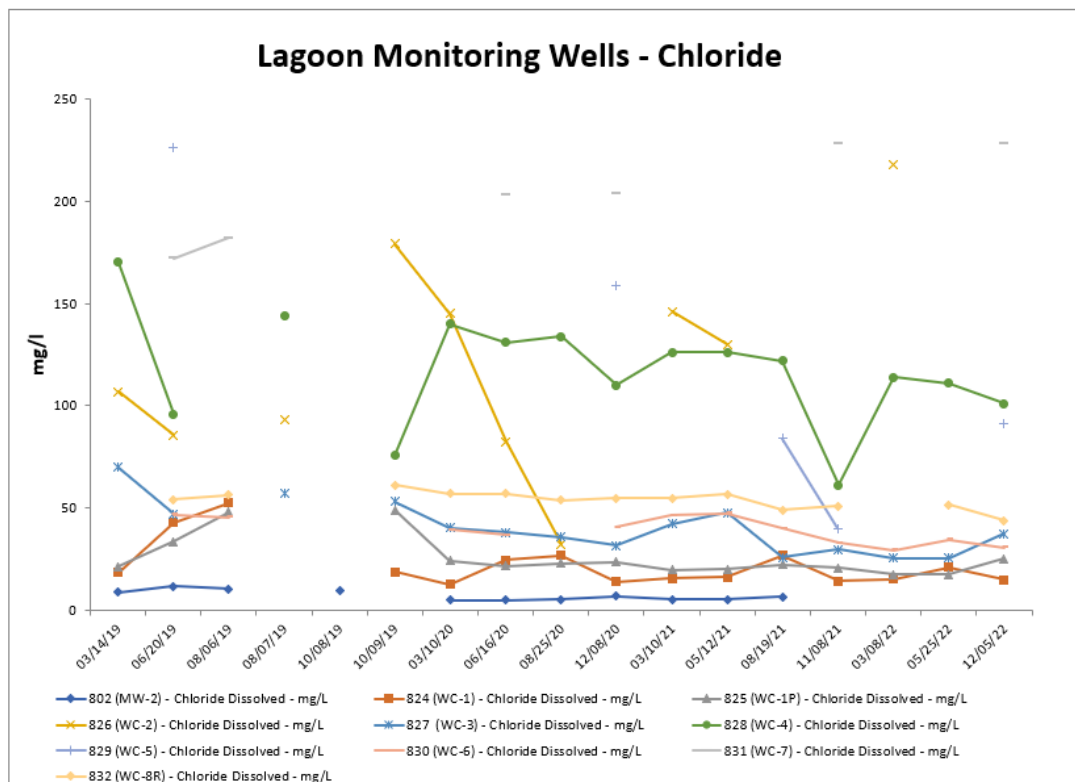


Figure 7 – Ammonia nitrogen at Lagoon Monitoring Wells

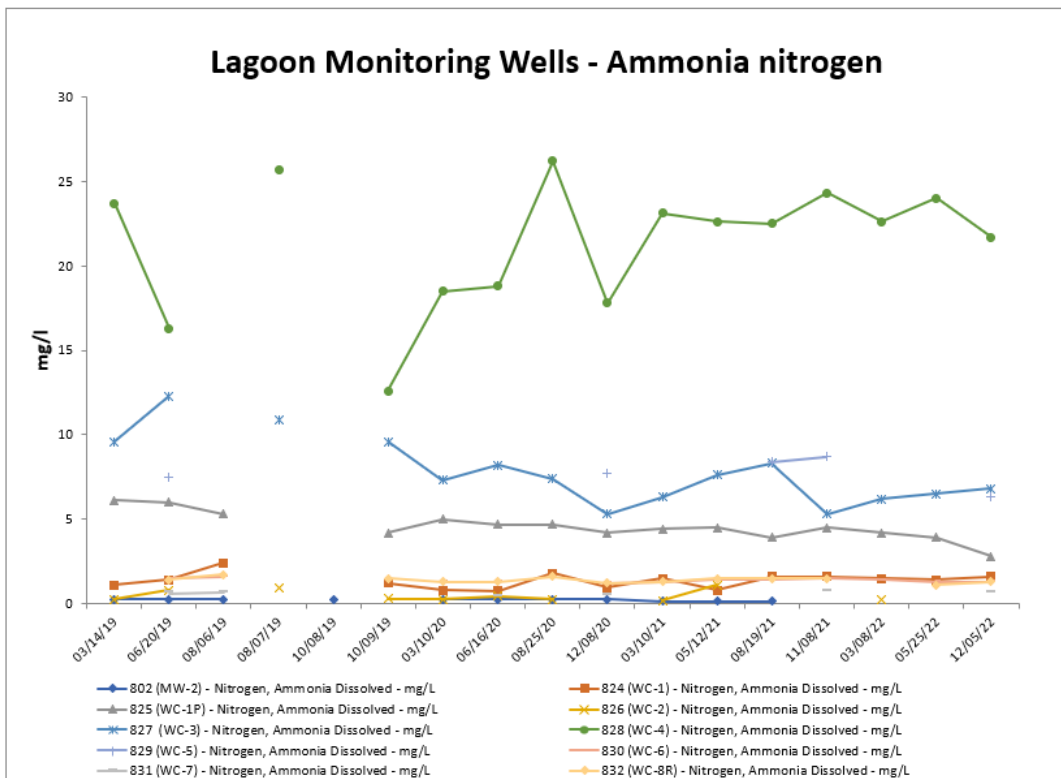


Figure 8 – Chloride at Sites 005 and 006 Monitoring Wells

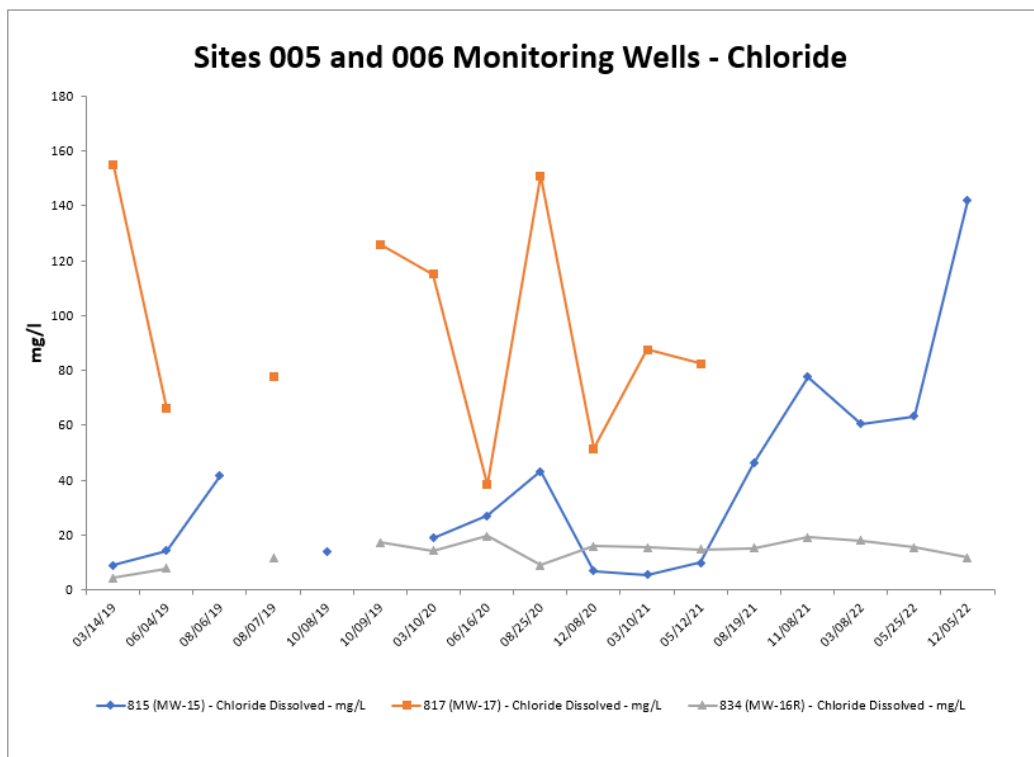


Figure 9 – Nitrite+nitrate, nitrogen at Sites 005 and 006 Monitoring Wells

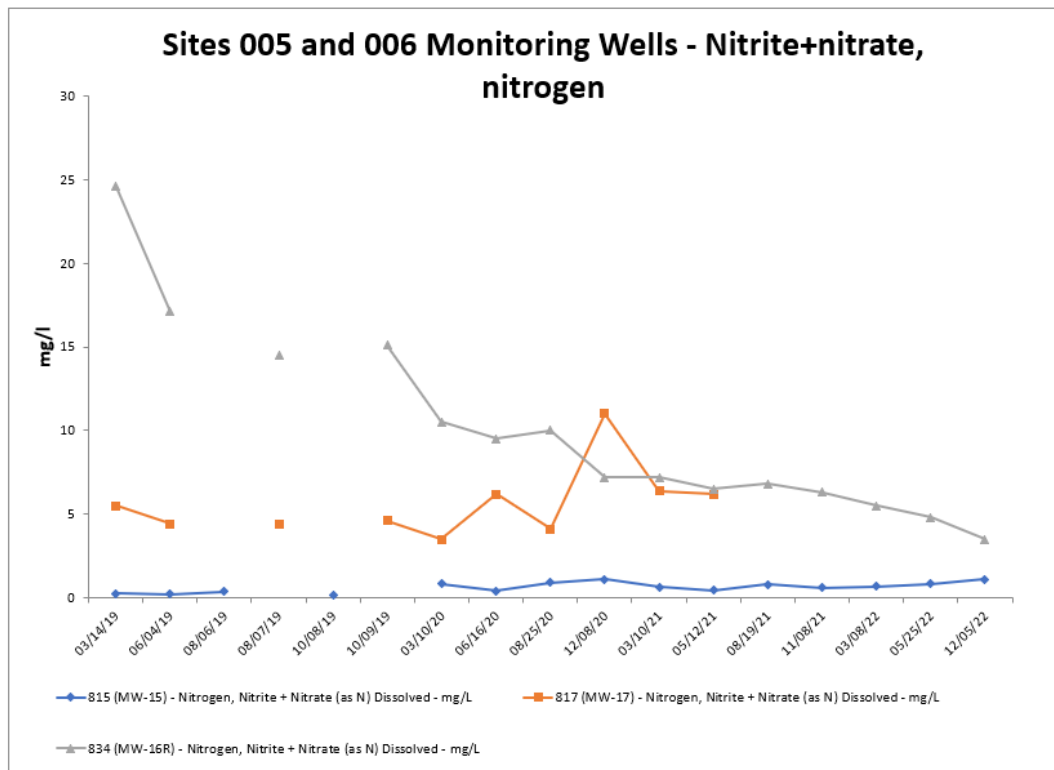


Figure 10 – Chloride at Sites 007 and 008 Monitoring Wells

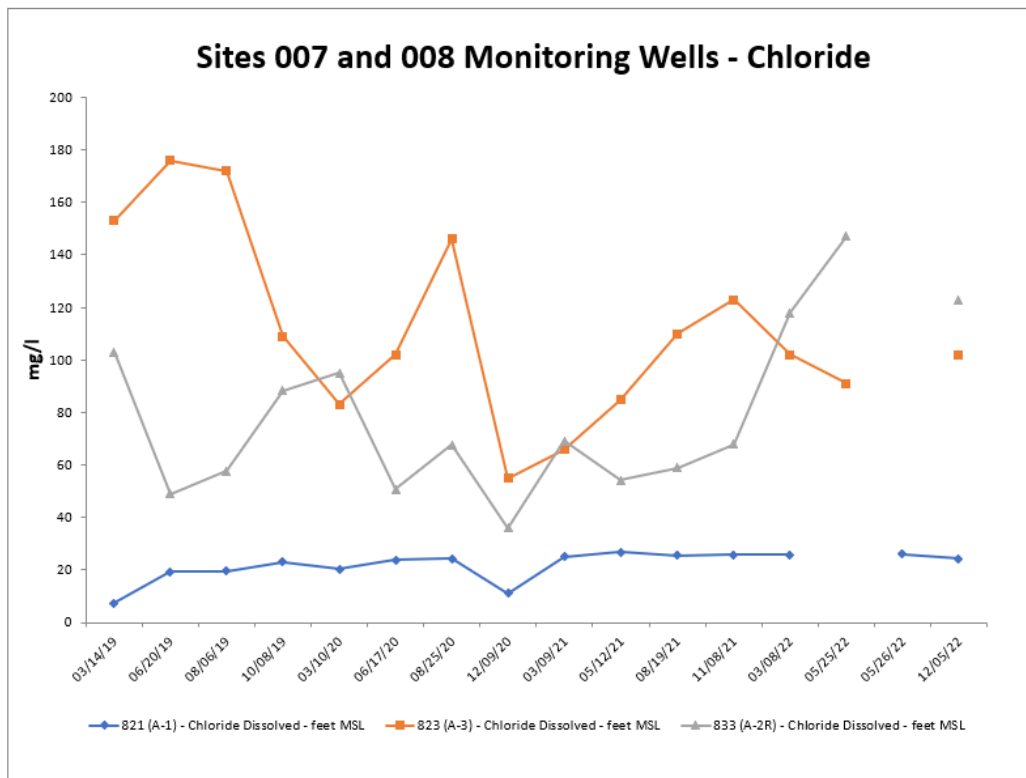


Figure 11 – Nitrite+nitrate, nitrogen at Sites 005 and 006 Monitoring Wells

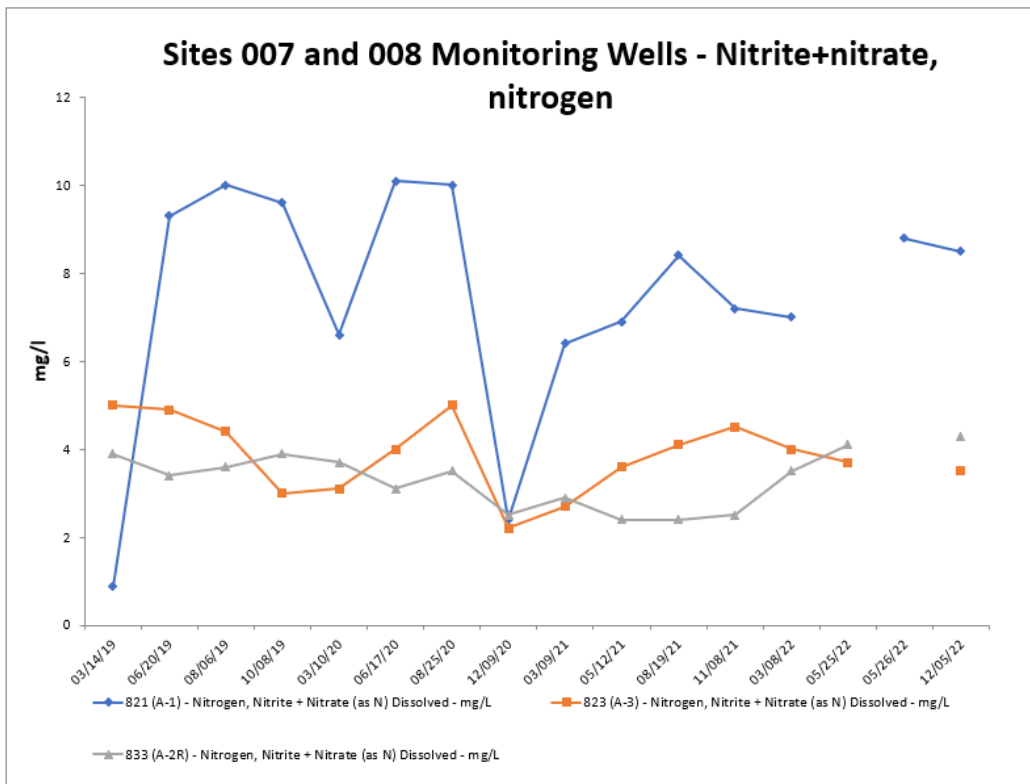


Figure 12 – Chloride at Sites 005 and 006 Monitoring Wells

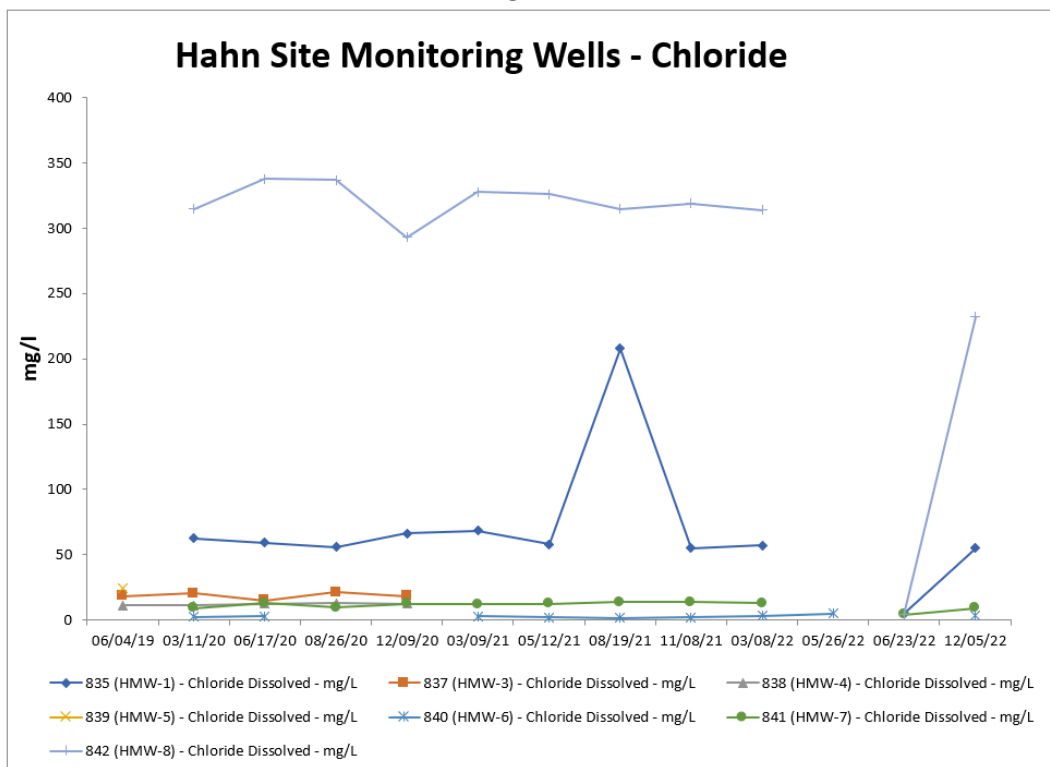


Figure 13 – Nitrite+nitrate, nitrogen at Sites 005 and 006 Monitoring Wells

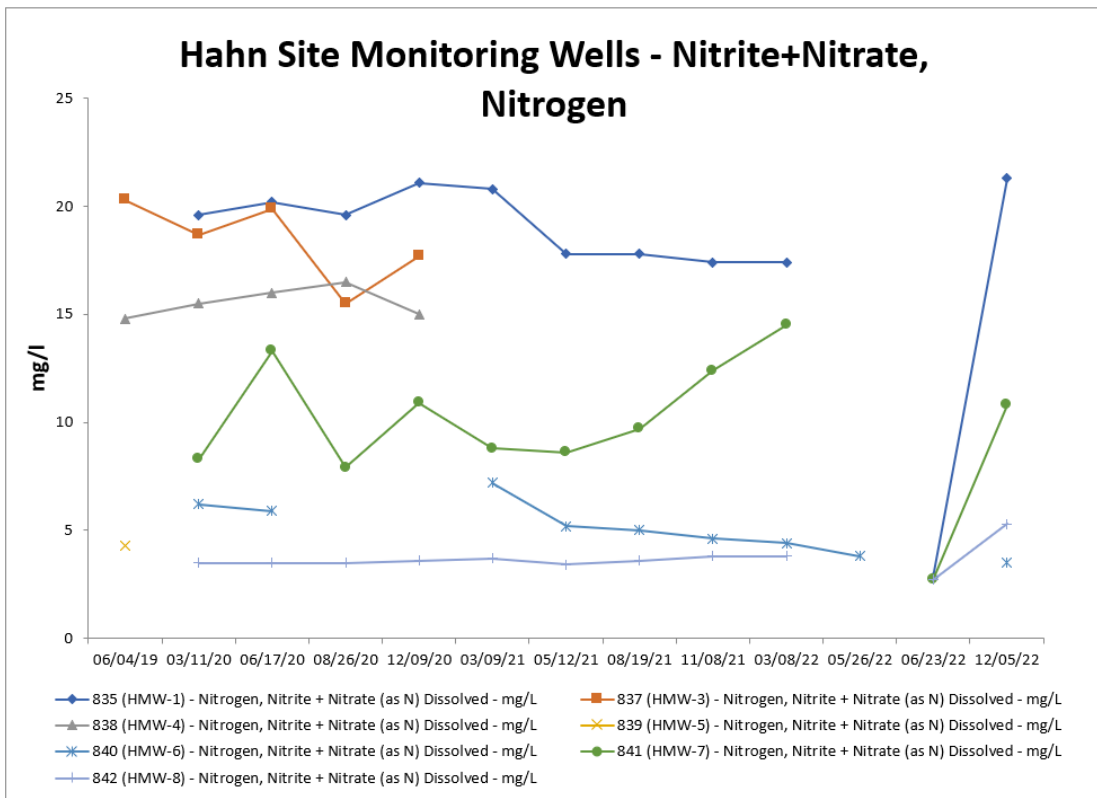


Figure 14 – Chloride at Hahn Site HMW-2R

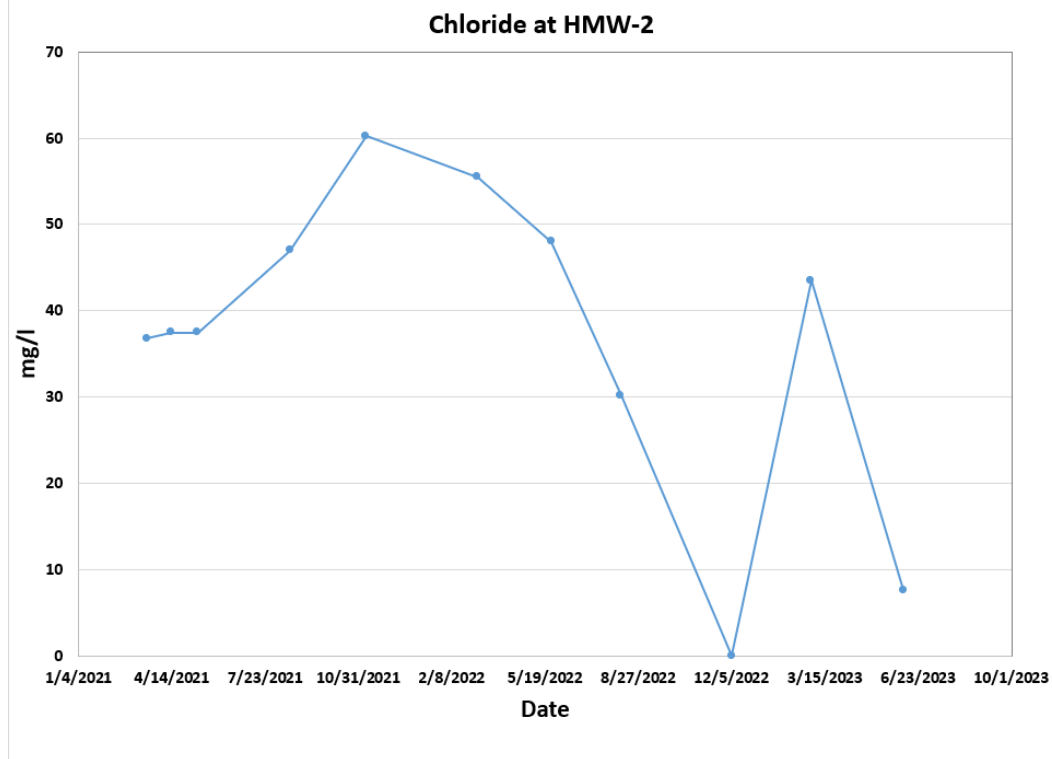


Figure 15 – Nitrite+nitrate, nitrogen at Hahn Site HMW-2R

