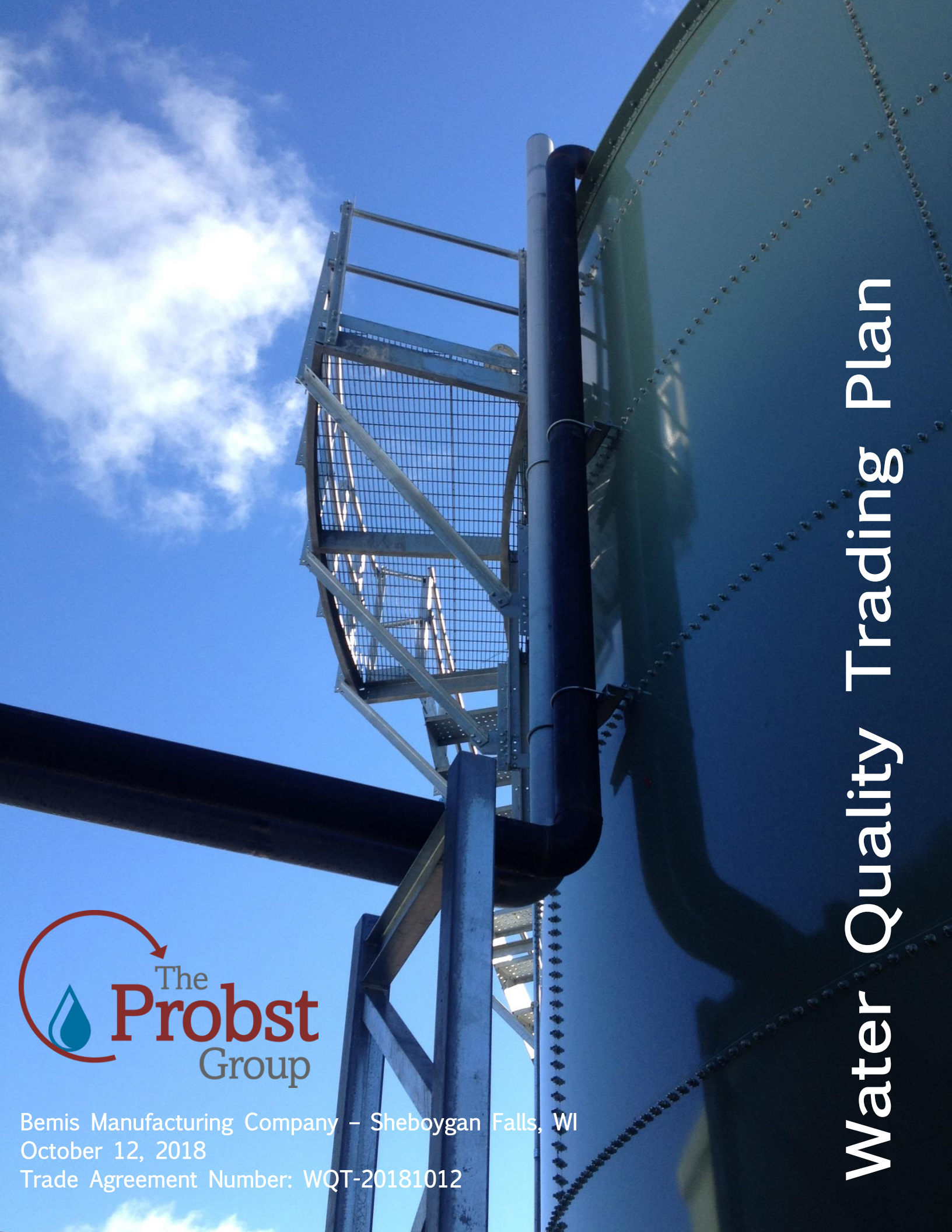

Water Quality Trading Plan

The Probst Group

Bemis Manufacturing Company – Sheboygan Falls, WI
October 12, 2018
Trade Agreement Number: WQT-20181012

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1 Introduction

Bemis Manufacturing Company (Bemis) owns and operates an injection molding and plastics extrusions production facility in Sheboygan Falls, Wisconsin, called Plants D and E (one continuous building). Contact and non-contact process wastewater generated by the facility as well as stormwater collected by surface water runoff and roof drains are currently discharged directly to a surface water discharge at the Sheboygan River. This outfall is covered under Wisconsin Department of Natural Resources (WDNR) Wisconsin Permit Discharge Elimination System (WPDES) Permit WI-0027456-08-2. The outfall will not meet the final water quality-based effluent limit (WQBEL) for total phosphorus of 0.1 milligrams per liter (mg/L) as a six-month average, which becomes effective August 1, 2022. Previous optimization efforts have not yielded sufficient reductions in total phosphorus to meet this future WQBEL limit.

The Probst Group, LLC (Probst) evaluated preliminary information for exploring potential water quality trading partners to satisfy the requirements of their WPDES permit. On June 25, 2018, on behalf of Bemis, Probst submitted a Notice of Intent to Conduct Water Quality Trading (Form 3400-206) to the WDNR with the intent to achieve compliance with the phosphorus limitation using effluent trading.

Additional information in the form of a Final WQT Plan is necessary to move forward with the WQT as a final compliance alternative.

This WQT plan summarizes the strategy for Bemis to use WQT to comply with phosphorus discharge limits in its WPDES permit for the Plant D Outfall 001. This outfall discharges to the Sheboygan River near the bottom of the HUC12 Subwatershed with hydrologic unit code: 040301011108 and HUC Name: City of Sheboygan Falls – Sheboygan River.

To assist in complying with the permit phosphorus discharge limits, Bemis will install and maintain permanent vegetative cover (grassland, not harvested) on previously farmed fields within the same subwatershed as Outfall 001 on Bemis property currently rented. SnapPlus, a software program designed for the preparation of nutrient management plans, was used to quantify the amount of potentially tradable phosphorus from the fields assuming current farming practices continued. The model was then rerun to calculate the amount of phosphorus after installation and maintenance of a permanent vegetative cover. Using a credit ratio of 1.2:1, Bemis calculated the phosphorus water quality credits available per year based on the change in management practice from farming soybeans to permanent vegetative cover of portions of two agricultural fields. Bemis will use these credits to demonstrate compliance with the total phosphorus limit in their WPDES permit.

2 Background

2.1 Purpose for Water Quality Trade

The purpose of this WQT Plan is to describe the use of WQT to comply with the Total Phosphorus limits on Outfall 001 of WPDES permit WI-0027456-08-2. This WQT Plan was developed pursuant to the Notice of Intent to Conduct Water Quality Trade included in Attachment A.

Bemis will create a WQT trade utilizing select portions of Bemis-owned property (Renter Fields), with the WDNR. Three portions of Renter Fields 2-2 and 2-3, located in the same HUC-12 subwatershed as Outfall 001, will be placed into perennial vegetation. Bemis will use the phosphorus credits generated from this management practice to comply with the Total Phosphorus limits in their WPDES permit.

Pursuant s. 283.84(1)(b), Wis. Stats, a trade agreement is required to be in place prior to using trading to help demonstrate compliance with the final phosphorus limits. Bemis has reached an agreement with the Renter.

2.2 Location of Outfall and Fields

2.2.1 Location of Outfall 001

Bemis discharges contact and non-contact process wastewater generated by the facility and stormwater to the Sheboygan River through Outfall 001 at approximate latitude of 43°43'551.02"N and longitude of 87°50'17.21"W. Outfall 001 is located in HUC12 Subwatershed 040301011108, which is also known as the City of Sheboygan Falls – Sheboygan River Subwatershed. This Subwatershed is part of the larger Sheboygan River – Frontal Lake Michigan Watershed (0403010111) in the Manitowoc – Sheboygan Sub-basin (04030101). The City of Sheboygan Falls – Sheboygan River Subwatershed is not subject to a total maximum daily load (TMDL) and is not upstream of a watershed subject to a TMDL. Figure 1 and Attachment B show the location of Outfall 001 in the Subwatershed.

Figure 1
Subwatershed Map with Outfall and Fields

2.2.2 Location of the Fields

Bemis will implement the management practices to generate phosphorus credits on the Renter Fields. The 54 acres of the proposed trade fields (project area) are upstream of Outfall 001 in the City of Sheboygan Falls – Sheboygan River Subwatershed. An Unnamed Tributary, water body identification code (WBIC) 5027442, bisects the Renter Fields and generally drains east towards the Sheboygan River WBIC 50700. The Sheboygan River generally flows south and east in the project area. Figure 2 is a topographic map with the Bemis Parcels and set asides of Renter Fields 2-2 and 2-3 identified.

Figure 2
Bemis Parcels and Renter Fields 2-2 and 2-3

The Renter Fields are located in the City of Sheboygan Falls (Sheboygan County, Wisconsin) and include parcels 59282920390, 59282920395, and 59282920750. These parcels are all located in sections 27 and 28, township 15 north, range 22 east. Bemis also owns two additional nearby parcels. Table 1 shows the parcels, in the HUC-12 Subwatershed, owned by Bemis and farmed by Renter. Attachment B contains a map of the Bemis parcels.

Table 1
Bemis Parcels in Subwatershed

Parcel ID	Total Acreage	Land Use	Acreage for Conversion
59282918056	30.54	30.54	0.00
59282920390 (Renter Field 2-2)	38.12	38.12	13.00
59282918038	38.11	38.11	0.00
59282920395 (Renter Fields 2-2 and 2-3)	40.00	40.00	30.00
59282920750 (Renter Fields 2-2 and 2-3)	40.00	9.00	11.00
TOTAL	**186.77**	**155.77**	**54.00**

See Figure 2

3 Existing Conditions and Potentially Tradeable Phosphorus Modeling

3.1 Existing Land Use of the Fields

A portion of three Renter Fields will be converted to generate credits for this WQT. No unfarmed acreage or the area related to WBIC 5027442 will be converted to grassland, not harvested. The other parcels owned by Bemis will not be impacted by this WQT.

3.2 Soil Sampling

As noted in the SnapPlus Soil Test Report, soil samples were collected for analyses on November 1, 2017, at the Renter Fields. Field 2-2 had 11 samples collected for the entire 53.2 acres and Field 2-3 had 11 samples collected for the entire 43.9 acres. Attachment B contains a NRCS soils map and Attachment C contains the soil sample results (see pages 106 through 114).

The sample results were used to calculate the current and future potentially tradeable phosphorus for the WQT. Attachments D and E contain the SnapPlus reports using the site-specific soil conditions.

3.3 Modeled PTP Under Current Conditions

SnapPlus (version 17.0.18085.1426) was used to model the Renter Fields under current conditions. The same cropping practices were used on both Renter Fields in 2015, 2016, 2017, and 2018. The Renter Fields have been managed in soybeans and had the following fertilizer applications:

- 2015: 32 pounds per acre (lbs/ac) of nitrogen fertilizer
- 2016: 32 lbs/ac of nitrogen fertilizer
- 2017: 32 lbs/ac of nitrogen fertilizer
- 2018: 32 lbs/ac of nitrogen fertilizer

Manure has not been used on the Renter Fields. Application of nutrients will continue on the portions of Bemis parcels that remain in agricultural production. Because all nutrient application on the Renter Fields will need to be purchased, there is no benefit to the farm to over apply nutrients. Nutrient application will not increase on the non-WQT Renter Fields because of this trade. There will be a net decrease of applied nutrients in the watershed as a result of this trade.

Attachment C includes information regarding existing farming practices including an AgSource Soil & Forage Lab *2015 – 2017 Cropping Season Nutrient Management Plan* completed for Renter. This cropping and application data were modeled as a 3-year rotation through the year 2026.

Attachment D includes the following SnapPlus reports assuming current cropping practices continued into the future:

- Narrative and Crop Report
- Soil Test Report
- Application Summary Report
- Manure Tracking Report
- Field Data and 590 Assessment Plan
- Nutrient Management Report
- P Trade Report

Table 2 summarizes the Potentially Tradeable Phosphorus (PTP) in pounds per acre per year (lbs/yr) from the SnapPlus Phosphorus Trade Report using the current crop and application rotation.

Table 2
SnapPlus PTP Report
Current Crop (lbs/yr)

	Acres	2019	2020	2021	2022	2023	2024	2025	2026
Field 2-2	22	166	96	163	169	98	165	171	101
Field 2-3	32	235	134	230	238	138	233	241	141
TOTAL	54	401	230	393	407	236	398	412	242

See Figure 2 for locations of fields

3.4 Modeled PTP with Proposed Permanent Grassland

The portion of the Renter Fields set aside for the WQT trade were then modeled by replacing the current crop rotation with a permanent grassland, not harvested. Attachment E contains the same SnapPlus reports for the permanent grassland, not harvested modeling. Table 3 below summarizes the PTP given in the SnapPlus Phosphorus Trade Report for future conditions with permanent grassland, not harvested.

Table 3
SnapPlus PTP Report
Permanent Grassland, Not Harvested (lbs/yr)

	Acres	2019	2020	2021	2022	2023	2024	2025	2026
Field 2-2	22	3	2	2	2	2	2	2	2
Field 2-3	32	4	3	3	3	3	3	3	3
TOTAL	54	7	5	5	5	5	5	5	5

See Figure 2 for locations of fields

3.5 Calculation of Change in PTP Based on Modified Land Use

Based on the change in land use from cropped agricultural land in corn and soybeans to a permanent grassland, not harvested, total PTP was then calculated. Table 4 is a calculation of the difference of the values in Tables 2 and 3 above. This table does not incorporate the trade ratio which is discussed further in Section 4 of this report. The trade ratio must be included to determine final credits generated.

Table 4
Calculated Potentially Tradable Phosphorus
Permanent Grassland, Not Harvested (lbs/yr)

	Acres	2019	2020	2021	2022	2023	2024	2025	2026
Field 2-2	22	163	94	161	167	96	163	169	99
Field 2-3	32	231	131	227	235	135	230	238	138
TOTAL	54	394	225	388	402	231	393	407	237

See Figure 2 for locations of fields

4 Trade Ratio Calculation

The PTP generated by the SnapPlus modeling is adjusted by the applicable trade ratio to determine the amount of credits the credit user can receive for urban and agricultural management practices. As described in the WDNR "Guidance for Implementing Water Quality Trading in WPDES Permits" dated August 21, 2013 ("WQT Guidance"), the trade ratio is the sum of the delivery, downstream, equivalency, and uncertainty factors less any habitat adjustment factor. The trade ratio can be summarized as:

Trade Ratio = (Delivery + Downstream + Equivalency + Uncertainty – Habit Adjustment):1

See WQT Guidance at Section 2.11. For trades between point sources and nonpoint sources, there is a minimum trade ratio of 1.2:1. See WQT Guidance at Section 2.11.6.

As described in further detail by factor below, management practices result in the minimum trade ratio of 1.2:1.

4.1 Individual Trade Ratio Factors

4.1.1 Delivery Factor:

As discussed earlier, the Renter Fields subject to the permanent vegetative cover management practice are located within the same City of Sheboygan Falls – Sheboygan River Subwatershed HUC12 as Bemis Outfall 001. In addition, the Renter Fields are approximately 2,160 feet upstream of the outfall. Because the Renter Fields are within the same HUC12 as the outfall, the delivery factor is not needed (i.e., it is zero). See WQT Guidance § 2.11.1.

4.1.2 Downstream Factor:

The Renter Fields are located upstream of Outfall 001. Because the Renter Fields are upstream the downstream factor is not needed (i.e., it is zero). See WQT Guidance at Section 2.11.2. The Renter Fields generally drain to the Unnamed Tributary WBIC 5027442. This tributary discharges to the Sheboygan River WBIC 50700, approximately 2,160 feet upstream Outfall 001.

4.1.3 Equivalency Factor:

The permanent vegetative cover management practice on the Renter Fields will reduce phosphorus loadings to the subwatershed. Bemis is using the phosphorus credits generated by the permanent vegetative cover management practice to comply with the phosphorus limits on Outfall 001. Because phosphorus reductions are being used to generate phosphorus credits, an equivalency factor is not needed (i.e., it is zero). See WQT Guidance at § 2.11.3.

4.1.4 Uncertainty Factor:

The Renter Fields will be placed in permanent vegetative cover, as described in Section 6. According to Table 4 of the WQT Guidance, land established and maintained in perennial vegetation, consistent with NRCS Technical Standard 327, results in an uncertainty factor of 1. See WQT Guidance at § 2.11.4, Table 4.

4.1.5 Habitat Adjustment Factor:

Bemis is not claiming any beneficial habitat adjustment, so a habitat adjustment is not needed (i.e., it is zero). See WQT Guidance at § 2.11.5.

4.2 Calculation of Trade Ratio Based on Individual Factors

Inserting the above factors into the WQT Guidance's trade ratio formula results in a trade ratio of 1.2:1:

Trade Ratio = (Delivery + Downstream + Equivalency + Uncertainty – Habit Adjustment):1

Trade Ratio = (0 + 0 + 0 + 1 – 0):1
= 1.0:1 = 1.2:1 (WDNR minimum default)

Because the minimum allowed trade ratio by WDNR is 1.2:1, Bemis will use a 1.2:1 trade ratio for the entire 54 acres for estimating credits generated by the management practices.

5 Credit Generation Calculation

For each year, the credit generated from the management practice is the difference between the PTP based on SnapPlus modeling assuming the prior crop rotation was continued and the PTP based on SnapPlus modeling assuming a permanent vegetative cover is installed and maintained on the Renter Fields, divided by the credit ratio as shown in the equation below. Table 5 shows the results of this calculation for each field.

Phosphorus Credits Per Year = (PTP Assuming Crops Rotation Continued - PTP Assuming Permanent Vegetative Cover) ÷ trade ratio

Table 5
SnapPlus PTP (lbs/year) - (trade ratio of 1.2 applied)

	Acres	2019	2020	2021	2022	2023	2024	2025	2026
Field 2-2	22	136	78	134	139	80	136	141	83
Field 2-3	32	193	109	189	196	113	192	198	115
TOTAL	54	328	188	323	335	193	328	339	198

See Figure 2 for locations of fields

For example, in 2020 the total lbs/yr for Renter Fields 2-2 and 2-3:

PTP Assuming Crop Rotation Continues: 230 lbs/yr (from Table 2)

PTP Assuming Permanent Vegetative Cover: 5 lbs/yr (from Table 3)

Difference: 225 lbs/yr (= 230 – 5; from Table 4)

Trade ratio: 1.2:1 (from Section 4.2)

PTP including Trade Ratio: 188 lbs/yr (225/1.2)

Planting of the permanent prairie is anticipated to be completed in June 2019. Full establishment of the prairie is expected by October 1, 2019. Table 6 shows the credit availability starting in 2020.

Table 6
WI-0027456-08-2 Credit Availability (lbs/yr)

	Acres	2020	2021	2022	2023	2024	2025	2026
TOTAL	54	188	323	335	193	328	339	198

See Figure 2 for locations of fields

Based on available DMR data, an estimated 184 lbs/yr of P (requiring offset) is discharged at Outfall 001.

6 Management Practice Description

6.1 Installation Plan

An Establishment Plan has been developed by Midwest Prairies, LLC and is included as Attachment F. The plan outlines what soil preparation, seed mix, erosion control measures, and other measures are required to install the grassland, not harvested, consistent with NRCS Technical Standard 327. The seed mix includes all native grasses and sedges. The plan is specific to each field and a map is included. The plan outlines other activities that may or may not be required to establish the prairie during the first couple of months.

6.2 Operation and Maintenance Plan

A separate operation & maintenance plan was also prepared by Midwest Prairies, LLC and is included as Attachment G. This plan outlines regular maintenance requirements to keep the prairie healthy. It also includes other irregular activities that may be required after inspections by a prairie expert.

7 Timeline

7.1 Schedule for Installation of Permanent Vegetative Practice

Date	Action
June 2019	Initial Planting of prairie (including cover crop).
July 2019	First inspection (one month after planting).
July 2019	Germination of all seed.
August - November 2019	Mowing and herbicide application as needed for weed control.
By October 1, 2019	Second inspection.
By October 1, 2019	Prairie established (bare spots greater than 100 yd^2 will be reseeded).
By October 1, 2019	Bemis will follow the Operation and Maintenance Plan after this date. The prairie will be maintained indefinitely to maintain the WQT.
January 2020	Credits become available.

8 Inspections and Reporting

8.1 Water Quality Trading Management Practice Registration

Planting of the permanent prairie will be completed in June 2019. The Registration Form 3400-207 for Water Quality Trading Management Practice Registration (see Attachment H for example) will be completed and submitted to the WDNR after the practice has been installed.

8.2 Monthly Inspection, Certification, and Reporting

Each month, Bemis will inspect the Renter Fields generating the phosphorus reduction credits to confirm continued cover of the permanent vegetative management practices. Any photos taken during these inspections can be used to supplement the annual inspections described further in Section 8.3.

Each month, Bemis shall also certify that the permanent vegetative cover management practice installed to generate phosphorus reduction credits is operated and maintained in a manner consistent with that specified in this WQT Plan or a statement noting noncompliance with this Plan. A certification of compliance may be made by including the following statement as a comment on the monthly discharge monitoring report (DMR):

> I certify that to the best of my knowledge the management practice identified in the approved WQT plan as the source of phosphorus reduction credits is installed, established and properly maintained.

Usage and reporting of phosphorus credits will also occur on a monthly basis and be submitted on the DMRs.

8.3 Annual Inspections

Once per year, Bemis will inspect the Renter Fields generating the phosphorus reduction credits to confirm implementation of the permanent vegetative cover management practice and that the management practice is being appropriately maintained. This annual inspection shall occur between mid-August and mid-September each year and shall include at least two photographs of each of the Renter Fields; one overall site photo, and one close-up photo of a representative area of the field. As stated in Section 8.2 above, Bemis will also certify in their DMRs each month that the practice is still in place and generating credits.

8.4 Notification of Problems with Cover Management Practice

The sites will be inspected one month after installation by Midwest Prairies, LLC to ensure cover crop germination. The site will also be inspected to confirm initial germination of native grasses in mid-September 2019 in order to provide ample time to develop a cover cropping plan for winter, if necessary. After that, the sites will be

inspected per the operation and maintenance standards. Reseeding activities shall continue in following seasons as necessary (see Attachments F and G).

In accordance with the Operation and Maintenance Plan, Bemis will notify the WDNR verbally within 24 hours of becoming aware that phosphorus reduction credits used or intended for use by Bemis are not being implemented or generated as set forth in this WQT Plan. Additionally, within five (5) days of becoming aware of noncompliance, written notification will be provided to WDNR. Both notifications will include the nature of the noncompliance, a description of how the issues will be addressed, and an appropriate timeline to address the issues. Bemis shall work to rectify such problems in accordance with the Operation and Maintenance Plan.

8.5 Annual Water Quality Trading Report

Bemis shall report to WDNR by January 31 of each year the following:

- The number of phosphorus reduction credits (lbs/month) used each month of the previous year to demonstrate compliance;
- Photographs from the annual inspection, and monthly inspections if available, of the permanent vegetative cover management practice that generated the phosphorus reduction credits used during the previous years; and
- Identification of noncompliance or failure to implement any terms or conditions WPDES permit WI-0027456-08-2 with respect to WQT that have not been reported in discharge monitoring reports.

8.6 WDNR Right to Inspect the Fields

WDNR has the right to inspect the permanent vegetative cover management practice at any time upon giving reasonable notice to Bemis to ensure the management practice is in compliance with the NRCS Technical Standard 327 and the terms of this Plan.

9 Compliance with Water Quality Trading Checklist

This WQT Plan complies with the WQT Checklist in Table 8 set forth at page 37 of the WQT Guidance. The checklist is also included in Attachment I. The Bemis WQT must comply with the requirements for Credit Source (e) in Table 8. Credit Source (e) includes sources where "credits are obtained from a construction project or implementation of a plan undertaken by the credit user for sources other than that covered by the credit user's WPDES permit." Bemis will be installing permanent vegetative cover on the Renter Fields, which are not currently covered by their WPDES permit.

Below is a list of the elements of a WQT plan for credit sources classified as (e) under Table 8 and references the section of this WQT Plan in which each element is addressed:

- Permittee's/credit user's WPDES permit number. Bemis WPDES permit number is WI-0027456-08-2 and is included in Section 2.1.

- Permittee's/credit user's contact information. Bemis's contact information is included in Section 10.
- Pollutant(s) for which credits will be generated. Credits will be generated for phosphorus as discussed in Section 2.1.
- Amount of credits available from each location/management practice/local governmental unit when acting as a broker. The amount of credits generated per year by installing and maintaining permanent vegetative cover on the Renter Fields is set forth in Table 6 in Section 5.
- Certification that the content of the trading application is accurate and correct. Certification that the content of this trading application is accurate and correct is included in Section 10.
- Signature and date of signature of permittee's/credit user's authorized representative. The Bemis authorized representative's signature and date of signature are included in Section 10.
- Location(s) where credits will be generated (e.g., map of field or site where management practice will be applied including major drainage way(s) from the project). Maps indicating the location of the Renter Fields and Outfall 001 are included in Section 2.4.2 and in Attachment B.
- Identification of method(s) including management practice(s) that will be used to generate credits at each location. The management practice applied to the Renter Fields is permanent vegetative cover consistent with NRCS Technical Standard 327 and is explained in Section 6 and Attachments F and G.
- Duration of agreement (e.g., the design life of the management practice) with each credit generator. The design life of the permanent vegetative management practice is perpetual as described in Section 1.
- Schedule for installation/construction of each management practice. The schedule for installation of the permanent vegetative practice is included in Section 7.2.
- Operation and maintenance plan for each management practice used to generate credits. The operation and maintenance plan for the permanent vegetative cover management practice is summarized in Section 6.2 and included in full in Attachment G.
- Date when credits become available for each management practice (i.e., when practice is established and effective). The date when credits become available is January 2020 and is referenced in Section 7.
- Model(s) used to derive the amount of credits. The model used to derive the amount of credits is SnapPlus (version 17.0.18085.1426) as referenced in Section 3.
- The applicable trade ratio for each management practice including supporting technical basis (see Table 4 on page 20 of WQT Guidance). The applicable trade ratio is 1.2:1 and the technical basis and calculation of the trade ratio is included in Section 4.

10 Certification of Water Quality Trade Report

The undersigned hereby certifies that this WQT Report is, to the best of his knowledge, accurate and correct.

Bemis Manufacturing Company – Sheboygan Falls, Wisconsin

By: _____
David Howell | Corporate Counsel

920.467.5477
300 Mill Street
Sheboygan Falls, Wisconsin 53085

ATTACHMENT A

Notice of Intent to Conduct Water Quality Trading

State of Wisconsin
Department of Natural Resources
101 South Webster Street
Madison WI 53707-7921
dnr.wi.gov

Notice of Intent to Conduct Water Quality Trading

Form 3400-206 (1/14)

Notice: Pursuant to s. 283.84, Wis. Stats., and ch. NR 217 Wis. Adm. Code, this form must be completed by any WPDES permittee that is using water quality trading as a method of complying with a permit limitation. Failure to complete this form would not result in penalties. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law (ss. 19.31 - 19.39, Wis. Stats.).

Applicant Information

Permittee Name	Permit Number	Facility Site Number
Bemis Manufacturing Company	WI- 0027456-08-0	Bemis Campus Plant D and E

Facility Address	City	State	ZIP Code
W2940 Old County Road PP	Sheboygan Falls	WI	53085

Project Contact Name (if applicable)	Address	City	State	ZIP Code
Clair Ruenger, P.G.	17035 West Wisconsin Avenue	Brookfield	WI	53005

Project Name
Bemis Manufacturing Company Compliance Alternatives Evaluation

Receiving Water Name	Parameter(s) being traded	HUC 12(s)
Sheboygan River	Total Phosphorus	040301011108

Is the permittee in a point or nonpoint source dominated watershed? (See PRESTO results - http://dnr.wi.gov/topic/surfacewater/presto.html)

- ○ Point source dominated
- ◉ Nonpoint source dominated

Credit Generator Information

Credit generator type (select all that apply):

- ☐ Permitted Discharge (non-MS4/CAFO)
- ☐ Permitted MS4
- ☐ Permitted CAFO
- ☐ Urban nonpoint source discharge
- ☒ Agricultural nonpoint source discharge
- ☐ Other - Specify: _____

Are any of the credit generators in a different HUC 12 than the applicant?

- ○ Yes; HUC 12: _____
- ◉ No
- ○ Unsure

Are any of the credit generators downstream of the applicant?

- ○ Yes
- ◉ No
- ○ Unsure

Will a broker/exchange be used to facilitate trade?

- ○ Yes; Name: _____
- ◉ No
- ○ Unsure

Point to Point Trades (Traditional Municipal / Industrial Discharge, MS4, CAFO)

Discharge Type	Permit Number	Name	Contact Address	Is the point source credit generator currently in compliance with their permit requirements?
○ Traditional ○ MS4 ○ CAFO				○ Yes ○ No ○ Unsure
○ Traditional ○ MS4 ○ CAFO				○ Yes ○ No ○ Unsure
○ Traditional ○ MS4 ○ CAFO				○ Yes ○ No ○ Unsure
○ Traditional ○ MS4 ○ CAFO				○ Yes ○ No ○ Unsure
○ Traditional ○ MS4 ○ CAFO				○ Yes ○ No ○ Unsure

Point to Nonpoint Trades (Non-permitted Agricultural, Non-Permitted Urban, etc.)

List the practices that will be used to generate credits:

Conservation Easement (natural prairie restoration) with portions of parcels 59282920390, 59282920395, and 59282920750, located in Sheboygan County and owned by Bemis Manufacturing Company. Anticipated acreage is approximately 40 acres based on preliminary modeling results.

Method for quantifying credits generated:
- ☐ Monitoring
- ☒ Modeling, Names: SnapPlus 17.0
- ☐ Other: _____

Projected date credits will be available: 10/26/2019

The preparer certifies all of the following:

- I am familiar with the specifications submitted for this application, and I believe all applicable items in this checklist have been addressed.
- I have completed this document to the best of my knowledge and have not excluded pertinent information.

Signature of Preparer	Date Signed
	06.22.18

Authorized Representative Signature

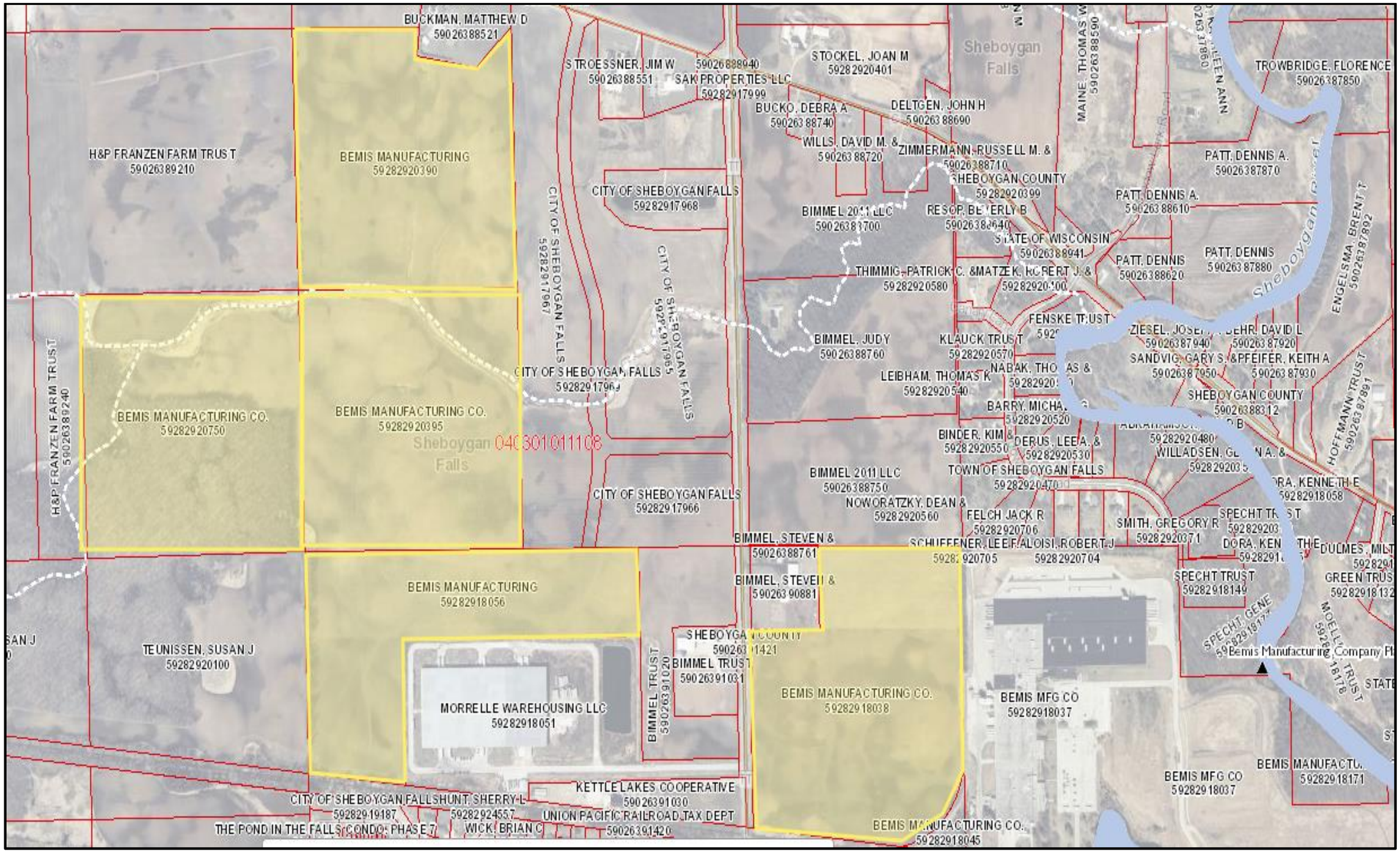
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision. Based on my inquiry of those persons directly responsible for gathering and entering the information, the information is, to the best of my knowledge and belief, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of Authorized Representative	Date Signed
	6-25-18

ATTACHMENT B
Project Maps

Bemis Manufacturing Company WQT Parcels – Bimmel Fields 2-2 and 2-3

59282920390, 59282920395, and 59282920750



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BEMIS MANUFACTURING COMPANY
SHEBOYGAN FALLS, WISCONSIN
PHOSPHORUS COMPLIANCE

WQT WATERSHED MAP

REVISIONS

NO.	DATE

DRAWN BY:	MJM
CHK'D BY:	
PROJ. ENG:	CR
ISSUE DATE:	8-6-18

PROJECT NUMBER:
5198

SHEET
WSM-1

PRELIMINARY

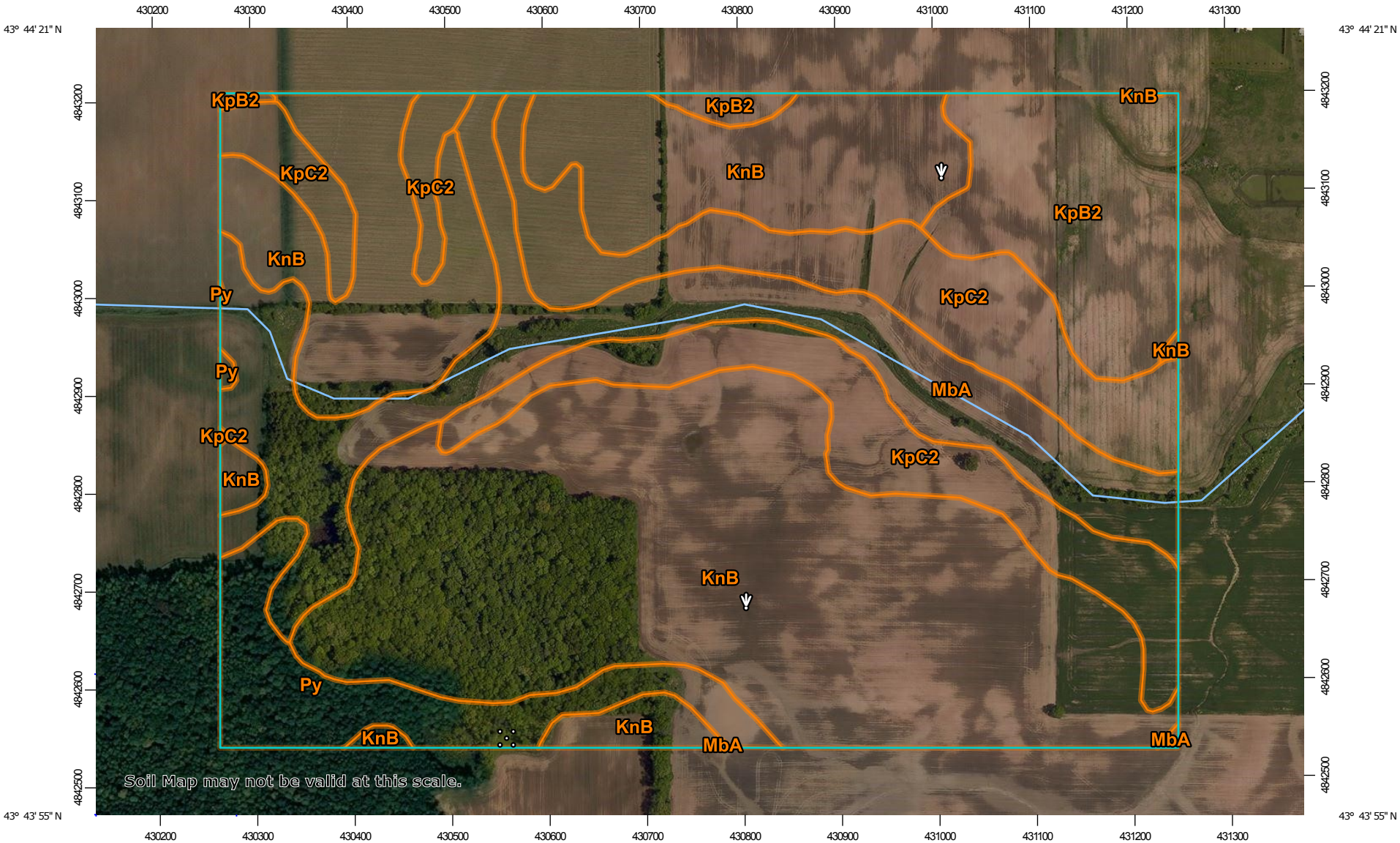
Field ID Map 1

Farm Name: Gary Bimmel

Map generated on: 2/6/2017 SnapMap Version: 16.0, Crop year: n/a

- Counties
- Township/Range
- Roads
- Fields
- Tile lines
- Not farmed
- Grass filter area
- Vegetated buffer
- Water
- Sinkhole/other karst feature
- Other
- Designed grassed waterway
- Permanent vegetated channel
- Unvegetated ephemeral channel
- Drainage ditch
- Gully
- Drinking Well
- Well
- Irrigation Well
- Sinkhole
- Non-metallic mine
- Fractured bedrock at surface
- Other direct conduit
- Tile outlet
- Tile inlet
- County Defined Karst Features

Soil Map—Sheboygan County, Wisconsin
(Bemis Manufacturing Company WQT Field Soil Mat)



Map Scale: 1:5,670 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Sheboygan County, Wisconsin
Survey Area Data: Version 13, Oct 6, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 29, 2011—Sep 12, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
KnB	Kewaunee silt loam, 2 to 6 percent slopes	85.2	52.2%
KpB2	Kewaunee silty clay loam, 2 to 6 percent slopes, eroded	14.2	8.7%
KpC2	Kewaunee silty clay loam, 6 to 12 percent slopes, eroded	30.6	18.8%
MbA	Manawa silt loam, 0 to 3 percent slopes	23.5	14.4%
Py	Poygan silty clay loam, 0 to 2 percent slopes, drained	9.6	5.9%
Totals for Area of Interest		**163.2**	**100.0%**

ATTACHMENT C

Renter Nutrient Management Plan

Nutrient Management Plan

for

Gary Bimmel

5268 County Road TT
Sheboygan Falls, WI 53085

Gary Bimmel
Owners/Manager
G(920)-207-7357

2015-2017 Cropping Season

Prepared By:
Nick Guilette, CCA 34684
(920) 304-6293 (cell)
AgSource Soil & Forage Lab
P. O. Box 7
Bonduel, WI 54107
(715) 758-2178 (office)

NMP TABLE OF CONTENTS

1	INTRODUCTION, CHECK LIST AND, GENERAL INFORMATION
2	FIELD AND SOIL MAPS
3	SPREADING PLAN REPORTS
4	RESTRICTION MAPS
5	WINTER RESTRICTION MAPS
6	ANIMAL NUMBERS AND MANURE QUANTITIES
7	MANURE TESTS AND SPREADER CALIBRATION
8	SOIL TEST SUMMARY REPORT
9	EMERGENCY RESPONSE PLAN
10	ADMINISTRATIVE CODES
11	ADDITIONAL SNAP-PLUS REPORTS
12	RECORD KEEPING FORMS

NUTRIENT MANAGEMENT PLAN CHECKLIST

V 11/9/05

For Wisconsin's NRCS 590 (September 2005) Nutrient Management Standard Requirements

County name: **Sheboygan** Date Plan Submitted: **Dec. 29, 2016** Growing season year NM plan is written for: **2015-2016** (harvest to harvest)

Township: T15N – R22E Initial Plan or Updated Plan: **Initial**

Name of qualified nutrient management planner		Planner's business name, address, phone:
Nick Guilette		**AgSource Laboratories** **106 North Cecil Street; Bonduel, WI 54107** **(715) 758-2178**
Planner's qualification: **CCA-34684**	Cropland Acres (owned & rented) **424.6**	Name of farmer receiving nutrient management plan: **Gary Bimmel** Circle relevant program requirement or regulation the plan was developed for: Ordinance, USDA, DATCP, DNR, NR 243 – NOD or WPDES

	Yes	No	NA
1. Are the following field features identified on maps or aerial photos in the plan?			
a. Field location, soil survey map unit(s), field boundary, and field identification number	X		
b. Areas prohibited from receiving nutrient applications: Surface water, established concentrated flow channels with perennial cover, permanent non-harvested vegetative buffer, non-farmed wetlands, sinkholes, lands where established vegetation is not removed, nonmetallic mines, and fields eroding at a rate exceeding tolerable soil loss (T)	X		
c. Areas within 50 feet of a potable drinking water well where mechanically-applied manure is prohibited	X		
d. Areas prohibited from receiving winter nutrient applications: Slopes > 9% (12% if contour-cropped); Surface Water Quality Management Area (SWQMA) defined as land within 1,000 ft of lakes and ponds or within 300 ft of perennial streams draining to these waters, unless manure is deposited through winter gleaning/pasturing of plant residue and not exceeding the N and P requirements of this standard; Additional areas identified within a conservation plan as contributing runoff to surface or groundwater	X		
e. Areas where winter applications are restricted unless effectively incorporated within 72 hours: Land contributing runoff within 200 feet upslope of direct conduits to groundwater such as a well, sinkhole, fractured bedrock at the surface, tile inlet, or nonmetallic mine	X		
f. Sites vulnerable to N leaching: Areas within 1,000 feet of a municipal well, and soils listed in Appendix 1 of the Conservation Planning Technical Note WI-1	X		
2. Are erosion controls implemented so the crop rotation will not exceed T on fields that receive nutrients according to the conservation plan or WI P Index model?	X		
3. Were soil samples collected and analyzed within the last 4 years according to UW Publication A2100 recommendations? See Narrative	X		
4. Using the field's predominant soil series and realistic yield goals, are planned nutrient application rates, timing, and methods of all forms of N, P, and K listed in the plan and consistent with UW Publication A 2809, *Soil Test Recommendations for Field, Vegetable and Fruit Crops,* **and the 590 standard?**	X		
5. Do manure production and collection estimates correspond to the acreage needed in the plan? Are manure application rates realistic for the calibrated equipment used? (See the narrative.)			X
6. Is a single phosphorus (P) assessment of either the P Index or soil test P management strategy uniformly applied to all fields within a tract?	X		
7. Are areas of concentrated flow, resulting in reoccurring gullies, planned to be protected with perennial vegetative cover? See Narrative.	X		
8. Will nutrient applications on non-frozen soil within the SWQMA comply with the following?			
a. Unincorporated liquid manure on unsaturated soils will be applied according to Table 1 of the 590 standard to minimize runoff	X		
b. One or more of the following practices will be used: 1) Install/maintain permanent vegetative buffers, or 2) Maintain greater than 30% crop residue or vegetative coverage on the surface after nutrient application, or 3) Incorporate nutrients leaving adequate residue to meet tolerable soil loss, or 4) Establish fall cover crops promptly following application	X		

I certify that the nutrient management plan represented by this checklist complies with Wisconsin's NRCS 590 nutrient management standard.

Signature of qualified nutrient management planner Nicholas A. Guilette

Prepared by: Anna Reimer

NUTRIENT MANAGEMENT PLAN CHECKLIST

V 11/9/05

For Wisconsin's NRCS 590 (September 2005) Nutrient Management Standard Requirements

County name: **Sheboygan** Date Plan Submitted: **Feb. 6, 2017** Growing season year NM plan is written for: **2016-2017** (harvest to harvest)

Township: T15N – R22E Initial Plan or Updated Plan: **Initial**

Name of qualified nutrient management planner		Planner's business name, address, phone:
Nick Guilette		**AgSource Laboratories** **106 North Cecil Street; Bonduel, WI 54107** **(715) 758-2178**
Planner's qualification: **CCA-34684**	Cropland Acres (owned & rented) **424.6**	Name of farmer receiving nutrient management plan: **Gary Bimmel** Circle relevant program requirement or regulation the plan was developed for: Ordinance, USDA, DATCP, DNR, NR 243 – NOD or WPDES

	Yes	No	NA
1. Are the following field features identified on maps or aerial photos in the plan?			
a. Field location, soil survey map unit(s), field boundary, and field identification number	X		
b. Areas prohibited from receiving nutrient applications: Surface water, established concentrated flow channels with perennial cover, permanent non-harvested vegetative buffer, non-farmed wetlands, sinkholes, lands where established vegetation is not removed, nonmetallic mines, and fields eroding at a rate exceeding tolerable soil loss (T)	X		
c. Areas within 50 feet of a potable drinking water well where mechanically-applied manure is prohibited	X		
d. Areas prohibited from receiving winter nutrient applications: Slopes > 9% (12% if contour-cropped); Surface Water Quality Management Area (SWQMA) defined as land within 1,000 ft of lakes and ponds or within 300 ft of perennial streams draining to these waters, unless manure is deposited through winter gleaning/pasturing of plant residue and not exceeding the N and P requirements of this standard; Additional areas identified within a conservation plan as contributing runoff to surface or groundwater	X		
e. Areas where winter applications are restricted unless effectively incorporated within 72 hours: Land contributing runoff within 200 feet upslope of direct conduits to groundwater such as a well, sinkhole, fractured bedrock at the surface, tile inlet, or nonmetallic mine	X		
f. Sites vulnerable to N leaching: Areas within 1,000 feet of a municipal well, and soils listed in Appendix 1 of the Conservation Planning Technical Note WI-1	X		
2. Are erosion controls implemented so the crop rotation will not exceed T on fields that receive nutrients according to the conservation plan or WI P Index model?	X		
3. Were soil samples collected and analyzed within the last 4 years according to UW Publication A2100 recommendations? See Narrative	X		
4. Using the field's predominant soil series and realistic yield goals, are planned nutrient application rates, timing, and methods of all forms of N, P, and K listed in the plan and consistent with UW Publication A 2809, *Soil Test Recommendations for Field, Vegetable and Fruit Crops,* **and the 590 standard?**	X		
5. Do manure production and collection estimates correspond to the acreage needed in the plan? Are manure application rates realistic for the calibrated equipment used? (See the narrative.)			X
6. Is a single phosphorus (P) assessment of either the P Index or soil test P management strategy uniformly applied to all fields within a tract?	X		
7. Are areas of concentrated flow, resulting in reoccurring gullies, planned to be protected with perennial vegetative cover? See Narrative.	X		
8. Will nutrient applications on non-frozen soil within the SWQMA comply with the following?			
a. Unincorporated liquid manure on unsaturated soils will be applied according to Table 1 of the 590 standard to minimize runoff	X		
b. One or more of the following practices will be used: 1) Install/maintain permanent vegetative buffers, or 2) Maintain greater than 30% crop residue or vegetative coverage on the surface after nutrient application, or 3) Incorporate nutrients leaving adequate residue to meet tolerable soil loss, or 4) Establish fall cover crops promptly following application	X		

I certify that the nutrient management plan represented by this checklist complies with Wisconsin's NRCS 590 nutrient management standard.

Signature of qualified nutrient management planner Nicholas A. Guilette

Prepared by: Anna Reimer

Gary Bimmel

Introduction

Gary Bimmel owns a cropping enterprise (Farm) located in Sheboygan County, Wisconsin. The main crops grown by the business is soybeans. The main agricultural commodity produced by the business is soybeans.

Current Operations

There are no animals on the Farm. Current owned and rented cropland is approximately 424.6 acres.

Field, Soils and Cropping Information

The Farm is located in the City of Sheboygan Falls - Sheboygan River Watershed, the Sheboygan River -Frontal Lake Michigan Watershed, and the Lower Mullet River Watershed.

The predominant soil series of the fields operated by the Farm are Kewaunee, Waymor, and Bellevue type soils.

The soil test phosphorus values on the fields operated by the Farm vary from a low of 6 ppm to a high of 101 ppm. More than half of the fields are in the low or optimum soil test phosphorus range for the crops being grown by the Farm.

The Farm typically follows a crop rotation of continuous soybeans. Typical yields for the Farm are soybean grain at 56-65 bushels. These yields are reflected in all planning in Snap-Plus.

Expansion Plans

The Farm does not have any plans of expanding at this time.

Plan Information

This NMP is a phosphorus based plan that was developed using the Snap-Plus nutrient management planning software developed by the University of Wisconsin. The Phosphorus Index is the method used to manage phosphorus.

Nutrient Budgets

The Farm is implementing nutrient management practices to comply with a cost share contract with the Sheboygan County NRCS office and Farmland Preservation Tax credits. Nutrient applications are planned based on crop needs. This has been done to meet the requirements in the 590 standard. All planned applications are subject to change based on yearly field conditions, weather conditions, and changes to crop rotations.

Manure/Wastewater Nutrient Values
There are no animals raised by the Gary Bimmel Farm.

Manure Application Equipment
There are no animals raised by the Gary Bimmel Farm.

Manure Applications
If manure applications are made to fields operated by Gary Bimmel, it is recommended that all corresponding nutrient restrictions are followed.

Fertility Recommendations
All recommendations follow the guidelines set forth in UWEX Publication A2809 Nutrient Application Guidelines for Field, Vegetable and Fruit Crops". The reports for each farm identify commercial fertilizer nutrient application rates. Commercial fertilizer recommendations for phosphorous (DAP) and potassium (potash) have been made based on the Snap-Plus program.

In some instances, the amount of fertilizer planned to be applied is less than what UW recommendations are. This has been discussed with the Farm and reflects several factors including, but not limited to, finances and past agronomic experiences.

Phosphorus Management
As mentioned earlier the Phosphorus Index is used to manage phosphorus on all fields operated by the Farm. The Farm will maintain a P-Index of 6 or less over the rotation on all fields. The Snap-Plus Field Data and 590 Assessment Plan in Tab 11 of the plan shows compliance with the P-Index requirements of the 590 Standard.

Nutrient Spreading Restrictions
This plan contains all of the nutrient application spreading restrictions outlined in the 590 standard. All spreading restrictions are marked on the maps contained in Tab 4 and 5. They need to be followed to minimize the risk of a runoff event.

Soil Tests
Most soil tests are current and can be found in Tab 8 of the plan. For fields without soil tests, a made up sample of 101ppm P was entered into SNAP-Plus. Once real soil sample data is collected it will be entered into SNAP-Plus. All fields, except 2-5, should be soil sampled in the spring of 2017.

Conservation Plan
The SNAP-Plus nutrient management planning software was used to assess the soil loss for each field contained in this NMP. The Snap-Plus Field Data and 590 Assessment Plan in Tab 11 shows the assumed rotation and estimated soil loss levels for each field contained in this NMP. Based on the soil loss assessments

in the SNAP-Plus program all fields are currently meeting tolerable soil loss requirements.

Areas known to have concentrated flow are left in permanent vegetation or have already been properly protected with established grassed waterways. Fields will be continually monitored for areas of erosion or concentrated flow. If problems are discovered, conservation practices to stop the erosion should be discussed with the District Conservationist at the NRCS Office for that particular county.

Record Keeping

As part of this NMP, a record keeping system has been developed and is contained in Tab 12 of this plan.

Plan Updates

The Farm will continue to update the NMP annually to remain in compliance with all rules and regulations adopted by the NRCS, State of Wisconsin, and Sheboygan County. All nutrient applications will be entered into the SNAP-Plus program on a continual basis throughout the year.

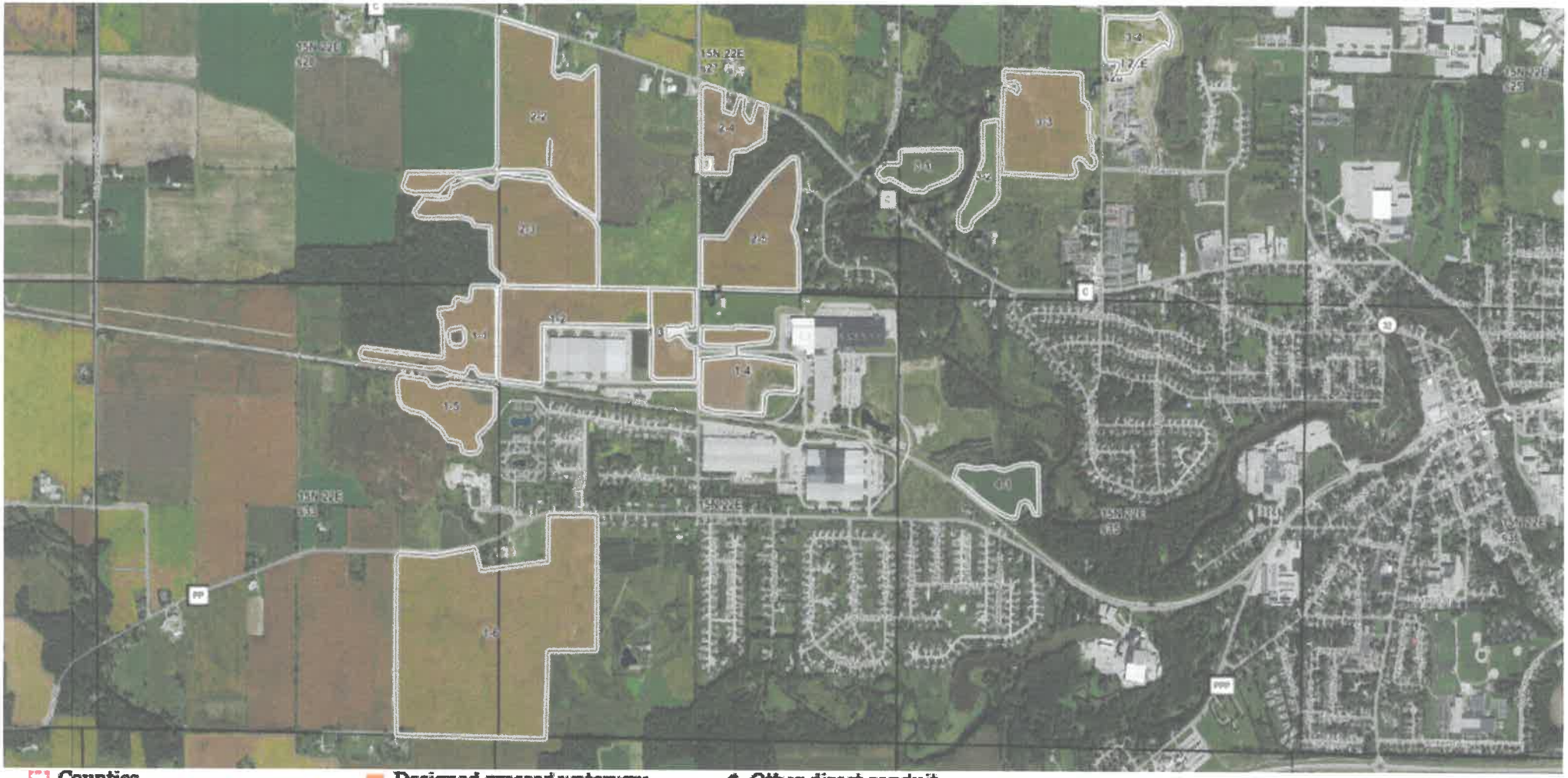
Prepared By:
Nicholas Guilette CCA 34684

Gary Bimmel Overview

Farm Name: Gary Bimmel

N

Map generated on: 2/6/2017 SnapMap Version: 16.0, Crop year: n/a



- Counties
- Township/Range
- Roads
- Fields
- Tile lines
- Not farmed
- Grass filter area
- Vegetated buffer
- Water
- Sinkhole/other karst feature
- Other
- Designed grassed waterway
- Permanent vegetated channel
- Unvegetated ephemeral channel
- Drainage ditch
- Gully
- Drinking Well
- Well
- Irrigation Well
- Sinkhole
- Non-metallic mine
- Fractured bedrock at surface
- Other direct conduit
- Tile outlet
- Tile inlet
- County Defined Karst Features

Field ID Map 1

Farm Name: Gary Bimmel

N

Map generated on: 2/6/2017 SnapMap Version: 16.0, Crop year: n/a

- Counties
- Township/Range
- Roads
- Fields
- Tile lines
- Not farmed
- Grass filter area
- Vegetated buffer
- Water
- Sinkhole/other karst feature
- Other
- Designed grassed waterway
- Permanent vegetated channel
- Unvegetated ephemeral channel
- Drainage ditch
- Gully
- Drinking Well
- Well
- Irrigation Well
- Sinkhole
- Non-metallic mine
- Fractured bedrock at surface
- Other direct conduit
- Tile outlet
- Tile inlet
- County Defined Karst Features

Field ID Map 2

Farm Name: Gary Bimmel

N

Map generated on: 2/6/2017 SnapMap Version: 16.0, Crop year: n/a

- Counties
- Township/Range
- Roads
- Fields
- Tile lines
- Not farmed
- Grass filter area
- Vegetated buffer
- Water
- Sinkhole/other karst feature
- Other
- Designed grassed waterway
- Permanent vegetated channel
- Unvegetated ephemeral channel
- Drainage ditch
- Gully
- Drinking Well
- Well
- Irrigation Well
- Sinkhole
- Non-metallic mine
- Fractured bedrock at surface
- Other direct conduit
- Tile outlet
- Tile inlet
- County Defined Karst Features

Field ID Map 3

Farm Name: Gary Bimmel

Map generated on: 2/6/2017 SnapMap Version: 16.0, Crop year: n/a

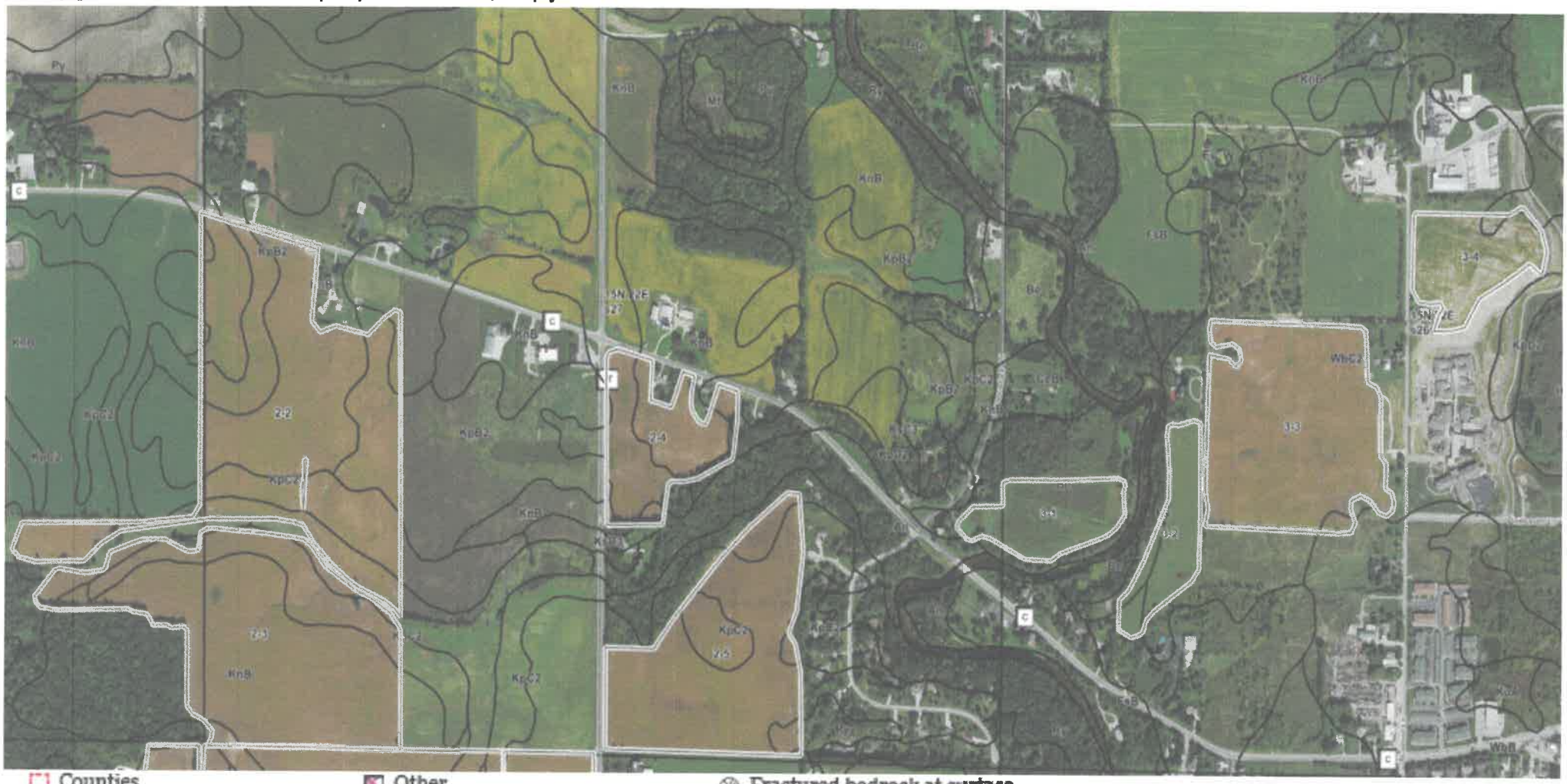
- Counties
- Township/Range
- Roads
- Fields
- Tile lines
- Not farmed
- Grass filter area
- Vegetated buffer
- Water
- Sinkhole/other karst feature
- Other
- Designed grassed waterway
- Permanent vegetated channel
- Unvegetated ephemeral channel
- Drainage ditch
- Gully
- Drinking Well
- Well
- Irrigation Well
- Sinkhole
- Non-metallic mine
- Fractured bedrock at surface
- Other direct conduit
- Tile outlet
- Tile inlet
- County Defined Karst Features

Soils Map 1

Farm Name: Gary Bimmel

N

Map generated on: 2/6/2017 SnapMap Version: 16.0, Crop year: n/a



- Counties
- Township/Range
- Roads
- Soils
- Fields
- Tile lines
- Not farmed
- Grass filter area
- Vegetated buffer
- Water
- Sinkhole/other karst feature
- Other
- Designed grassed waterway
- Permanent vegetated channel
- Unvegetated ephemeral channel
- Drainage ditch
- Gully
- Drinking Well
- Well
- Irrigation Well
- Sinkhole
- Non-metallic mine
- Fractured bedrock at surface
- Other direct conduit
- Tile outlet
- Tile inlet
- County Defined Karst Features

Soils Map 2

Farm Name: Gary Bimmel

N

Map generated on: 2/6/2017 SnapMap Version: 16.0, Crop year: n/a

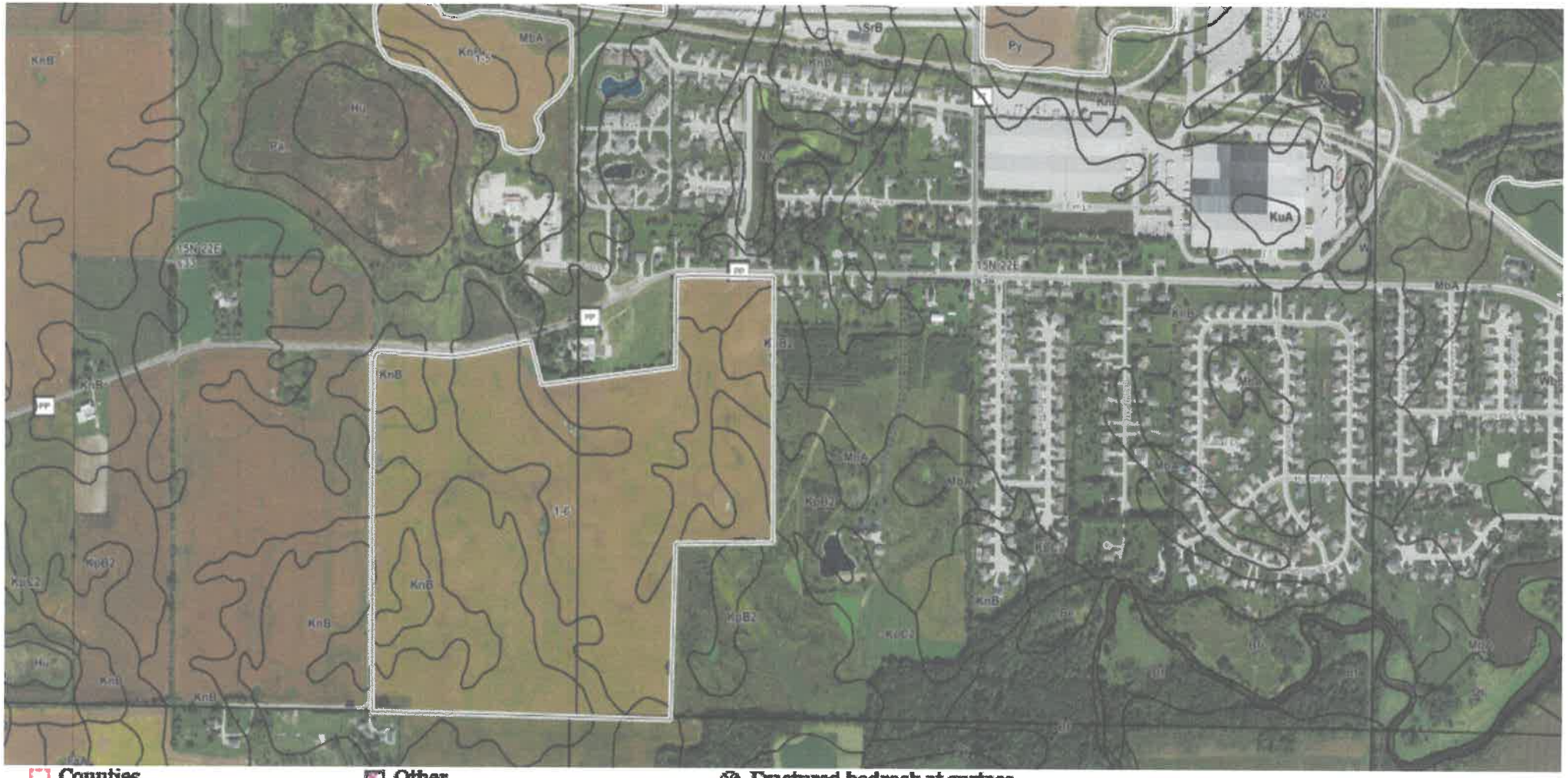
- Counties
- Township/Range
- Roads
- Soils
- Fields
- Tile lines
- Not farmed
- Grass filter area
- Vegetated buffer
- Water
- Sinkhole/other karst feature
- Other
- Designed grassed waterway
- Permanent vegetated channel
- Unvegetated ephemeral channel
- Drainage ditch
- Gully
- Drinking Well
- Well
- Irrigation Well
- Sinkhole
- Non-metallic mine
- Fractured bedrock at surface
- Other direct conduit
- Tile outlet
- Tile inlet
- County Defined Karst Features

Soils Map 3

Farm Name: Gary Bimmel

N

Map generated on: 2/6/2017 SnapMap Version: 16.0, Crop year: n/a


KnB
MbA
KnB2
KuA
Py
SrB
KnB
KuB2
KuC2
KpB2
KuC2
KnB
KnB
KnB

Map Unit Legend

Sheboygan County, Wisconsin

Map symbol	Map unit name
Ag	Adrian muck
Ak	Adrian-Granby-Oakville complex
Am	Alluvial land
An	Alluvial land, wet
Ba	Barry silt loam
Bd	Beaches, sandy
Be	Bellevue silt loam
Bf	Bellevue fine sandy loam, sandy subsoil variant
Bk	Boots muck
BmB	Boyer loamy sand, 2 to 6 percent slopes
BmC2	Boyer loamy sand, 6 to 12 percent slopes, eroded
CeA	Casco loam, 0 to 2 percent slopes
CeB	Casco loam, 2 to 6 percent slopes
CeC2	Casco loam, 6 to 12 percent slopes, eroded
CrC	Casco-Rodman complex, 6 to 12 percent slopes
CrD2	Casco-Rodman complex, 12 to 20 percent slopes, eroded
CrE	Casco-Rodman complex, 20 to 30 percent slopes
CrF	Casco-Rodman complex, 30 to 45 percent slopes
Cw	Colwood silt loam
Cx	Cut and fill land, sandy and gravelly
Cy	Cut and fill land, loamy
Cz	Cut and fill land, clayey
Dn	Dune land
Ed	Edwards muck
Ev	Elvers silt loam
FaA	Fabius loam, 0 to 3 percent slopes
FsA	Fox silt loam, 0 to 2 percent slopes
FsB	Fox silt loam, 2 to 6 percent slopes
FsC2	Fox silt loam, 6 to 12 percent slopes, eroded
Gb	Granby loamy fine sand
Gg	Granby silt loam, gravelly variant
Gp	Gravel pit
HeA	Hebron loam, 0 to 2 percent slopes
HeB	Hebron loam, 2 to 6 percent slopes
HfA	Hebron sandy loam, sandy subsoil variant, 0 to 2 percent slopes
HfB	Hebron sandy loam, sandy subsoil variant, 2 to 6 percent slopes
HmB2	Hochheim silt loam, 2 to 6 percent slopes, eroded
HmC2	Hochheim silt loam, 6 to 12 percent slopes, eroded
HmD2	Hochheim silt loam, 12 to 20 percent slopes, eroded
HmE	Hochheim silt loam, 20 to 30 percent slopes
HsC2	Hochheim-Casco-Sisson complex, 6 to 12 percent slopes, eroded
HsD2	Hochheim-Casco-Sisson complex, 12 to 20 percent slopes, eroded
HsE	Hochheim-Casco-Sisson complex, 20 to 30 percent slopes
HtB	Hochheim-Knowles silt loams, 1 to 6 percent slopes
Hu	Houghton muck
JuA	Juneau silt loam, 0 to 3 percent slopes
KlA	Kendall silt loam, 0 to 3 percent slopes
KnA	Kewaunee silt loam, 0 to 2 percent slopes
KnB	Kewaunee silt loam, 2 to 6 percent slopes

Map Unit Legend

Sheboygan County, Wisconsin

Map symbol	Map unit name
KpB2	Kewaunee silt clay loam, 2 to 6 percent slopes, eroded
KpC2	Kewaunee silty clay loam, 6 to 12 percent slopes, eroded
KpD2	Kewaunee silty clay loam, 12 to 20 percent slopes, eroded
KsC3	Kewaunee silty clay, 6 to 12 percent slopes, severely eroded
KsD3	Kewaunee silty clay, 12 to 20 percent slopes, severely eroded
KuA	Kibbie silt loam, 0 to 3 percent slopes
LDF	Landfill
LmA	Lamartine silt loam, 0 to 3 percent slopes
Lo	Loamy land, seeped
M-W	Miscellaneous water
Ma	Made land
MbA	Manawa silt loam, 0 to 3 percent slopes
Mf	Marsh
MgA	Martinton silt loam, 0 to 3 percent slopes
MkA	Matherton silt loam, 0 to 3 percent slopes
Mo	Montgomery silty clay loam
MsA	Mosel loam, 0 to 3 percent slopes
Mz	Muskego muck
Na	Navan loam
NnA	Nenno silt loam, 0 to 2 percent slopes
NnB	Nenno silt loam, 2 to 6 percent slopes
OaB	Oakville loamy fine sand, 0 to 6 percent slopes
OaC	Oakville loamy fine sand, 6 to 12 percent slopes
Ot	Otter silt loam
Pa	Palms muck
Ph	Pella silt loam
Py	Poygan silty clay loam
Ry	Rough broken land
ScA	St. Charles silt loam, 0 to 2 percent slopes
ScB	St. Charles silt loam, 2 to 6 percent slopes
ShA	Saylesville silt loam, 0 to 2 percent slopes
ShB	Saylesville silt loam, 2 to 6 percent slopes
SkC2	Saylesville silty clay loam, 6 to 12 percent slopes, eroded
Sm	Sebewa silt loam
SrA	Sisson very fine sandy loam, 0 to 2 percent slopes
SrB	Sisson very fine sandy loam, 2 to 6 percent slopes
SrC2	Sisson very fine sandy loam, 6 to 12 percent slopes, eroded
Sw	Stony land, wet
ThA	Theresa silt loam, 0 to 2 percent slopes
ThB	Theresa silt loam, 2 to 6 percent slopes
ThC2	Theresa silt loam, 6 to 12 percent slopes, eroded
W	Water
Wa	Wasepi sandy loam
WbA	Waymor silt loam, 0 to 2 percent slopes
WbB	Waymor silt loam, 2 to 6 percent slopes
WbC2	Waymor silt loam, 4 to 12 percent slopes, eroded
We	Willette muck
YhA	Yahara very fine sandy loam, 0 to 3 percent slopes
ZuA	Zurich silt loam, 0 to 2 percent slopes

Map Unit Legend

Sheboygan County, Wisconsin

Map symbol	Map unit name
ZuB	Zurich silt loam, 2 to 6 percent slopes

SnapPlus Spreading Plan Report

Crop Year	**2017**
Reported For	**Gary Bimmel**
Printed	**2017-02-08**
Plan Completion/Update Date	**2001-01-01**
SnapPlus Version 16.3 built on 2016-10-31	
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Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

Nutrient Source Summary for 2017

No Sources Found

Manure Applications

No Manure Apps Found

Fertilizer Source Summary

Fertilizer Name	Form	N%	P2O5%	K2O %	S%	Mg%	Ca%	Total Applied
Diammonium phosphate (DAP)	Solid	18	46	0	0	0	0	53,723 lb
Potassium chloride	Solid	0	0	61	0	0	0	82,948 lb

Fertilizer Applications

411.4 total acres reported

Field Name	Acres	Field Slope %	N Res	Prior Crop	Planned Crop	Analysis	Surface	Incorp	Subsurface	Rate	Total Amount
1-1	18.1	4	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	175	3,168
1-1	18.1	4	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	225	4,073
1-2	29.4	4	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	50	1,470
1-2	29.4	4	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	200	5,880
1-4	20.8	4	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	150	3,120

Field Name	Acres	Field Slope %	N Res	Prior Crop	Planned Crop	Analysis	Surface	Incorp	Subsurface	Rate	Total Amount
1-5	16	4	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	175	2,800
1-5	16	4	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	225	3,600
1-6	119.4	4		Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	175	20,895
1-6	119.4	4		Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	200	23,880
2-2	53.2	9		Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	175	9,310
2-2	53.2	9		Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	225	11,970
2-3	43.9	9		Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	50	2,195
2-3	43.9	9		Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	200	8,780
2-4	13.2	4		Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	50	660
2-4	13.2	4		Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	200	2,640
2-5	30.1	9	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	50	1,505
2-5	30.1	9	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	150	4,515
3-1	8.7	1		Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	150	1,305
3-2	7.6	9		Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	200	1,520
3-2	7.6	9		Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	225	1,710
3-3	30.3	8		Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	200	6,060
3-3	30.3	8		Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	225	6,818
3-4	9.9	8	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	200	1,980
3-4	9.9	8	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	225	2,228
4-1	10.8	9		Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	200	2,160
4-1	10.8	9		Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	225	2,430

Lime Applications

No Lime Apps Found

SnapPlus Spreading Plan Report

Crop Year	**2015**
Reported For	**Gary Bimmel**
Printed	**2017-02-08**
Plan Completion/Update Date	**2001-01-01**
SnapPlus Version 16.3 built on 2016-10-31	
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Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

Nutrient Source Summary for 2015

No Sources Found

Manure Applications

No Manure Apps Found

Fertilizer Source Summary

Fertilizer Name	Form	N%	P2O5%	K2O %	S%	Mg%	Ca%	Total Applied
Diammonium phosphate (DAP)	Solid	18	46	0	0	0	0	53,723 lb
Potassium chloride	Solid	0	0	61	0	0	0	83,868 lb

Fertilizer Applications

424.6 total acres reported

Field Name	Acres	Field Slope %	N Res	Prior Crop	Planned Crop	Analysis	Surface	Incorp	Subsurface	Rate	Total Amount
1-1	18.1	4	W		Soybeans 7-10 inch row	18-46-0	Spring	-	-	175	3,168
1-1	18.1	4	W		Soybeans 7-10 inch row	0-0-61	Spring	-	-	225	4,073
1-2	29.4	4	W		Soybeans 7-10 inch row	18-46-0	Spring	-	-	50	1,470
1-2	29.4	4	W		Soybeans 7-10 inch row	0-0-61	Spring	-	-	200	5,880
1-3	13.2	4			Soybeans 7-10 inch row	0-0-61	Spring	-	-	100	1,320

Field Name	Acres	Field Slope %	N Res	Prior Crop	Planned Crop	Analysis	Surface	Incorp	Subsurface	Rate	Total Amount
1-4	20.8	4	W		Soybeans 7-10 inch row	0-0-61	Spring	-	-	150	3,120
1-5	16	4	W		Soybeans 7-10 inch row	18-46-0	Spring	-	-	175	2,800
1-5	16	4	W		Soybeans 7-10 inch row	0-0-61	Spring	-	-	200	3,200
1-6	119.4	4			Soybeans 7-10 inch row	18-46-0	Spring	-	-	175	20,895
1-6	119.4	4			Soybeans 7-10 inch row	0-0-61	Spring	-	-	200	23,880
2-2	53.2	9			Soybeans 7-10 inch row	18-46-0	Spring	-	-	175	9,310
2-2	53.2	9			Soybeans 7-10 inch row	0-0-61	Spring	-	-	225	11,970
2-3	43.9	9			Soybeans 7-10 inch row	18-46-0	Spring	-	-	50	2,195
2-3	43.9	9			Soybeans 7-10 inch row	0-0-61	Spring	-	-	200	8,780
2-4	13.2	4			Soybeans 7-10 inch row	18-46-0	Spring	-	-	50	660
2-4	13.2	4			Soybeans 7-10 inch row	0-0-61	Spring	-	-	200	2,640
2-5	30.1	9	W		Soybeans 7-10 inch row	18-46-0	Spring	-	-	50	1,505
2-5	30.1	9	W		Soybeans 7-10 inch row	0-0-61	Spring	-	-	150	4,515
3-1	8.7	1			Soybeans 7-10 inch row	0-0-61	Spring	-	-	150	1,305
3-2	7.6	9			Soybeans 7-10 inch row	18-46-0	Spring	-	-	200	1,520
3-2	7.6	9			Soybeans 7-10 inch row	0-0-61	Spring	-	-	225	1,710
3-3	30.3	8			Soybeans 7-10 inch row	18-46-0	Spring	-	-	200	6,060
3-3	30.3	8			Soybeans 7-10 inch row	0-0-61	Spring	-	-	225	6,818
3-4	9.9	8	W		Soybeans 7-10 inch row	18-46-0	Spring	-	-	200	1,980
3-4	9.9	8	W		Soybeans 7-10 inch row	0-0-61	Spring	-	-	225	2,228
4-1	10.8	9			Soybeans 7-10 inch row	18-46-0	Spring	-	-	200	2,160
4-1	10.8	9			Soybeans 7-10 inch row	0-0-61	Spring	-	-	225	2,430

Lime Applications

No Lime Apps Found

SnapPlus Spreading Plan Report

Crop Year	**2016**
Reported For	**Gary Bimmel**
Printed	**2017-02-08**
Plan Completion/Update Date	**2001-01-01**
SnapPlus Version 16.3 built on 2016-10-31	
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Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

Nutrient Source Summary for 2016

No Sources Found

Manure Applications

No Manure Apps Found

Fertilizer Source Summary

Fertilizer Name	Form	N%	P2O5%	K2O %	S%	Mg%	Ca%	Total Applied
Diammonium phosphate (DAP)	Solid	18	46	0	0	0	0	53,723 lb
Potassium chloride	Solid	0	0	61	0	0	0	80,375 lb

Fertilizer Applications

424.6 total acres reported

Field Name	Acres	Field Slope %	N Res	Prior Crop	Planned Crop	Analysis	Surface	Incorp	Subsurface	Rate	Total Amount
1-1	18.1	4	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	175	3,168
1-1	18.1	4	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	225	4,073
1-2	29.4	4	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	50	1,470
1-2	29.4	4	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	200	5,880
1-3	13.2	4		Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	100	1,320

Field Name	Acres	Field Slope %	N Res	Prior Crop	Planned Crop	Analysis	Surface	Incorp	Subsurface	Rate	Total Amount
1-4	20.8	4	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	150	3,120
1-5	16	4	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	175	2,800
1-5	16	4	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	225	3,600
1-6	119.4	4		Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	175	20,895
1-6	119.4	4		Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	200	23,880
2-2	53.2	9		Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	175	9,310
2-2	53.2	9		Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	200	10,640
2-3	43.9	9		Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	50	2,195
2-3	43.9	9		Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	175	7,683
2-4	13.2	4		Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	50	660
2-4	13.2	4		Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	200	2,640
2-5	30.1	9	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	50	1,505
2-5	30.1	9	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	150	4,515
3-1	8.7	1		Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	150	1,305
3-2	7.6	9		Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	200	1,520
3-2	7.6	9		Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	200	1,520
3-3	30.3	8		Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	200	6,060
3-3	30.3	8		Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	200	6,060
3-4	9.9	8	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	200	1,980
3-4	9.9	8	W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	200	1,980
4-1	10.8	9		Soybeans 7-10 inch row	Soybeans 7-10 inch row	18-46-0	Spring	-	-	200	2,160
4-1	10.8	9		Soybeans 7-10 inch row	Soybeans 7-10 inch row	0-0-61	Spring	-	-	200	2,160

Lime Applications

No Lime Apps Found

2005 NUTRIENT MANAGEMENT STANDARD 590 SUMMARY

Updated February 2007

The 590 nutrient management standard contains criteria for surface and groundwater protection that manages the amount and timing of all nutrient sources. These plans are annual and based on soil tests and UW soil fertility recommendations. These plans must credit nitrogen from legumes for the first and second year [A.1.h.], N, P, and K from manure and fertilizer – against the soil test recommendations for the crops to be grown.[A.1.] Available nitrogen from all sources shall not exceed the annual N requirement of non-legume crops consistent with UWEX Publication A2809, or the annual N uptake by legume crops.[A.f.] Annual P and K nutrient recommendations may be combined into a single application that does not exceed the total nutrient recommendation for the rotation except when manure is applied using either the Phosphorus Index, or soil test phosphorus management. [A.d.]

Phrases shown in [brackets] are the requirement's location in the 590 standard.

What are some of the nutrient application restrictions or setbacks in the 590 standard?

- Manures, organic byproducts, and fertilizers shall not run off the field during application. [A. 1. k.]
- Nutrients shall not be spread on:
  Surface water, established concentrated flow channels or non-harvested vegetative buffers, a non-farmed wetland, sinkhole, nonmetallic mine, or well. [A. 2. a.(1.)(2.)]

  Areas within 50 feet of a drinking water well shall not receive mechanical applications of manure. [A. 2. a.(3.)]

  Areas contributing runoff within 200 feet up slope of direct conduits to groundwater such as a well, sinkhole, fractured bedrock at the surface, tile inlet or nonmetallic mine unless the nutrients are effectively incorporated within 72 hours. [A. 2. a.(4.)]

  Land where vegetation is not removed unless necessary in an emergency situation. [A. 2. a.(5.)]

  Fields eroding more than tolerable soil loss (T) levels over the crop rotation. [A. 2. a.(6.)]

- When frozen or snow-covered soils prevent effective incorporation at the time of application and the nutrient application is not prohibited, implement the following:

  Do not apply nutrients within the 1,000 feet of lakes and ponds or 300 feet of perennial streams (SWQMA) unless manure is deposited through winter gleaning of plant residue. Where winter gleaning occurs, calculate manure nutrients applied and do not exceed the N and P requirements of this standard. [A. 2. b.(1.)]

  Do not apply nutrients to locally identified areas delineated in an operator signed and land conservation committee approved conservation plan. These areas contribute runoff to surface water or direct conduits to groundwater as a result of runoff. [A. 2. b.(2.)] [Locally identified areas with winter spreading restrictions must be part of an ordinance to protect public health and safety if used for the Livestock Facility Siting Application under ATCP 51, Wis. Admin. Code.]

  Do not exceed the P removal of the following growing season's crop when applying manure. Limit liquid manure applications to 7000 gallons per acre. The balance of the crop nutrient requirement may be applied the following spring or summer. [A. 2. b.(3.)]

  Do not apply manure on slopes greater than 9% or up to 12% if slopes are contoured farmed. [A. 2. b.(4.)]

  Do not apply N and P in the form of commercial fertilizer except for grass pastures and on winter grains that do not fall within prohibition areas. [A. 2. b.(5.)]

- Nutrient applications on non-frozen soils in a SWQMA, use one or more of the following appropriate practices: 1) Install or maintain permanent vegetative buffers. 2) Maintain 30% crop residue or vegetative cover on the soil surface. 3) Incorporate nutrients within 72 hours leaving adequate residue to meet T. 4) Establish fall cover crops promptly following application. [A. 3. b.(1.)(2.)(3.)(4.)]

In addition to the practices above, unincorporated liquid manure (less than 12% solids) applications on non-frozen soils in a SWQMA will use Table 1 to determine maximum acceptable rates. Sequential applications may be made to meet the desired nutrient additions consistent with this standard. Soils shall be evaluated using Table 1 or waiting a minimum of 7 days prior to subsequent applications. [A. 3. a.]

Table 1.

Max. Unincorporated Liquid Manure Application Rate within a SWQMA on Unsaturated soils			*Allowable Soil Moisture Description for Applications*
Percent Crop Residue or vegetative cover on surface after manure application	*<30%**	*≥30%**	
Fine soil texture *clay, silty clay, silty clay loam, clay loam*	*3,000*	*5,000*	*Easily ribbons out between fingers, has a slick feel.*
Medium soil texture *sandy clay, sandy clay loam, loam, silt loam, silt*	*5,000*	*7,500*	*Forms a ball, is very pliable, slicks readily with clay.*
Coarse soil texture *loamy sand, sandy loam, sand, peat, muck*	*7,000*	*10,000*	*Forms a weak ball, breaks easily.*

More applications may be made to meet the nutrient need as soil conditions become suitable.

- To reduce N losses to groundwater, restricts the majority of crop N applications to the spring on high permeability soils (sands, etc.), soils with less than 20 inches to bedrock, or soils with less than 12 inches to apparent water table or within 1000' of a municipal well, apply criteria in section B., if applicable. [B.]

- To reduce P losses to surface water develop a P management strategy. Where manure, organic byproducts, or fertilizers are applied, avoid building soil test P values when possible beyond the non-responsive soil test range. [C.1.a.] Establish perennial vegetative cover in all areas of concentrated flow resulting in reoccurring gullies. [C.1.b.] Use either the Phosphorus Index, or soil test phosphorus management strategies when manure or organic by-products are applied during the crop rotation. [C.2.]

  Using the Wisconsin phosphorus index (PI) strategy, the planned average PI values for up to an 8 year rotation in each field shall be 6 or lower. P applications to fields with planned average PI value greater than 6 may be made only if additional P is needed according to UWEX soil fertility recommendations. [C.2.a.]

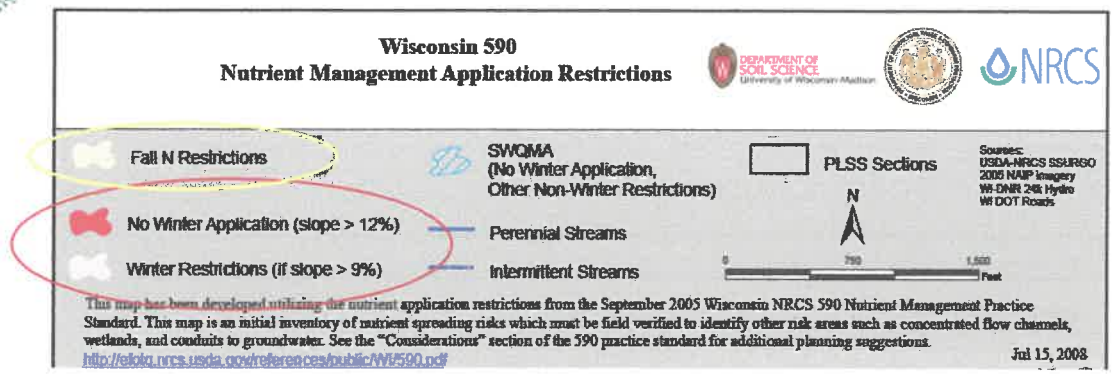
  Using soil test phosphorus management strategies, fields testing from 50-100 ppm soil test P with a P application, shall not exceed total crop P removal for crops to be grown over a maximum of *8 years*. Greater than 100 ppm soil test P, eliminate P applications if possible. Or limit applications to 25% less than the cumulative annual crop removal over a maximum of 8 years. For land with potatoes in the rotation, total P applications shall not exceed crop removal over a maximum of 8 years if soil tests are in the optimum, high, or excessively high range for potatoes. Operations using this strategy shall have a certified conservation plan addressing all soil erosion consistent with the current crops and management or use the erosion assessment tools included in the Phosphorus Index model. Where ephemeral erosion is an identified problem, a minimum of one of the following runoff-reducing practices shall be implemented: 1) Install/maintain contour strips and/or contour buffer strips. 2) Install/maintain Filter Strips along surface waters and concentrated flow channels that empty into surface waters that are within or adjoin the areas where manure will be applied. 3) Maintain greater than 30% crop residue or vegetative cover on the soil surface after planting. 4) Establish fall cover crops. [C.2.b.]

Finding Snap Plus

From this web address http://www.snapplus.net/ you can download the 590 standard and technical note, SNAP Plus, and the user manual. If you have questions, please call either of us.

Sue Porter and Sara Walling
608-224-4605 608-224-4524

Winter/Slope and Fall N Restricted Soils on My Farm



Why do some soil types have a "Fall N Restriction"?

Areas identified in yellow on these maps are believed to be hazardous because of the strong possibility that they are direct conduits to groundwater. These soils fit into at least one of the following categories:

- Highly permeable, allowing water to flow downward very quickly, or
- Have less than 20 inches to bedrock
- Have less than 12 inches to the water table

How does a fall N-restricted soil affect my farm management?

For fields containing an N-restricted soil type, the general rule of thumb is to restrict the majority of crop N applications to the spring. The following restrictions also apply and must be followed:

- **Fall application of commercial N to these soils is prohibited,** except for establishment of fall-seeded crops, in which case applications may not exceed 30 lbs of available N/acre.
- **Manure-N restrictions:**
  - When manure is fall-applied and soil temperatures are higher than 50° F:
    - use a nitrification inhibitor with liquid manure and limit rate to 120 lb N/acre, or
    - apply after Sept. 15 and limit rate to 90 lb N/acre, or
    - apply to perennial or fall-seeded crops and limit rate to 120 lb N/acre or crop N need, whichever is less.
  - When manure is fall-applied and soil temperatures are lower than 50° F, limit the application rate to 120 lb N/acre or the crop's N need, whichever is less.
- **On irrigated fields:**
  - split N applications, applying the majority of N after crop establishment, or
  - use a nitrification inhibitor with ammonium forms of N.

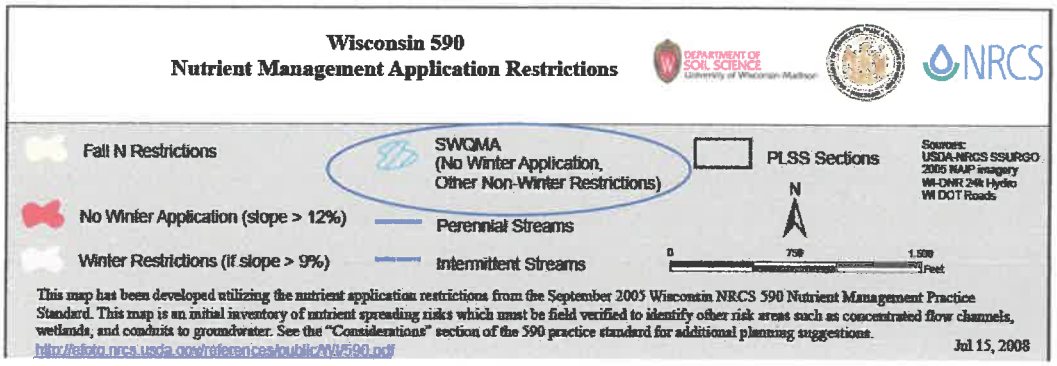
Why do some soils have a No Winter Application restriction?

Winter applications of nutrients are prohibited on slopes greater than 12% due to high risk of erosion and nutrient losses (unless effective incorporation can occur at the time of application). Winter conditions are defined as having either frozen and/or snow covered soil. Areas that have been identified as having slopes greater than 12% are depicted in red on these maps.

What does it mean to have a soil labeled with "Winter Restrictions (if slope > 9%)"?

The 590 Nutrient Management Standard restricts manure applications on slopes >9% (unless it is contour plowed, in which case manure applications can be made on slopes up to 12%). Many areas in Wisconsin have been mapped as having slopes between 6-12%; these soils are depicted in pink on the 590 NM Application Restriction maps. Fields labeled with this (pink) restriction must be checked to determine their actual slope.

SWQMA Areas on My Farm



What is a SWQMA?

A Surface Water Quality Management Area, or SWQMA, is defined as the area within 1,000 feet of lakes and ponds and within 300 feet of perennial rivers and streams. These areas are given special consideration due to the higher likelihood of soil and nutrients applied to these areas entering and polluting the water body.

How does a SWQMA designation affect how I apply nutrients to my fields?

Nutrient application restrictions within a SWQMA are different for winter and other parts of the year.

Winter:

Nutrient applications are prohibited on frozen and/or snow-covered soils in SWQMAs (fields within 1,000 ft of lakes/ponds, or within 300 ft of perennial streams).

Non-winter:

Nutrient applications on unfrozen/non-snow covered ground in SWQMAs are restricted in the following ways:

- Nutrient applications must be accompanied by at least one of the following:
  - establishment of permanent vegetative buffers
  - maintenance of greater than 30% residue or vegetative cover
  - incorporation of nutrients within 3 days
  - establishment of cover crops after application
- Unincorporated liquid manure application rates are restricted based on soil type and soil moisture.
- Maximum acceptable rates for unincorporated liquid (less than 12% solids) manure applications are shown below. If these rates are not enough to meet the desired nutrient application rate (consistent with the 590 standard), you can may sequential applications. Wait at least 7 days or use the "allowable soil moisture description" below to make sure that the soil is dry enough for another application.

Max. Unincorporated Liquid Manure Application Rate within a SWQMA on Unsaturated soils			***Allowable Soil Moisture Description for Applications***
Percent crop residue or vegetative cover on surface after manure application	***< 30%****	***≥ 30%****	
Fine soil texture *clay, silty clay, silty clay loam, clay loam*	*3,000*	*5,000*	*Easily ribbons out between fingers, has a slick feel.*
Medium soil texture *sandy clay, sandy clay loam, loam, silt loam, silt*	*5,000*	*7,500*	*Forms a ball, is very pliable, slicks readily with clay.*
Coarse soil texture *loamy sand, sandy loam, sand, peat, muck*	*7,000*	*10,000*	*Forms a weak ball, breaks easily.*

For more information about Nutrient Management and the NRCS 590 Nutrient Management Standard, please visit:
http://www.datcp.state.wi.us/arm/agriculture/land-water/conservation/nutrient-mngmt/planning.jsp

Spreading Restrictions Map 1

Farm Name: Gary Bimmel

Map generated on: 2/6/2017 SnapMap Version: 16.0, Crop year: n/a

- DNR Wetland
- Winter Restriction if Slope > 9%
- No Winter App. Slope > 12%
- 590 SWQMA 300FT
- SWQMA 1000FT
- Fall N Restrictions
- Perennial Streams
- Intermittent Streams
- Waterbodies
- Counties
- Township/Range
- Roads
- Fields
- Tile lines
- Not farmed
- Grass filter area
- Vegetated buffer
- Water
- Sinkhole/other karst feature
- Other
- Designed grassed waterway
- Permanent vegetated channel
- Unvegetated ephemeral channel
- Drainage ditch
- Gully
- Point buffers
- Drinking Well
- Well
- Irrigation Well
- Sinkhole
- Non-metallic mine
- Fractured bedrock at surface
- Other direct conduit
- Tile outlet
- Tile inlet
- County Defined Karst Features

Spreading Restrictions Map 2

Farm Name: Gary Bimmel

N

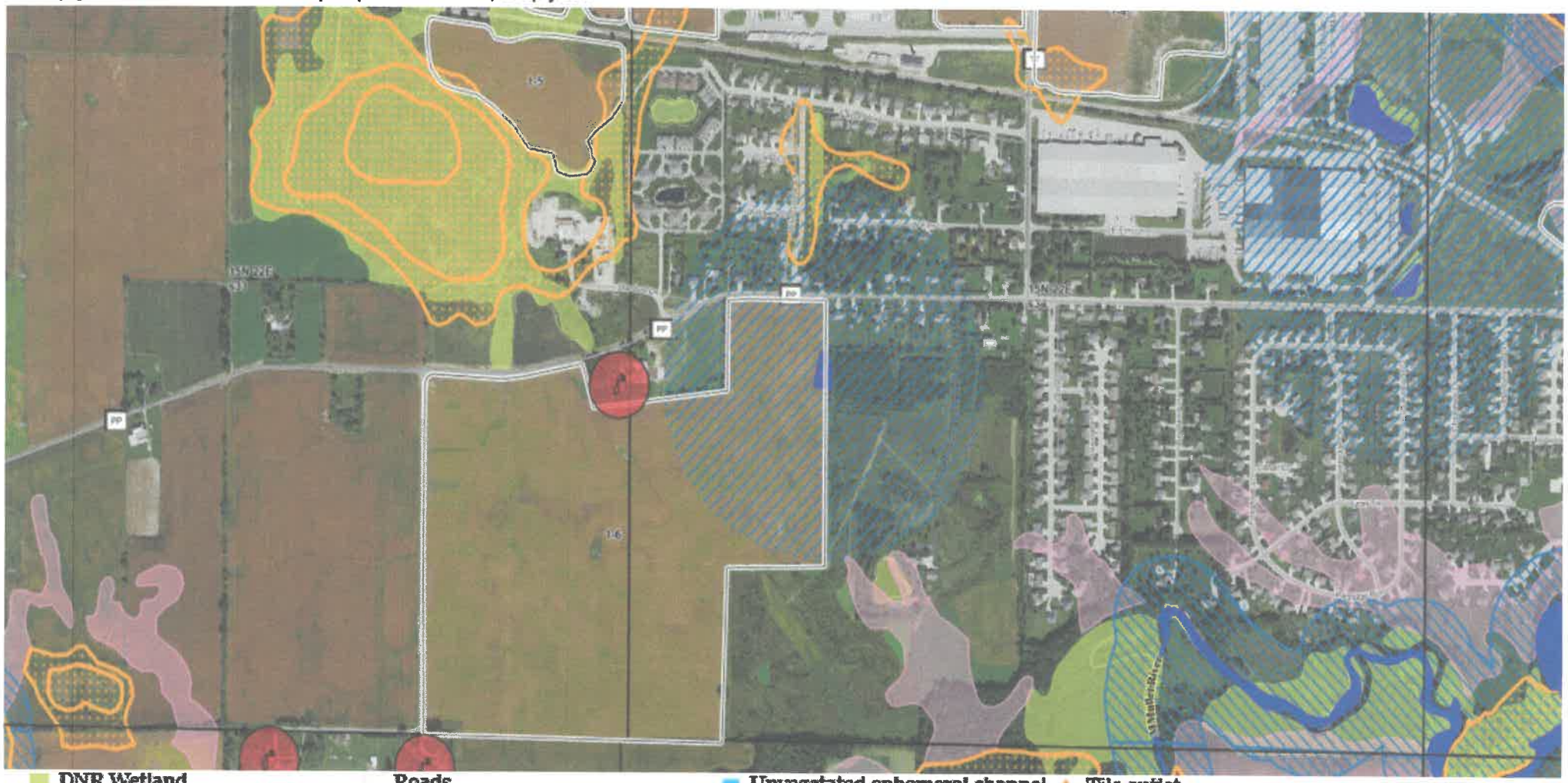
Map generated on: 2/6/2017 SnapMap Version: 16.0, Crop year: n/a

- DNR Wetland
- Winter Restriction if Slope > 9%
- No Winter App. Slope > 12%
- 590 SWQMA 300FT
- SWQMA 1000FT
- Fall N Restrictions
- Perennial Streams
- Intermittent Streams
- Waterbodies
- Counties
- Township/Range
- Roads
- Fields
- Tile lines
- Not farmed
- Grass filter area
- Vegetated buffer
- Water
- Sinkhole/other karst feature
- Other
- Designed grassed waterway
- Permanent vegetated channel
- Unvegetated ephemeral channel
- Drainage ditch
- Gully
- Point buffers
- Drinking Well
- Well
- Irrigation Well
- Sinkhole
- Non-metallic mine
- Fractured bedrock at surface
- Other direct conduit
- Tile outlet
- Tile inlet
- County Defined Karst Features

Spreading Restriction Map 3

Farm Name: Gary Bimmel

Map generated on: 2/6/2017 SnapMap Version: 16.0, Crop year: n/a



- DNR Wetland
- Winter Restriction if Slope > 9%
- No Winter App. Slope > 12%
- 590 SWQMA 300FT
- SWQMA 1000FT
- Fall N Restrictions
- Perennial Streams
- Intermittent Streams
- Waterbodies
- Counties
- Township/Range
- Roads
- Fields
- Tile lines
- Not farmed
- Grass filter area
- Vegetated buffer
- Water
- Sinkhole/other karst feature
- Other
- Designed grassed waterway
- Permanent vegetated channel
- Unvegetated ephemeral channel
- Drainage ditch
- Gully
- Point buffers
- Drinking Well
- Well
- Irrigation Well
- Sinkhole
- Non-metallic mine
- Fractured bedrock at surface
- Other direct conduit
- Tile outlet
- Tile inlet
- County Defined Karst Features

Tab 5

Winter spreading restrictions are identified on the spreading restriction maps included in Tab 4.

SnapPlus Animal Units Calculator Report

Crop Year	**2017**
Reported For	Gary Bimmel
Printed	2017-02-06
Plan Completion/Update Date	2001-01-01

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Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

Animal Type		**I. Mixed Animal Units (current NR 243 equivalencies)**			**II. Non-Mixed Animal Units (federal equivalencies)**		
		b. Equiv. factor	c. Number of Animals	d. Equivalent Animal Units	e. Equiv. factor	f. Number of Animals	g. Equivalent Animal Units
Example- Broilers (non-liquid manure):		0.005	150,000	750	0.008	150,000	1,200
					Fed. numbers in this column comply with 40 CFRs. 122.23		
Swine	Boars (each)	0.5	0	0	0.4	0	0
Chickens	Broilers/Pullets (each)-non-liquid system	0.005	0	0	0.008	0	0
Beef	Bulls (each)	1.4	0	0	1	0	0
Dairy Cattle	Dairy/Beef Calves (under 400 lbs)	0.2	0	0	0	0	0
	Milking and Dry Cows	1.4	0	0	1.43	0	0
Ducks	Ducks (each)-non-liquid system	0.01	0	0	0.0333	0	0
	Ducks (each)-liquid system	0.2	0	0	0.2	0	0
Other	Goats (each)	0.1	0	0	0.1	0	0
Dairy Cattle	Heifers (800 to 1200 lbs)	1.1	0	0	1	0	0
	Heifers (400 to 800 lbs)	0.6	0	0	1	0	0
Other	Horses (each)	2	0	0	2	0	0
Chickens	Layers (each)-non-liquid system	0.01	0	0	0.0123	0	0
	Layers or Broilers-liquid system	0.033	0	0	0.0333	0	0
Swine	Pigs (Up to 55 lbs)	0.1	0	0	0.1	0	0
	Pigs (55 lbs to market)	0.4	0	0	0.4	0	0
Other	Sheep (each)	0.1	0	0	0.1	0	0
Swine	Sows (each)	0.4	0	0	0.4	0	0
Beef	Steers or Cows (400 lbs to market)	1	0	0	1	0	0
Other	Turkeys (each)	0.018	0	0	0.018	0	0
Beef	Veal Calves (each)	0.5	0	0	1	0	0
Total	Animal Units		Mixed AU=	0		Non-Mixed AU=	0

SnapPlus Manure Production Estimator Report

Crop Year	2017
Reported For	Gary Bimmel
Printed	2017-02-06
Plan Completion/Update Date	2001-01-01

SnapPlus Version 16.3 built on 2016-10-31

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Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

Nutrient Source Summary for 2017

No Sources Found

Estimated Livestock Manure Production

No Livestock Found

Manure Storage

No Storages Found

Spreaders

No Spreaders Found

Manure Sampling Protocol

The following is the manure sampling procedure and labeling protocols that are to be followed each time manure is removed from a sampling point to be land applied. No sample shall be taken when manure is transferred between sampling points.

Manure Sampling Protocol for Liquid Manure

- Manure shall be adequately agitated so that the mixture is uniform before being loaded into the tankers.
- Multiple subsamples will be taken from the manure that is removed from a sampling point.
- The samples shall be commingled into a bucket and thoroughly mixed.
- From this mixture fill a sample container ¾ full to allow room for gas expansion.
- The date and sample point shall be recorded on the lid of the sample container and the appropriate information sheets shall be completed.
- The sample shall be stored in the freezer at the farm office.
- The samples will be submitted to the lab for analysis.

Manure Sampling Protocol for Solid Manure

- Collect manure from a full manure spreader or stack using a small shovel or wear plastic gloves to collect subsamples.
- Collect 5 to 8 subsamples from various locations in the spreader or manure stack. Avoid large pieces or clumps of bedding.
- The subsamples shall be commingled into a bucket and thoroughly mixed.
- From this mixture fill a sample container ¾ full to allow room for gas expansion.
- The date and sample point shall be recorded on the lid of the sample container and the appropriate information sheets shall be completed.
- The sample shall be stored in the freezer at the farm office.
- The samples will be submitted to the lab for analysis.

NOTE: Samples should be completely frozen and mailed early in the week to prevent microbial activity which can rupture the sample container.

Manure Testing Analytical Procedures

- All manure samples will be submitted to an approved laboratory that follows the manure analysis procedures outlined in Wisconsin Administrative Code ATCP 50.50 (8). Approved laboratories must participate in the manure analysis proficiency program administered by the Minnesota Department of Agriculture or a equivalent program administered by the University of Wisconsin Soil Analysis Laboratory.
- Manure analysis must be performed according to the procedures outlined in UWEX Publication A3769 – Recommended Methods of Manure Analysis.

Manure Spreader Calibration

Bill Jokela, UVM Extension Soils Specialist

Getting the most value from the manure on your farm, as well as minimizing potential for water pollution, requires careful management of the manure resource. This means applying manure at the proper time, incorporating the manure as soon as possible, knowing the nutrient content of the manure, and applying manure at the rate needed to meet the crop nutrient needs on each field (in combination with fertilizer). The only way to know what rate of manure you are applying is to calibrate the spreader. Then you can adjust accordingly to apply the desired application rate, based on a nutrient analysis of the manure.

General Approach

An application rate -- whether it is manure, fertilizer, or herbicide -- is defined as the amount of material applied per unit area of land. For manure, it is usually expressed in tons per acre (solid or semi-solid) or gallons per acre (liquid, or slurry), as follows:

Application Rate = Amount Applied (tons, gallons)/Area covered (acres)

So, to calibrate a manure spreader, you need to have reliable estimates of both ***amount applied*** and ***area covered***. There are a number of different ways to estimate each parameter.

Method 1. Based on Single Spreader Load: Solid, Semi-solid, or Liquid

1. Estimate ***amount applied***, or spreader capacity, based on one of following:

   a) Manufacturer's rated spreader capacity
   For full liquid spreaders use rated capacity directly. Adjust to account for less than full capacity, for example, because of foaming or non-level surface. Actual load may typically be 90% of rated capacity. For box type solid or semi-solid spreader, adjust rated capacity according to fullness of load. Be sure to note if rated capacity is "heaped" or "struck (level) load". (Some equipment specifications include both.) If rating is "heaped" capacity, adjust according to Figure 1 for your typical spreader load. If there is any uncertainty about the rated capacity, a more accurate method is to measure actual volume, as in b) below.

   b) Measured volume of spreader
   Measure and calculate volume of spreader in cubic feet (Figure 2). Convert cubic feet to pounds, and then to tons or gallons, based on manure density. (See Manure Conversion box.)

   c) Weigh spread load directly.
   If you have access to scales, weigh spreader full, then subtract spreader weight empty to get weight of manure. Convert to tons or gallons.

Manure Conversions

1 ton = 2000 pounds
1 cubic foot = 7.5 gallons
1 bushel = 1.25 cubic feet
1 gallon = 8.3 pounds
1 cubic foot = 62 pounds (wet) to 55 pounds (dry)*

*Manure density (weight per cubic foot) varies with moisture content, primarily depending on amount of bedding.
For a more accurate estimate, weigh a five-gallon pail of manure, then multiply the weight by 1.5 to get the density in pounds per cubic foot

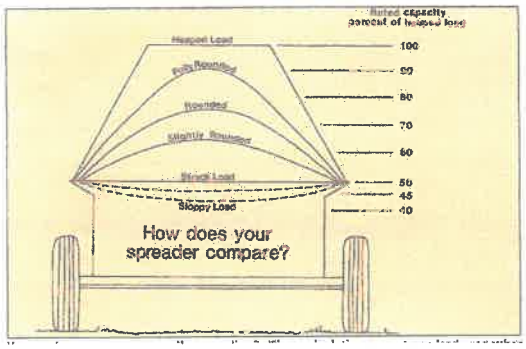


Fig. 1. Box spreader capacity with different types of loading (Way, 1983)

Table 1.2-17. Determining manure spreader capacity.

Spreader capacity, weight basis:

Tons per load = volume x density ÷ 2000

Density varies from 55 to 62 lb/cu ft depending on manure moisture:

dry manure is 55 and liquid manure is 62.

Spreader capacity, volume basis:

100 gal per load = volume ÷ 13.4

Calculate the volumes as follows (see diagrams at right):

Solid or semisolid manure

A. Box-shaped spreader[1] (level load)

Volume = length (l) x width (w) x depth (d)

B. Box-shaped spreader[1] (piled load)

Volume = length (l) x width (w) x [depth (d) + stacking height (h) x 0.8]

C. Flail-type barrel spreader (level load)

Volume = length (l) x depth (d) x depth (d) x 1.6

D. Flail-type barrel spreader (piled load)

Volume = length (l) x depth (d) x 1.6 x [depth (d) + stacking height (h)]

Liquid manure

Box-shaped spreader[1]—same as box-shaped spreader (level load)

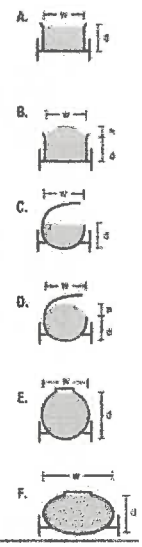
Flail-type barrel spreader—same as flail-type spreader (level load)

E. Tank spreader (round)

Volume = length (l) x tank diameter (d) x tank diameter (d) x 0.8

F. Tank spreader (noncircular)

Volume = length (l) x width (w) x depth (d) x 0.8



[1] For a box spreader with sloping sides, use an average width.

Fig. 2. Determining manure spreader capacity (Beegle, 2003)

2. Estimate ***area covered*** by one spreader load by doing the following:

   a) Measure width of one spreader pass, allowing for any overlap with adjacent passes.
   b) Measure distance traveled to empty spreader (adjusting for distance at beginning and end when spreading a partial rate) by one of the following:
      1) Use measuring wheel or long tape measure
      2) Measure number of tractor tire revolutions:
         (a) Tie cord around rear tire at top.
         (b) Measure distance traveled in exactly one revolution.
         (c) Count number of tire revolutions to empty spreader.
         (d) Distance = Number of revolutions x distance per revolution

c) Calculate area covered by one spreader load:

Spreader width (ft) x Distance (ft)/43,560 sq ft = Area (acres)

3. Calculate manure ***application rate*** by dividing ***amount applied*** by ***area covered***:

Method 2. Application Rate Based on Spreader Loads Applied to a Field: Solid, Semi-solid, or Liquid

1. Determine amount of manure per spreader load by a method in 1 above.
2. Count number of loads applied to field in a uniform application.
3. Determine accurate acreage of field.
4. Calculate manure application rate for field:

Application Rate = (No. loads x tons or gallons per load)/Field acreage

Method 3. Application Rate Based on Plastic Sheet Subsample: Solid or Semi-solid

This method involves measuring the amount of manure spread on a plastic sheet of known area (20 to 40 sq ft is a reasonable size). It is most useful where making an accurate estimate of spreader capacity is difficult, e.g. a heaped box spreader.

1. Cut three plastic sheets of similar size, e.g. 4 ft x 7 ft; 6 ft x 6 ft; 4 ft 8 in x 4 ft 8 in
2. Weigh large bucket (e.g. five gallon) and one plastic sheet on scale.
3. Lay sheets flat in the field some distance apart in the intended path of the manure spreader and hold down with stones or small stakes in the corners. Allow enough distance before the first sheet so that spreader is applying at full rate.
4. Drive tractor and spreader directly over plastic sheets at normal speed, being sure to begin spreading well ahead of first sheet.
5. Check manure-covered sheet to be sure wheel traffic did not shift position of plastic. If plastic has moved, remeasure area covered by plastic (and now manure).
6. Carefully fold manure-covered plastic and place in large bucket.
7. Weigh bucket, plastic, and manure and subtract weight of empty bucket and plastic to obtain weight of manure.
8. Repeat steps e-g for other plastic sheets.
9. Calculate manure application rate for each plastic sheet from Table 1 or use the following formula:

   Application Rate (tons/acre) = (lbs. of manure on sheet x 21.8)/size of sheet (in sq ft)
   Size of sheet (sq ft) = length (ft) x width (ft)
   Note: If the sheet size is 21.8 sq ft, e.g. 4 ft 8 in x 4 ft 8 in (56 inches square or about 4 ft x f ft 6 in), then weight in lbs equals application rate in tons/acre.

10. Average the calculated rates from at least three plastic sheets. If two or more values are similar but one is unusually high or low, average only the similar ones.

Table 1. Manure application rates based on weight of manure on plastic sheets of different sizes.

Weight of Manure	Size of Plastic Sheet		
	4' x 7'	6' x 6'	56" x 56"
lbs	Manure Rate, Tons/Acre		
8	6	5	8
10	8	6	10
12	9	7	12
14	11	8	14
16	12	10	16
18	14	11	18
20	16	12	20
22	17	13	22
24	19	15	24
26	20	16	26
28	22	17	28
30	23	18	30
32	25	19	32
34	26	21	34
36	28	22	36
38	30	23	38
40	31	24	40
42	33	25	42
44	34	27	44
46	36	28	46
48	37	29	48
50	39	30	50

Method 4. Average Application Rate Based on Storage Volume Applied to Fields

This is not a calibration method in the same way as the others described here, but it is a way of estimating the average rate of manure applied to fields after emptying your manure storage. You need to know the capacity of your manure storage or an estimate of the portion applied on a given acreage.

Application Rate = Manure storage emptied (tons or gallons)/Area covered (acres)
If you know storage capacity only in volume (cubic feet), convert to gallons or tons using the conversion factors given earlier.

Adjustment to Obtain Desired Rate

Whichever calibration method is used, you will probably need to adjust the application rate to obtain the rate, or different rates, desired. Do this by changing a combination of tractor speed and spreader control. Then recalibrate the spreader by the same method. When the desired application rate is obtained, record the tractor and spreader settings for future reference. You may need to establish two or more rates for different crop types or varying nutrient needs.

References

Beegle, D. 2003. Penn State Agronomy Guide. p. 39-41. Penn State University. http://agguide.agronomy.psu.edu/PDF03/part1_2_4.pdf

Klausner, S. 1995. Nutrient management: crop production and water quality. Cornell Univ., Ithaca, NY.

Way, W. 1983. Manure Primer. Br. 1339. Univ. of Vermont Extension. Burlington, VT.

Solid Manure Calibration

Tractor/Truck Speed **mph**

Tarp Size **(10 X 10)** **43560 sq. ft/acre**

Tarp Weight Loaded with Manure **lbs x 435.6 equals lbs/acre divided by 2000 = tons/acre**

Procedure is run manure spreader spreading over tarp at set speeds to determine spreading rate

Repeat process three times and average to determine spreading rate

SnapPlus Soil Test Report

Data retrieval failed for the subreport, 'Subreport2',

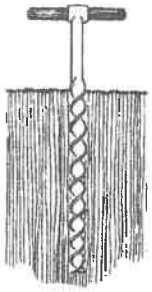
			Predominant					Samples				in ppm			
Field Name	Subfarm	Acres	Soil Map Symbol	Soil Name	Soil Test Date	Soil Test Lab	Lab Number	Rec. #	Actual #	pH	OM%	P	K	S	CEC
1-1		18.1	KnB	KEWAUNEE	2012-11-16	Rock River Lab	152027	**4**	**4**	7.1	2.8	15	47	0	0
1-2		29.4	KnB	KEWAUNEE	2012-11-16	Rock River Lab	152027	**6**	**20**	7.2	2.6	24	80	0	0
1-3		13.2	KnB	KEWAUNEE	2012-11-16	Rock River Lab	152027	**3**	**3**	7.6	2.7	97	172	0	0
1-4		20.8	KnB	KEWAUNEE	2008-02-06	Planning Value		**4**	**1**	7.0	2.8	101	120	0	0
1-5		16	MbA	MANAWA	2012-11-16	Rock River Lab	152027	**3**	**4**	7.5	2.8	13	57	0	0
1-6		119.4	KnB	KEWAUNEE	2012-11-16	Rock River Lab	152027	**24**	**29**	7.3	2.8	15	77	0	0
2-2		53.2	KnB	KEWAUNEE	2012-11-16	Rock River Lab	152027	**11**	**13**	7.3	2.5	13	57	0	0
2-3		43.9	KnB	KEWAUNEE	2012-11-16	Rock River Lab	152027	**9**	**20**	7.2	2.6	24	80	0	0
2-4		13.2	KnB	KEWAUNEE	2012-11-16	Rock River Lab	152027	**3**	**3**	7.5	2.7	21	77	0	0
2-5		30.1	KnB	KEWAUNEE	2013-10-31	Rock River Lab	159431	**6**	**7**	7.3	2.8	21	110	0	0
3-1		8.7	Be	BELLEVUE	2008-02-06	Planning Value		**2**	**1**	7.0	2.8	101	120	0	0
3-2		7.6	WbC2	WAYMOR	2012-11-16	Rock River Lab	152027	**2**	**2**	7.4	2.7	9	50	0	0
3-3		30.3	WbC2	WAYMOR	2012-11-16	Rock River Lab	152027	**6**	**8**	7.4	2.6	6	44	0	0
3-4		9.9	WbC2	WAYMOR	2012-11-16	Rock River Lab	152027	**2**	**2**	7.3	2.6	9	67	0	0
4-1		10.8	KpC2	KEWAUNEE	2012-11-16	Rock River Lab	152027	**2**	**3**	7.4	2.4	8	56	0	0

Crop Year Soil Test Needed

Field Name	Soil Test Date	2017	2018
1-1	2012-11-16	X	
1-2	2012-11-16	X	
1-3	2012-11-16	X	
1-5	2012-11-16	X	
1-6	2012-11-16	X	
2-2	2012-11-16	X	
2-3	2012-11-16	X	
2-4	2012-11-16	X	
2-5	2013-10-31		X
3-2	2012-11-16	X	
3-3	2012-11-16	X	
3-4	2012-11-16	X	
4-1	2012-11-16	X	

Gary Bimmel
Spring 2017 Fields to be soil sampled

Field	Total Acres	Soil Test Date
All fields, except 2-5, need to be sampled in the spring of 2017.	394.5	Fall of 2012 or no previous data was available.
2-5	30.1	Fall of 2013



A2100

Sampling soils for testing

J.B. Peters, K.A. Kelling, and L.G. Bundy

Importance of taking good soil samples

A soil test is the only practical way of telling whether lime and fertilizer are needed. However, if a soil sample does not represent the general soil conditions of the field, the recommendations based on this sample will be useless, or worse, misleading. An acre of soil to a 6-inch depth weighs about 1,000 tons, yet less than 1 ounce of soil is used for each test in the laboratory. Therefore, it is very important that the soil sample is characteristic of the entire field. The following directions will help you collect good soil samples.

When to take soil samples

Take soil samples at any convenient time. Studies examining the effect of sampling time on soil test results suggest that test values for pH, phosphorus (P), and potassium (K) are typically slightly higher in early spring samples than in fall samples. To receive your recommendations early enough to enable you to apply the lime and fertilizer needed, it may be best to sample in the fall. Another benefit of fall testing is that fertilizer prices are more likely to be discounted then. Hayfields can be sampled after any cutting. Regardless of when you sample, it is best to be consistent from one year to the next.

Winter sampling, or sampling when the soil is frozen, is permissible only when it is possible to take a uniform boring or core of soil to the appropriate depth. This may require using a portable power boring tool. Using a pick or spade to remove a few chunks of frozen soil from the surface will give inaccurate results.

Where to take soil samples

If the field is generally uniform, fewer composite samples may be required than for fields with more variation. A composite sample consists of a core or boring taken from at least 10 different places in the area to be sampled.

Avoid sampling areas such as:

- dead furrows or back furrows
- lime, sludge, or manure piles
- animal droppings
- near fences or roads
- rows where fertilizer has been banded
- eroded knolls
- low spots

In general, do not sample any area of a field that varies widely from the rest of the field in color, fertility, slope, texture (sandy, clayey, etc.), drainage, or productivity. If the distinctive area is large enough to receive lime or fertilizer treatments different from the rest of the field, sample it separately. If manure or crop residues are on the surface, push aside these organic materials to keep from including them in the soil sample.

On contour strip fields, sample each strip separately if it is approximately 5 acres or more in size, following the sampling intensity guidelines listed in this publication. Cores from two or three small strips that have identical cropping and management histories may be combined following these same recommended sampling intensity guidelines.

Goals of a soil sampling program

When sampling soils for testing and obtaining fertilizer and lime recommendations, the most common objectives are to

1. obtain samples that accurately represent the field from which they were taken;
2. estimate the amount of nutrients that should be applied to provide the greatest economic return to the grower;
3. provide some estimate of the variation that exists within the field and how the nutrients are distributed spatially; and
4. monitor the changes in nutrient status of the field over time.

The ultimate goal of the fertility program needs to be considered before taking any samples, as that will determine how many are needed and where to sample. For example, if you intend to fertilize the entire field using a single application rate, you would need to collect fewer samples than if you plan to apply variable rates of fertilizer within the field. The second application strategy, known as site-specific management, requires special equipment to change rates of manure, lime, or fertilizer on the go. To select between the sampling strategies, consider analytical costs, field fertilization history, and the likelihood of response to variable fertilization. Each approach is outlined below.

Sampling fields for a single recommendation

With conventional sampling, you will receive a single set of results based on sample averages. The sampling guidelines in table 1 are based on when the field was last tested (more or less than 4 years) and whether the fields were responsive or non-responsive the last time they were tested (if within 4 years). The **responsive** range is considered to be where either soil test P or K levels are in the high (H) category or lower. A **non-responsive** field is one where both soil test P and K levels are in the very high (VH) or excessively high (EH) categories.

To assure accurate representation of the nutrient needs of the field, each sample should be made up of a minimum of 10 cores. Research has shown that taking 10–20 cores provides a more representative sample of the area than when samples are made up of fewer cores. Use a W-shaped sampling pattern (as shown in figure 1) when gathering composite samples. Be sure to thoroughly mix the cores before placing approximately 2 cups in the sample bag.

It is an advantage to submit multiple samples for all fields. When at least three samples are provided, the Wisconsin soil test recommendation program will remove samples that are significantly higher than the field average. This ensures that no part of the field is under-fertilized. Where only one or two samples are submitted for a field, no sample can be discarded, whereas one sample can be discarded if three or four samples are submitted, and up to two samples may be discarded from fields having five or more samples.

Sampling fields for site-specific management

Site-specific management requires a distinct picture of the magnitude and location of soil variability. Sampling soils for site-specific management usually involves taking many more composite samples than sampling for a single recommendation. The global positioning system (GPS) is used to record the geographical coordinates of each sample. This information is used to generate an application map with mathematically derived boundaries between soil test levels. Using variable rate application technology, these fields can be managed more intensively than the conventional approach of one fertilizer and lime rate per field.

When using a site-specific approach to soil sampling, sample handling and testing are similar to the traditional system, but recommendations may vary from one part of the field to another, and these areas must be managed separately to realize the potential advantages of intensive soil sampling.

Several sampling strategies can be used to guide variable-rate fertilizer and lime applications. **Grid sampling** uses a systematic approach that divides the field into squares of approximately equal size (grid cells). The sampling technique used is known as grid-point sampling. A grid-point sample consists of at least 10 cores collected from a small area (10-foot radius) around a geo-referenced point. When using a grid sampling approach, Wisconsin research recommends a sampling strategy based on an unaligned systematic grid (figure 2). Sampling points should be unaligned because sampling in a uniform grid arrangement may lead to biased results if aligned with row patterns. Fields that have soil test P and K levels in the non-responsive categories should be grid-point sampled on a 300-foot grid. Fields that in the past have tested in the responsive categories (interpretive levels of "high" or below) may need to be sampled on a grid no larger than 200 feet. A careful evaluation of the economics of this intensive of a sampling system needs to be done before proceeding.

Table 1.
Recommended sample intensity for "uniform" fields.

Field characteristics	Field size (acres)	Suggested sample number*
Fields tested more than 4 yrs ago and fields testing in the responsive range	all fields	1 sample/ 5 acres
Non-responsive fields tested within past 4 yrs	5–10	2
	11–25	3
	26–40	4
	41–60	5
	61–80	6
	81–100	7

**10 cores/sample minimum.*

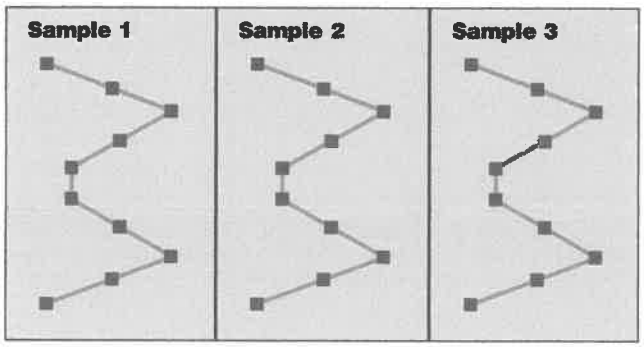


Figure 1. Recommended W-shaped sampling pattern for a 15-acre field. Each sample should be composed of at least 10 cores.

Another approach gaining support among researchers is the **management zone sampling method**, also known as directed or "smart" sampling. The basic concept of this approach is to use various layers of information that have been collected using other precision agricultural technologies such as yield maps, aerial photographs of bare soil or crop canopy, or soil electrical conductivity measurements. Directed sampling evaluates the spatial distribution of several factors that may influence nutrient availability in soil and crop productivity to help define sampling areas with similar characteristics. The grid-point method can be used in management zones with sample points clustered within the zone, rather than being uniformly dispersed in the field. If the results of grid or management zone sampling do not warrant variable-rate application (for example, relatively little between-sample variation), average them to determine the appropriate single-rate treatment.

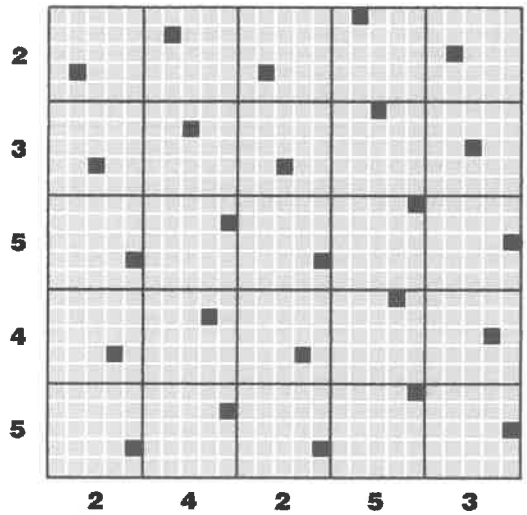
Regardless of the strategy used, soil must be collected from several locations within the defined sampling area. Fertilizer recommendations become increasingly accurate as the number of cores per sample and the number of samples increases. However, the value of that accuracy must be weighed against the economics of greater expense, and the practicality of taking more samples.

How to take soil samples

The following guidelines will help you take full advantage of the soil samples collected and the Wisconsin soil test recommendation program. If the soil sample is to be used in conjunction with cost-sharing programs requiring the use of a Wisconsin certified laboratory, or is being submitted as part of a nutrient management plan, these steps must be followed.

1. **Use a sampling probe or auger to take samples.** You can obtain these tools on loan from most county Extension offices, crop consultants or fertilizer dealers.
2. **Insert the probe or auger into the soil to plow depth or at least 6 inches.** To aid year-to-year comparisons, it is important to take repeated samplings from the same field to exactly the same depth.
3. **Take at least 10 soil cores or borings for each composite sample** and, preferably, at least two composite samples for every field. For non-responsive fields greater than 5 acres in size, obtain, at a minimum, the number of samples specified in table 1. For responsive fields that have not been sampled in the past 4 years, take one composite sample for every 5 acres.
4. **Place the sample (about 2 cups) in a soil sample bag.** Sample bags are available from all soil testing labs.
5. **Identify the bag with your name, field identification, and sample number.**
6. **Record the field and sample location** on an aerial photo or sketch of the farm and retain for your reference.
7. **Fill out the soil information sheet.** The more completely and carefully this sheet is filled out, the better the recommendation will be. Read the instructions on the back side of the sheet. Be sure to include the soil series name for each field. The soil series can be obtained from your Natural Resource Conservation Service (NRCS) farm plan or your country NRCS office.

Figure 2. An example of an unaligned grid pattern for sampling site-specific fields.



What to do with soil samples

The soil samples and a completed soil information sheet can be taken to your county Extension office for forwarding to an approved soil testing laboratory. If this is not convenient, soil samples can be sent directly to the soil testing laboratory or delivered in person. Place the soil information sheet in a separate first-class envelope and attach it to the soil sample container. The soil test report containing test results and lime and fertilizer recommendations are normally returned within 2 weeks.

The University of Wisconsin-Madison, through the Department of Soil Science, operates soil testing laboratories at Madison and Marshfield. You may also use private soil testing laboratories,

some of which are approved for cost-sharing purposes. Your county Extension office can provide you with addresses of Wisconsin Certified Labs, or you can obtain a current list at the UW Soil and Plant Analysis Laboratory web site (http://uwlab.soils.wisc.edu). Fee schedules for the various soil tests at the University of Wisconsin soil testing labs are available from these labs. To have your soils tested at the university laboratories send samples to either:

Soil and Plant Analysis Laboratory
5711 Mineral Point Road
Madison, WI 53705-4453
(608) 262-4364

or

Soil and Forage Analysis Laboratory
8396 Yellowstone Drive
Marshfield, WI 54449-8401
(715) 387-2523

How often to sample

For field crops, sampling the soil once every 3–4 years or once in a rotation is sufficient. Fields that are more susceptible to changes in nutrient levels, such as those with sandy soils, or those used to raise high-value crops such as potatoes should be sampled more frequently.

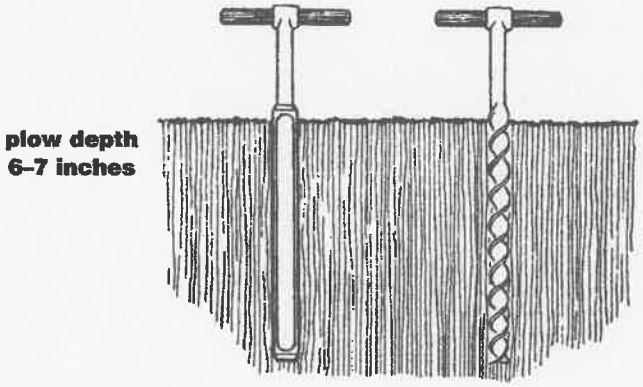
Tillage system considerations when sampling

Moldboard plowing. Sample to the depth of tillage.

Chisel plowing and offset disking. Take soil samples to ¾ of the tillage depth. When possible, take soil samples before spring or fall tillage. Sampling before tillage lets you determine the sampling depth more accurately and you can avoid fertilizer bands applied for the previous crop.

Till-plant and ridge tillage. Sample ridges to the 6-inch depth and furrows (between rows) to a depth of 4 inches. Combine equal numbers of soil cores from ridges and furrows to make up the composite sample.

No-till. Fields that have not been tilled for 5 years or more may develop an acid layer on the surface from the use of nitrogen fertilizer. This acid layer could reduce the effectiveness of triazine herbicides. Unincorporated phosphorus (P) and potassium (K) are also likely to build up in the surface soil. If an acid layer is suspected, take a separate sample to a depth of only 2 inches. When sending the soil to the lab, indicate that the sampling depth was only 2 inches. This sample will be tested for pH only, unless P and K are specifically requested. For fertilizer recommendations, take a separate sample to a depth of 6–7 inches. Fertilizer recommendations require this sampling depth because fertilizer calibration studies are based on plow-depth sampling. Sample between rows to avoid fertilizer bands.



UW Extension

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Emergency Response Plan

Farm Name:	Gary Bimmel								
Owner/Operator:	Gary Bimmel				Home			Cell	(920) 207-7357
Farm Address:	5268 County Road TT, Sheboygan Falls, WI 53085								
Farm Location:	Township:	15N	Range:	22E	Section:	34	County:	Sheboygan	
Driving Directions or Emergency Coordinates:									

In Case of Injury, Fire, or Rescue Emergency, Immediately Implement the Following:

1. Assess the condition of the victim, extent of the emergency (fire, rescue) and call for help.
2. Stabilize the victim, use on-site rescue equipment, evacuate buildings, or begin fire suppression as necessary.
3. Brief emergency responders upon arrival on current status of situation.

In Case of Spill, Leak, or Failure at the Storage Facility, During Transport, or Land Application, Immediately Implement the Following:

1. Stop the source of the leak or spill. For example:
   - Turn off all pumps/valves and clamp hoses or park tractor on hoses to stop the flow of manure.
2. Assess the situation and make appropriate calls for people, equipment, and materials. See contacts below.
   - Notify DNR spill hotline: 1-800-943-0003 (Spill reporting is mandatory by state law.)
   - Call sheriff's office if spilled on public roads or its right-of-ways for traffic control.
   - Clear the road and roadside of spilled material immediately.
3. Contain the spill and prevent spillage from entering surface waters, tile intakes, or waterways.
   - Use a skid loader or tractor with a blade to build dikes to contain or divert the spill or leak.
   - Insert sleeves around tile intakes (or plug/cap intakes) and block down-slope culverts.
   - Use tillage implements to work up the ground ahead of the spill or use absorptive materials.
4. Begin cleanup.
   - Use pumps to recover liquids.
   - Land apply on approved cropland at appropriate rates.
5. Document your actions.

Emergency Contacts	Contact Person (or Company)	Phone Number
Fire/Rescue		911
County Sheriff	Sheboygan County Sheriff's Department (Todd Priebe)	911 or 920-459-3111
Farm Emergency Coordinator	Gary Bimmel	Cell: (920) 207 7357
DNR Hazardous Spill Line		
DNR Permit Contact/Warden		
NMP Specialist (AgSource Laboratories)	Nick Guilette	920-304-6293
Equipment/Supplies	**Contact Person (or Company)**	**Phone Number**
Milking equipment		
Electric Contractor		
Excavation Contractor		
Septic Tank Pumping Truck		
Veterinarian		
Mortality Disposal Contractor		
Local Government Contacts	**Contact Person**	**Phone Number**
Town Chairman		
LCD County Conservationist	Aaron Brault	(920) 459-3060
NRCS District Conservationist	Michael Patin	(920) 467-9917

Be prepared to provide the following information:

- Your name and contact information.
- Farm address, location and other pertinent identification information.
- Nature of emergency (employee injury, fire, discharge of manure or hazardous materials).
- Emergency equipment and personnel that are needed.
- Potential for manure or hazardous materials to reach surface waters or major field drains.
- Current status of containment efforts.
- Location of hazardous/flammable materials and fire suppression equipment, emergency cut off switches or valves.

Site specific instructions:

Field Runoff Emergency and Manure Land Spreading Risk Reduction

Excavation and emergency response equipment available on site:

- Front End Loader Tractor
- Skid steer
- Manure Spreader/Wagon
- High Volume Pump(s)
- Soil Ripper/Chisel Plow
- Bailed Stalks, Straw, Hay
- Earthen Fill
- Other: Trencher, Dozer with Deep Ripper, Backhoe

Unplanned manure runoff from a farm field puts farmers at risk for contaminating surface and ground water. Planning a quick response may reduce potential damage and liability.

Field Runoff Emergency Planning Information

Recognition of potential for runoff event

Watch for up coming periods of rapid snow melt or heavy rainfall on frozen soil on crop fields where manure has been winter spread. Anticipation of runoff events is critical to implementing an effective response.

Locations of emergency fill on the farm

Identify the location(s) of any emergency earthen fill sources available on the farm or notify the excavation contractor to bring fill in.

Identify other sources of material to that can be used to contain runoff including large round/square bales of other sources of bedding, hay or silage.

Planned location of temporary manure containment dikes or other measures:

Identify places where culverts can be temporarily plugged or berms constructed to contain surface run off containing manure.

Field Runoff Emergency Response Actions

1. **Assess the situation and make appropriate calls for assistance.**
2. **Notify DNR spill hotline: 1-800-943-0003**
3. **Use machinery to create cross field channels that will hold back manure. A deep ripper/chisel plow can be used to create channels perpendicular to the land slope to slow manure runoff. NOTE: Prior to implementation assess the potential for cross field channels to deliver manure runoff to subsurface drainage tiles or to impact groundwater.**
4. **Build a temporary berm across concentrated flow channels to contain run off using round or big square bales of corn stalks or hay. Earthen dams can be constructed to hold back run off where earthen fill is available.**
5. **Use pumps to load manure runoff for transport to a safer location. NOTE: If manure runoff is reapplied directly to agricultural land plan and document the application rate per acre using the NRCS Nutrient Management Practice Standard (590).**

6. **Document your actions.**

Follow Up Actions

Collect residual manure and contaminated topsoil from the overflow area behind the temporary dike. Land apply these materials to fields approved for manure application in the nutrient management plan at rates established in the nutrient management plan.

Once the risk for runoff has passed remove temporary culvert plugs and/or dikes. Re-establish vegetative cover as needed at start of the next growing season.

Manure Spill During Transport or Land Application Emergency

Excavation and emergency response equipment available on site:

- Front End Loader Tractor
- Skid steer
- Large tank to transport water
- Manure Spreader/Wagon
- High Volume Pump(s)
- Soil Ripper/Chisel Plow
- Bailed Stalks, Straw, Hay
- Earthen Fill
- Other: Trencher, Dozer with Deep Ripper, Backhoe

Manure Spill During Transportation Emergency Planning Information

Recognition of potential for spill event

Evaluate the methods utilized to transport manure from the storage facility to land application site and identify potential high risk situations (Example: high pressure transfer pipelines or hauling routes located near surface waters or conduits to groundwater).

Locations of absorbent materials and emergency fill on the farm

Identify sources of material that can be used to absorb spilled manure liquids or contain runoff including large round/square bales of other sources or bedding, hay or silage.

Identify the location(s) of any emergency earthen fill sources available on the farm or notify the excavation contractor to bring fill in.

Manure Spill Emergency Response Actions:

1. **Turn off all pumps that pressurize the manure pipeline or tanker**
2. **Assess situation and call for assistance**
3. **Notify DNR spill hotline: 1-800-943-0003**
4. **Stop the flow of manure from the pipeline or tanker if possible**
5. **Build a temporary berm to contain any large volumes of manure run off using round or big square bales of corn stalks or hay. Earthen dams can be constructed to hold back run off where earthen fill is available. NOTE: Contact landowner for permission prior to digging or moving large amount of soil on the emergency site.**

6. **Use absorbent material to collect manure liquids from the road surface or where small volumes of liquid have collected in the adjoining ditches.**
7. **Use pump(s) as necessary to load manure and any runoff for transport to a safe location. NOTE: If manure will be applied directly to agricultural land use the NRCS Nutrient Management Practice Standard (590) to plan and document the application rate per acre.**
8. **Use clean water to wash remaining manure off of the road way if runoff will not cause an environmental impact (see 6. above if additional environmental protection is necessary)**
9. **Document your actions.**

Follow Up Actions

Collect remaining manure and contaminated topsoil from the overflow area behind the temporary dike. Land apply these materials to fields approved for manure application in the nutrient management plan at rates established in the nutrient management plan.

Re-establish vegetative cover as needed at start of the next growing season.

Manure Storage Safety

- Fences will be constructed and gates installed to restrict access of animals or people from the manure pit area.
- Ventilation for covered waste storage. Holding structures will prevent inhalation of poisonous gases, asphyxiation or explosion at reception pits.
- Safety stops or gates will be installed at push off ramps to keep machinery from accidentally entering the manure pit.
- Ramp slopes will be installed consistency with equipment needs.

Slurry Store Units:

- Lowest Ladder section will be removed from the unit when not in use.
- Padlocks will be placed on release valves to avoid tampering if this is a potential issue.

Manure Storage Failure & Over Flow

Excavation and emergency response equipment available on site:

- Front End Loader Tractor
- Skid steer
- Manure Spreader/Wagon
- High Capacity Pump(s)
- Bailed Stalks, Straw, Hay
- Earthen Fill

Manure Storage Failure and Overflow Emergency Planning Information

Location of emergency fill source on the farm:

Identify the location(s) of any emergency earthen fill sources available on the farm or notify the excavation contractor to bring fill in.

Identify other sources of material to that can be used to contain runoff including large round/square bales of other sources of bedding, hay or silage.

Planned location of temporary manure containment dikes or other measures

Identify locations where culverts can be temporarily plugged or berms constructed to contain surface run off containing manure and document on the CNMP site map and/or in this section of the plan.

Manure Storage Failure and Overflow Emergency Response Actions

7. **Turn off All pumps that transfer manure into the storage.**
8. **Assess the situation and make appropriate calls for assistance.**
9. **Notify DNR spill hotline: 1-800-943-0003**
10. **Stop the flow of manure leaving the storage facility or begin to draw down the manure level in the storage by pumping from designated loading areas.**
11. **Create a temporary dike down slope of the storage if necessary to contain the spill.**
12. **Load the manure captured behind the temporary dikes using the high capacity pump(s) and spread onto crop fields as outlined in the 590 plan. NOTE: If manure runoff is applied directly to agricultural land use the NRCS Nutrient Management Practice Standard (590) to plan and document the application rate per acre.**
13. **Document your actions.**

Follow Up Actions

Conduct engineering analysis of the manure storage failure and develop repair plan.

Obtain necessary approvals for manure storage repair plan.

Collect manure and contaminated topsoil from the overflow area behind the temporary dike. Land apply these materials to fields approved for manure application at rates established in the nutrient management plan.

Remove temporary dike(s) and temporary fill from the manure storage berm.

Manure Storage or Transfer Accidental Entry Emergency

An accidental entry into a manure storage or transfer can quickly become life threatening. Make certain all fences and safety features (grates/push-off ramp stop bars) are maintained around manure storage units. Keep gates closed and safety grates in place to minimize the opportunity for an accidental entry. Remove the lower section ladder sections from above-ground storage units when not in use.

Emergency response equipment available on site:

- First Aide Kit
- Electric Defibrillator Unit
- Electrical Cutoff Switch(s)

- Manure Transfer Pump Shut Off Switch
- Rescue equipment for manure storage structure (line with flotation device, grab pole/ladder)

Accidental Entry Manure Storage and Transfer Emergency Planning Information

Identify the locations of safety switches and emergency response equipment in this section of the plan and on the CNMP site maps.

Manure Storage and Transfer Accidental Entry Emergency Response Actions

14. **DO NOT ENTER AN ENCLOSED MANURE STORAGE AREA WITHOUT A "SELF CONTAINED BREATHING APPARATUS"**
15. **Turn off all pumps or other manure handling equipment**
16. **Assess the situation and make appropriate calls for assistance. Describe the specific emergency and notify the 911 Operator:**
    a. **the number of persons needing rescue and describe the situation**
    b. **if "Self Contained Breathing Apparatus" are required due to the persons being in an enclosed manure storage and the potential presence of poisonous gas**
    c. **if the rescue must be done in a confined space**
    d. **if the person(s) are unconscious and approximate length of time that the person(s) have been in the manure storage/transfer system**
17. **Without putting yourself or others at risk, attempt to assist conscious persons with emergency rescue equipment (ladder, rope, grab pole).**
18. **Brief emergency responders upon arrival and assist as requested**

Follow Up Actions

Replace or restock emergency materials (fire extinguishers, first aide supplies, oxygen supplies.

Assess adequacy of emergency response plan and address identified gaps or weaknesses

Assess the need for additional safety measures or training

Disposal of Animal Carcasses in Emergency Circumstances

The disposal options for dead animals in emergency circumstances are as follows (in order of preference):
1. Rendering plant
2. Licensed landfill
3. Burial on farm lands
4. Composting of carcasses (DNR approval required)

If the dead animals are buried on farmlands, every attempt should be made to bury the animals in an upland area away from surface water bodies and above the groundwater table to minimize the potential for contaminating the water. Disposal pits or trenches should be a minimum of 1,200 feet away from private or public water supply wells and 1,000 feet away from surface waters and other sensitive areas.
The carcasses should be buried in pits or trenches (usually easier for placement) that allow for at least 2 feet of soil cover over top of the carcasses. The carcasses should be placed in a single layer in the bottom of the pit/trench and then covered with barn lime and the 2 foot soil layer. This should help the decomposition of the carcasses and keep

other animals from digging them back up. The cover soil should be sloped to divert surface water away from the burial area and topsoiled, seeded, and fertilized as soon as possible to maintain a healthy vegetative cover.
This guidance generally conforms to DATCP rules and policies. If there are any questions regarding the DATCP regulations or policies, please contact DATCP staff directly at (608)224-4872.
Questions can also be directed to Deb Pingel, WDNR at 715/359-4531.
(See State Statute s. 95.50, Disposition of Carcasses, as regulated by Department of Agriculture, Trade and Consumer Protection)

Gary Bimmel
Manure or Hazardous Material Spill Accident Worksheet

Gary Bimmel
5268 County Road TT
Sheboygan Falls, WI 53085

Emergency Coordinators
Gary Bimmel: (920) 207-7357

DNR Hazardous Spill Line 1-800-943-0003

Picture Information – Pictures were taken before cleanup ☐ after cleanup ☐

Spill Information

Date and time of the spill: _____

Spill Location: _____

_____

Where Spill Material was Ultimately Deposited: _____

_____

Property Owners Name: _____

Individuals Involved: _____

Material Spilled: _____

Quantity of Spill: _____

Actions Taken to Stop the Release or Minimize the Impact: _____

_____

_____

_____

_____

Potential Impact to Human Health and the Environment: _____

_____

"I hereby declare the information provided above is true, accurate and complete."

_____ _____
Signature Date

NUTRIENT MANAGEMENT
(Acre)
Code 590

Natural Resources Conservation Service
Conservation Practice Standard

I. Definition

Managing the amount, source, placement, form, and timing of the application of nutrients and soil amendments.

II. Purposes

This standard establishes the acceptable criteria and documentation requirements for a plan that addresses the application and *budgeting*[1] of nutrients for plant production. All nutrient sources, including soil reserves, commercial fertilizer, manure, organic byproducts, legume crops, and crop residues shall be accounted for and properly utilized. These criteria are intended to minimize nutrient entry into surface water, groundwater, and atmospheric resources while maintaining and improving the physical, chemical, and biological condition of the soil.

III. Conditions Where Practice Applies

This standard applies to all *fields* where plant nutrient sources and soil amendments are applied during the course of a *rotation*.

IV. Federal, State, and Local Laws

Users of this standard are responsible for compliance with applicable federal, state, and local laws, rules, or regulations governing nutrient management systems. This standard does not contain the text of federal, state, or local laws. Implementation of this standard may not eliminate nutrient losses that could result in a violation of law.

V. Criteria

This section establishes requirements for planning, design parameters, acceptable management processes, and performance requirements for nutrient management plan development and implementation. Nutrient management plans shall be prepared according to all of Criteria A., B., C., D., and E.

All of the information contained in this section is required. Wisconsin Conservation Planning Technical Note WI-1 is the companion document to this standard and includes criteria that are required where referenced within this section.

A. Criteria for Surface and Groundwater Resources

1. Nutrient Criteria for All Sites

   a. Develop and implement an annual field-specific nutrient application plan. Account for the source, rate, timing, form, and method of application for all *major nutrients* consistent with this standard and soil fertility recommendations found in University of Wisconsin-Extension (UWEX) Publication A2809, "Soil Test Recommendations for Field, Vegetable and Fruit Crops," unless use of one the following options are appropriate:

      - For crops not listed in A2809, use other appropriate Land Grant University recommendations.
      - For nutrient application decisions based on plant tissue analysis, the sampling and testing of plants and the resulting nutrient recommendations shall be done in accordance with University of Wisconsin recommendations. See V.A.1.l.

      Annual plan updates shall document the crops, tillage, nutrient application rates, and methods actually implemented.

   b. The plan shall be based on yield goals that are attainable under average growing conditions and established

[1] Words in the standard that are shown in italics are described in X. Definitions. The words are italicized the first time they are used in the text.

using soil productivity, local climate information, multi-year *documented yields*, and/or local research on yields for similar soils and crop management systems. Yield goals should not be higher than 15% above the previous 3-5 year average.

c. Soils shall be tested a minimum of once every four years by a DATCP-certified laboratory for pH, phosphorus (P), potassium (K), and organic matter. A laboratory list is provided in Appendix 2 of the Wisconsin Conservation Planning Technical Note WI-1. Soil sampling shall be consistent with UWEX Publication A2100, "Sampling Soils for Testing." For perennial fruit crops, use of soil test recommendations from UWEX Publication A-2809 is only required as the basis for fertilizer applications prior to establishment of new plantings. Subsequent nutrient recommendations should be based on plant tissue analysis results. See V.A.1.l.

d. Annual P and K nutrient recommendations may be combined into a single application that does not exceed the total nutrient recommendation for the rotation. This combined annual application is not allowed on frozen or snow covered soil. Commercial P fertilizers shall not be applied to soils with P tests in the non-responsive range for the crop being grown with the exception of not more than 20 pounds per acre P_2O_5 as starter for corn or recommended rates of starter P_2O_5 for potatoes and other vegetable crops as identified in UWEX Publication A3422, "Commercial Vegetable Production in Wisconsin." All the P and K starter fertilizer shall be credited against crop needs. When grouping fields for nutrient application purposes, N, P, and K application rates shall match individual field recommendations as closely as possible.

e. Where practical, adjust soil pH to the specific range of the crop(s) grown to optimize nutrient utilization.

f. Available nitrogen from all sources shall not exceed the annual N requirement of non-legume crops consistent with UWEX Publication A2809, or the annual N uptake by legume crops. Because of variability in N mineralization and manure applications, it is acceptable for available N to be up to 20% more than the recommended N rate when legumes, manures, and organic byproducts are used to meet the entire N requirement of the crop to be grown.

   Starter N fertilizers are to be credited against crop needs as follows: all N beyond 20 pounds per acres for corn and 40 pounds per acre for potatoes.

g. First year available N in manure applied to fields prior to legume crop establishment shall not exceed the first year's annual N removal by legumes and companion crop. See Wisconsin Conservation Planning Technical Note WI-1, Part II B.4.

h. First and second-year legume credits shall be applied as identified in UWEX Publication A2809, Table 25, or through soil nitrate testing as identified in UWEX Publication A3624, "Soil Nitrate Tests for Wisconsin Cropping Systems."

i. Estimates of first-year available nutrient credits for manure shall be established in accordance with one of the following methods:

   (1) A manure analysis from a laboratory participating in the Manure Analysis Proficiency (MAP) testing program and interpreted according to Part III, Table 3 of the Wisconsin Conservation Planning Technical Note WI-1, or

   (2) Estimates of first-year available nutrients from manure. See Part III, Table 4 of the Wisconsin Conservation Planning Technical Note WI-1.

   Note: It is strongly recommended that second-year nutrient credits, especially for areas receiving consecutive manure applications, be

included in the nutrient management plan using values in Part III, Table 4 of Wisconsin Conservation Planning Technical Note WI-1 or soil nitrate testing.

j. Organic byproducts other than manure (i.e., industrial wastes, municipal sludge, and septage) applied to fields shall be analyzed for nutrient content and applied in accordance with applicable regulations including restrictions on heavy metal content and land application rates.

k. Manures, organic byproducts, and fertilizers shall not run off the field site during or immediately after application. If ponding, runoff, or drainage to subsurface tiles of the applied materials occurs, implement the following activities as appropriate:

(1) Stop application.

(2) Take corrective action to prevent offsite movement.

(3) Modify the application (rate, method, depth of injection, timing) to eliminate runoff or drainage to subsurface tiles.

(4) Notify the Wisconsin Department of Natural Resources (WDNR) in the event that a spill or accidental release of any material or substance when required by the Agricultural Spill Law (s.289.11, Wis. Stats.) or the terms of a WPDES permit. Refer to the Wisconsin Conservation Planning Technical Note WI-1, Part IV, for contact information and "Agricultural Spills and How to Handle Them," Pub-RR-687-2002, August 2002.

l. Where nutrient application decisions are based on plant tissue analysis, the sampling and testing of plants and the resulting nutrient recommendations shall be done in accordance with University of Wisconsin recommendations in the references section of this standard. Nutrient recommendations for cranberries may be based on plant analysis as defined by appropriate publications in the references section of this standard.

m. Where *gleaning/pasturing* occurs, verify through computations that the nutrients deposited as manure within a field, do not exceed the N and P requirements of this standard.

2. Nutrient Application Prohibitions

a. Nutrients shall not be spread on the following features.

(1) Surface water, established *concentrated flow channels,* or non-harvested *permanent vegetative buffers.*

(2) A non-farmed wetland, sinkhole, nonmetallic mine, or well.

(3) The area within 50 feet of a potable drinking water well shall not receive mechanical applications of manure.

(4) Areas contributing runoff within 200 feet upslope of *direct conduits to groundwater* such as a well, sinkhole, fractured bedrock at the surface, *tile inlet,* or nonmetallic mine unless the nutrients are *effectively incorporated* within 72 hours.

(5) Land where vegetation is not removed mechanically or by grazing, except to provide nutrients for establishment and maintenance, unless necessary in an emergency situation.

(6) Fields exceeding *tolerable soil loss (T).* Erosion controls shall be implemented so that tolerable soil loss (T) over the crop rotation will not be exceeded on fields that receive nutrients.

b. When frozen or snow-covered soils prevent effective incorporation at the time of application and the nutrient application is allowed, implement the following:

(1) Do not apply nutrients within the *Surface Water Quality Management Area (SWQMA)*

except for manure deposited through winter gleaning/pasturing of plant residue.

(2) Do not apply nutrients to locally identified areas delineated in a *conservation plan* as contributing nutrients to direct conduits to groundwater or surface water as a result of runoff.

(3) Do not exceed the P removal of the following growing season's crop when applying manure. Liquid manure applications are limited to 7,000 gallons per acre. The balance of the crop nutrient requirement may be applied the following spring or summer. Winter applications shall be conducted according to Section VII.B.

(4) Do not apply nutrients on slopes greater than 9%, except for manure on slopes up to 12% where cropland is contoured or contour strip cropped.

(5) Do not apply N and P in the form of commercial fertilizer. An exception is allowed for grass pastures and on winter grains that do not fall within a prohibition area defined by V.A.2.

3. Nutrient Application Restrictions

a. When unincorporated liquid manure applications (less than 12% solids) occur on non-frozen soils within a SWQMA, use Table 1 to determine maximum acceptable rates. No applications are allowed on *saturated soils*.

Sequential applications may be made to meet the desired nutrient additions consistent with this standard. Prior to subsequent applications soils shall be evaluated using Table 1 or wait a minimum of 7 days.

Table 1.

Surface Texture Class[1]	**Max Application Rate** *gal/acre*		**Allowable Soil Moisture Description for Applications**
	*< 30%**	*≥ 30%**	
Fine	3000	5000	Easily ribbons out between fingers, has a slick feel.
Medium	5000	7500	Forms a ball, is very pliable, slicks readily with clay.
Coarse	7000	10000	Forms a weak ball, breaks easily.

[1] Fine – clay, silty clay, silty clay loam, clay loam
Medium – sandy clay, sandy clay loam, loam, silt loam, silt
Coarse – loamy sand, sandy loam, sand. This category also includes peat and muck based on their infiltration capacity.

* Crop residue or vegetative cover on the soil surface after manure application.

b. For all nutrient applications on non-frozen soil within a SWQMA use one or more of the following practices as appropriate to address water quality concerns for the site:

(1) Install/maintain permanent vegetative buffers (harvesting is allowed unless restricted by other laws or programs). Refer to NRCS Field Office Technical Guide (FOTG), Section IV, Standard 393, Filter Strip, or ATCP 48 for land in drainage districts.

(2) Maintain greater than 30% crop residue or vegetative cover on the soil surface after nutrient application.

(3) Incorporate nutrients within 72 hours leaving adequate residue to meet tolerable soil losses.

(4) Establish cover crops promptly following application.

B. Criteria to Minimize Entry of Nutrients to Groundwater

To minimize N leaching to groundwater on *high permeability soils*, or soils with less than 20 inches to bedrock, or soils with less than 12 inches to *apparent water table,* or within 1000 feet of a municipal well, apply the following applicable management practices:

Note: A list of soils with a high potential for N leaching to groundwater is provided in Appendix 1 of the Wisconsin Conservation Planning Technical Note WI-1.

1. Where sources of N are applied:

a. No fall commercial N applications except for establishment of fall-seeded crops. Commercial N application rates, where allowed, shall not exceed 30 pounds of available N per acre.

b. On irrigated fields, including irrigated manure, apply one of the following management strategies:

(1) A split or delayed N application to apply a majority of crop N requirement after crop establishment.

(2) Utilize a nitrification inhibitor with ammonium forms of N.

2. When manure is applied in late summer or fall to meet the fertility needs of next year's crop and soil temperatures are greater than 50°F, apply one of the following options:

a. Use a nitrification inhibitor with liquid manure and limit N rate to 120 pounds available N per acre.

b. Delay applications until after September 15 and limit available N rate to 90 pounds per acre.

c. Apply to fields with perennial crops or fall-seeded crops. N application shall not exceed 120 pounds available N per acre or the crop N requirement, whichever is less.

3. When manure is applied in the fall and soil temperatures are 50°F or less, limit available N from manure application to 120 pounds per acre or the crop N requirement, whichever is less.

Note: The restrictions in B. 2. and 3. do not apply to spring manure applications prior to planting. The balance of the crop N requirements may be applied the following spring or summer.

4. Where P enrichment of groundwater is identified as a conservation planning concern, implement practices to reduce delivery of P to groundwater.

C. Additional Criteria to Minimize Entry of Nutrients to Surface Water

1. Where manure, organic byproducts, or fertilizers are applied:

a. Avoid building soil test P values when possible beyond the non-responsive soil test range for the most demanding crop in the rotation. For most agronomic crops in Wisconsin, the non-responsive soil test range is 30 to 50 parts per million (ppm) Bray P-1 soil test.

b. Establish perennial vegetative cover in all areas of concentrated flow resulting in reoccurring gullies.

2. Develop a P management strategy when manure or organic by-products are applied during the crop rotation to minimize surface

water quality impacts. Use either the *Phosphorus Index (PI)* in section a., or Soil Test Phosphorus Management Strategy found in section b. The single strategy chosen, either a. or b., shall be applied uniformly to all fields within a farm or tract.

Note: First year available N in manure applied to fields prior to legume crop establishment shall not exceed the first year's annual N removal by legumes and companion crop. See Wisconsin Conservation Planning Technical Note WI-1, Part II B.4. Available N applied cannot exceed the N need or legume crop N removal of the next crop to be grown.

a. PI Strategy – The planned average PI values for up to an 8-year rotation in each field shall be 6 or lower. P applications on fields with an average PI greater than 6 may be made only if additional P is needed according to UWEX soil fertility recommendations. Strategies for reducing the PI, algorithms, and software for calculating the Wisconsin PI can be found at http://wpindex.soils.wisc.edu/.

b. Soil Test Phosphorus Strategy - Management strategies based on soil test phosphorus may be used. Operations using this strategy shall have a conservation plan addressing all soil erosion consistent with the current crops and management or use the erosion assessment tools included with the Phosphorus Index model. In crop fields where ephemeral erosion is an identified problem, a minimum of one of the following runoff-reducing practices shall be implemented:

- Install/maintain contour strips and/or contour buffer strips. Refer to NRCS FOTG, Section IV, Standard 585, Strip Cropping, and/or Standard 332, Contour Buffer Strip.
- Install/maintain filter strips (NRCS FOTG, Section IV, Standard 393, Filter Strip) along surface waters and concentrated flow channels that empty into surface waters that are within or adjoin areas where manure will be applied.
- Maintain greater than 30% crop residue or vegetative cover on the soil surface after planting.
- Establish fall cover crops.

Available phosphorus applications from all sources shall be based on the following soil test P values (Bray P-1).

(1) Less than 50 ppm soil test P: nutrient application rates allowed up to the N needs of the following crop or the N removal for the following legume crop.

(2) 50-100 ppm soil test P: P application shall not exceed the total crop P removal for crops to be grown over a maximum rotation length of 8 years.

(3) Greater than 100 ppm soil test P: eliminate P applications, if possible, unless required by the highest P demanding crop in the rotation. If applications are necessary, applications shall be 25% less than the cumulative annual crop removal over a maximum rotation length of 8 years.

(4) For land with potatoes in the rotation, total P applications shall not exceed crop removal over a maximum rotation length of 8 years if soil tests are in the optimum, high, or excessively high range for potatoes.

D. Additional Criteria to Minimize N and Particulate Air Emissions

Where air quality is identified in a conservation plan as a resource concern, apply a management strategy that minimizes nutrient volatilization and particulate losses while maintaining tolerable soil erosion levels for wind and water.

E. Additional Criteria to Protect the Physical, Chemical, and Biological Condition of the Soil

1. Nutrients shall be applied in such a manner as not to permanently degrade the soil's structure, chemical properties, or biological condition.

2. To the extent practical, nutrients shall not be applied to flooded or saturated soil when the potential for soil compaction and/or the creation of ruts is high.

VI. Considerations

The following are optional management considerations and are not required practices.

A. Promote seeding and stabilization of concentrated flow channels, installation and maintenance of vegetative filter strips, riparian buffers and other buffer strips adjacent to surface water and wetlands in conjunction with other conservation practices in order to reduce the amounts of sediment and nutrients that reach surface water and/or groundwater.

B. Corn nitrogen recommendations in A2809 can be adjusted for the effects of current corn and nitrogen fertilizer prices using the N rate calculator available at http://www.uwex.edu/ces/crops/NComparison.htm. Additional management practices that can be utilized to improve N use efficiency can be found in the Wisconsin Conservation Planning Technical Note WI-1, Part II.

C. Apply nutrients not specifically addressed by this standard (i.e., secondary and micro nutrients) based on recommendations found in UWEX Publication A2809.

Since specific environmental concerns have not been identified for potassium (K), K additions in manure or bio-solids will be determined by rate limits for the N or P in those materials. Commercial fertilizer K applications equal to crop removal will avoid building soil test K levels. K may be applied equal to crop removal at any soil test K level. Dairy producers should monitor K levels in forages and take additional steps to reduce soil K levels if consumption of forage with high K levels becomes an animal health problem.

D. To minimize N leaching on medium and fine-textured soils, avoid fall commercial N applications for crops to be seeded the following spring. When commercial N is applied in the fall, use ammonium forms of N and delay N application until soil temperatures drop below 50°F. Use of a nitrification inhibitor with fall-applied N is recommended.

E. Irrigated fields should use irrigation scheduling strategies with the intent of minimizing leaching losses and improving water use efficiency and not exceeding intake/infiltration capacity of the soil.

F. Consider the use of animal feeding strategies based on published nutrition research findings (National Research Council, etc.) to reduce excess P in rations when manure applications are made to cropland.

G. Consider delaying surface applications of manure or other organic byproducts if precipitation capable of producing runoff is forecast within 24 hours of the time of planned application.

H. Consider modifications to the crop rotation to provide crop fields for the application of manure during the summer crop growing season.

I. Manure top-dressed on existing forages should not exceed the nutrient equivalent of 35 pounds N – 25 pounds P_2O_5 – 80 pounds K_2O (first year availability per acre) or no more than 10 tons of solid manure per acre per harvest. Additional management considerations can be found in "Applying Manure to Alfalfa," North Central Regional Research Report 346.

J. For fields directly adjacent to, or with areas of concentrated or channelized flow that drain directly to, Outstanding, Exceptional or nutrient impaired surface waters, avoid raising soil test P levels to the maximum extent practicable. In addition, implement conservation practices that reduce delivery of nutrients to these waters. For operations using the P-Index in high environmental risk areas, the P-Index values should be reduced to the maximum extent practicable by applying additional conservation practices.

K. Where residual nitrate carryover is probable, the preplant soil nitrate test is recommended to adjust N application rates.

VII. Plans and Specifications

A. The minimum requirements for a nutrient management plan are specified in the previous sections of this standard and expanded in Part I of the Wisconsin Conservation Planning Technical Note WI-1. Include in a nutrient management plan:

- a soil map and aerial photograph of the site;

- current and planned crops and crop yields; realistic yield goals;
- results of soil, plant, manure, or organic byproduct sample analysis;
- recommended nutrient application rates;
- documentation of actual nutrient applications including the rate, form, timing, and method. Revise the plan to reflect any changes in crops, yields, tillage, management, and soil or manure analyses;
- the location of sensitive areas and the resulting nutrient application restrictions;
- guidance for implementation, maintaining records;
- each field's tolerable and actual soil losses;
- soil test P-ppm; P balance, or P Index level where applicable;
- other management activities required by regulation, program requirements, or producer goals;
- a narrative to explain other implementation clarifications.

B. Winter Spreading Plan – The plan shall identify those areas of fields that meet the restrictions for frozen or snow-covered ground identified in this standard. If necessary, land application of manure on frozen and snow-covered ground shall occur on those fields accessible at the time of application that represent the lowest risk of runoff and deliverability to areas of concentrated and channelized flow and surface waters. Low-risk fields shall be identified using either the P-Index or an approved conservation plan. In general, fields most suitable for land application during frozen and snow-covered ground conditions include those fields:

- with low slope,
- with low erosion,
- with high levels of surface roughness,
- with the greatest distance to surface waters and areas of concentrated flow,
- with no drainage to Outstanding/ Exceptional/nutrient impaired water bodies,
- with low delivery potential during active snowmelt.

Refer to section VIII.E for storage/infield stacking of manure during periods of active snowmelt.

C. Persons who review or approve plans for nutrient management shall be certified through any certification program acceptable to the NRCS (NRCS General Manual, Title 180, Part 409.9, NRCS TechReg) or other appropriate agencies within the state.

D. Industrial wastes and byproducts and municipal sludge are regulated by the Wisconsin Department of Natural Resources (WDNR). They must be spread in accordance with a Wisconsin Pollution Discharge Elimination System (WPDES) permit as obtained from the WDNR.

E. Plans for nutrient management shall be developed in accordance with policy requirements of the NRCS General Manual Title 450 Part 401.03 and Title 190, Part 402, the contents of this standard, the procedures contained in the National Planning Procedures Handbook, and NRCS National Agronomy Manual, Section 503.

F. Plans for Nutrient Management that are elements of a more comprehensive conservation plan shall recognize other requirements of the conservation plan and be compatible with the other requirements. A Comprehensive Nutrient Management Plan (CNMP) is a conservation system unique to animal feeding operations (AFO). The CNMP will be developed to address the environmental risks identified during the resource inventory of an AFO. A CNMP will require use of all the applicable criteria in this technical standard along with the additional criteria located in NRCS National Planning Procedures Handbook, Subpart B, Part 600.54.

VIII. Operation and Maintenance

A. Document the actual nutrient application including the rate, form, timing, and method of the application. Revise the plan to reflect any changes in crops, tillage or management, soils, and manure tests.

B. Evaluate the need to modify field operations to reduce the risk of large nutrient losses during a single runoff event based on current field conditions or forecasted weather events.

C. Minimize operator exposure to potentially toxic gases associated with manure, organic wastes, and chemical fertilizers, particularly in enclosed areas. Wear protective clothing appropriate to the material being handled.

D. Protect commercial fertilizer from the weather, and agricultural waste storage facilities from accidental leakage or spillage. See Wisconsin administrative rules and county or local ordinances concerning regulations on siting, design, operation, and maintenance of these facilities.

E. During periods when land application is not suitable, manure shall be stored in a manure storage facility designed in accordance with the criteria contained in NRCS FOTG Standard 313, Waste Storage Facility. Temporary management of manure shall be in accordance with the criteria for temporary unconfined stacks of manure contained in Table 7 of Standard 313.

F. When cleaning equipment after nutrient application, remove and save fertilizers or wastes in an appropriate manner. If the application equipment system is flushed, use the rinse water in the following batch of nutrient mixture where possible or dispose of according to state and local regulations. Always avoid cleaning equipment near high runoff areas, ponds, lakes, streams, and other water bodies. Extreme care must be exercised to avoid contaminating potable drinking water wells.

G. The application equipment shall be calibrated to achieve the desired application rate.

IX. References

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University of Wisconsin-Extension (UWEX) Publication A3568, A Step-by-Step Guide to Nutrient Management, May 1992.

University of Wisconsin-Extension (UWEX) Publication A3624, Soil Nitrate Tests for Wisconsin Cropping Systems, 1994.

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University of Wisconsin-Extension (UWEX) Publication A3769, Recommended Methods of Manure Analysis, 2003.

University of Wisconsin Soil and Forage Analysis Lab Sampling for plant analysis: http://uwlab.dyndns.org/marshfield/ (Click on Lab procedures and then plant analysis).

Wisconsin Administrative Code, Department of Agriculture, Trade and Consumer Protection, Chapter 48, Drainage Districts.

Wisconsin Phosphorus Index: http://wpindex.soils.wisc.edu/.

X. Definitions

Apparent Water Table (V.B) - Continuous saturated zone in the soil to a depth of at least 6 feet without an unsaturated zone below it.

Budgeting (II) - Document present and prior year's crop, estimated nutrient removal by these crops and known nutrient credits. When nutrients are applied for future crop needs in the rotation, implement a tracking process to allow adjustment of subsequent nutrient applications so that the total amount of nutrients applied to the farm or tract complies with this standard and is documented in the plan. Required as a component for all nutrient management plans (VII.A.; Wisconsin Conservation Planning Technical Note WI-1 Part 1 B.d. (1), (2); C.6.).

Concentrated Flow Channel (V.A.2.a.(1)) - A natural channel or constructed channel that has been shaped or graded to required dimensions and established in perennial vegetation for the stable conveyance of runoff. This definition may include non-vegetated channels caused by ephemeral erosion. These channels include perennial and intermittent streams, drainage ditches, and drainage ends identified on the NRCS soil survey and not already classified as SWQMAs. Concentrated flow channels are also identifiable as contiguous up-gradient deflections of contour lines on the USGS 1:24,000 scale topographic map. The path of flow to surface water or direct conduits to groundwater must be documented. For construction, refer to NRCS FOTG Standard 412, Grassed Waterway, for more information.

Conservation Plan (V.A.2.b.(2)) - A plan developed and field verified by a conservation planner to document crop management and the conservation practices used to control sheet and rill erosion to tolerable levels (T) and to provide treatment of ephemeral soil erosion. A conservation plan must be signed by the land operator and approved by the county land conservation committee or their representative. A conservation plan will be needed for designating winter spreading restrictions other than those specifically listed in this standard, and when implementing the soil test P management strategy where the soil erosion assessment is not calculated with the Wisconsin Phosphorus Index model. A conservation planner must develop conservation plans using the minimum criteria found in the USDA, NRCS National Planning Procedures Handbook and the Wisconsin Field Office Technical Guide and be qualified by one of the following:

1. Meeting the minimum criteria in the NRCS General Manual, Title 180, Part 409.9(c), NRCS Certified Conservation Planner Designation.

2. Meeting criteria established by the county land conservation committee.

3. Meeting the NRCS TechReg Certified Conservation Planner Option 1, 2, 3.

Direct Conduits to Groundwater (V.A.2.a.(4)) - Wells, sinkholes, swallets (a sinkhole or rock hole that intercepts a stream, diverting all or a portion of it to the groundwater), fractured bedrock at the surface, mine shafts, non-metallic mines, tile inlets discharging to groundwater quarries, or depressional groundwater recharge areas over shallow fractured bedrock. For the purpose of nutrient management planning, these features will be identified on the NRCS soil survey and/or USGS 1:24,000 scale topographic map, or otherwise determined through on-site evaluation and documented in a conservation plan.

Documented yields (V.A.1.b.) - Crop production yield-records documented by field for at least two consecutive years that are used to determine phosphorus and potassium fertility recommendations. Yield record documentation may include measurements of harvested crop weight, volume, or the use of calibrated yield-monitors.

Effectively Incorporated (V.A.2.a.(4)) - Means the mixing with the topsoil or residue or subsurface placement of nutrients with topsoil by such means as injector, disc, sweep, mold-board plow, chisel plow, or other tillage/infiltration methods. Nutrients will not run off the field or drain to subsurface tiles during application.

Fields (III) - A group or single nutrient management unit with the following conditions: similar soil type, similar cropping history, same place in rotation (i.e., second year corn fields, established alfalfa), similar nutrient requirements, and close proximity. Examples include: alternate strips in a contour strip system, pasture, variable rate nutrient application management units, and other management units where grouping facilitates implementation of the nutrient management plan.

Gleaning / Pasturing (V.A.1.m.) - An area of land where animals graze or otherwise seek feed in a manner that maintains the vegetative cover over all the area and where the vegetative cover is the primary food source for the animals. Livestock shall be managed to avoid the routine concentration of animals within the same area of the field. Manure deposited near a well by grazing of livestock does not require incorporation.

High Permeability Soils (V.B) - Equivalent to drained hydrologic group A that meet both of the following criteria:

1. Permeability = 6 inches/hour or more in all parts of the upper 20 inches and

2. Permeability = 0.6 inches/hour or more in all parts of the upper 40 inches.

Use the lowest permeability listed for each layer when evaluating a soil. For a multi-component map unit (complex), evaluate each component separately. If the high permeability components meet the criteria and cannot be separated, the entire map unit should be considered as high permeability.

Major Nutrients (V.A.1.a) - Nitrogen (N), phosphorus (P), and potassium (K).

Note (V.A.1.i.) - Any section labeled as a 'note' is to be considered a recommendation rather than a requirement. The note is included in the criteria section to ensure subject continuity.

Permanent Vegetative Buffer (V.A.2.a.(1)) - A strip or area of perennial herbaceous vegetation situated between cropland, grazing land, or disturbed land (including forest land) and environmentally sensitive areas (as defined in NRCS Technical Standard 393, Filter Strip).

Phosphorus Index (PI) (V.C.2) - The Wisconsin Phosphorus Index (PI) is an assessment of the potential for a given field to deliver P to surface water. The PI assessment takes into account factors that contribute to P losses in runoff from a field and subsequent transport to a water body, including:

- Soil erosion as calculated using the current approved NRCS soil erosion prediction technology located in Section I of the NRCS FOTG.
- Estimated annual field rainfall and snowmelt runoff volume.
- Soil P concentrations as measured by routine soil test P (Bray P-1).
- Rate and management of P applications in the form of fertilizer, manure, or other organic material.
- Characteristics of the runoff flow pathway from the field to surface water.

The algorithms and software for calculating the Wisconsin PI can be found at http://wpindex.soils.wisc.edu/.

Rotation (III) - The sequence of crops to be grown for up to an 8-year period as specified by the conservation plan or as part of the soil erosion assessment calculated with the Wisconsin Phosphorus Index model.

Saturated Soils (V.A.3.a) - Soils where all pore spaces are occupied by water and where any additional inputs of water or liquid wastes cannot infiltrate into the soil.

Surface Water Quality Management Areas (SWQMA) (V.A.2.b.(1)) - For the purposes of nutrient management planning, Surface Water Quality Management Areas are defined as follows:

1. The area within 1,000 feet from the ordinary high-water mark of navigable waters that consist of a lake, pond or flowage, except that, for a navigable water that is a glacial pothole lake, "surface water quality management area" means the area within

1,000 feet from the high-water mark of the lake.

2. The area within 300 feet from the ordinary high-water mark of navigable waters that consists of a river or stream that is defined as:

   - Perennial streams (continuous flow) identified on the NRCS soil survey and/or USGS 1:24,000 scale topographic map as solid lines,
   - Otherwise determined through an onsite evaluation and documented in an approved conservation plan.

   Areas within the SWQMA that do not drain to the water body are excluded from this definition.

Tile Inlet (V.A.2.a.(4)) - The interception of surface runoff within a concentrated flow channel or field depression, by a constructed device designed to direct runoff into an underground tile for conveyance to surface or groundwater.

Tolerable Soil Loss (T) - For sheet and rill erosion (V.A.2.a.(6)) - T-value means the maximum rate of soil erosion established for each soil type that will permit crop productivity to be sustained economically and indefinitely. Erosion calculations shall be based on current approved erosion prediction technology found in NRCS FOTG Section I or the soil loss assessment calculated using the Phosphorous Index Model. Tolerable soil erosion rates shall be determined using the RUSLE2 Related Attributes Report located in Section 2, e-FOTG, Soil Report.

D. **Specific Criteria For Temporary, Unconfined Stacks of Manure and Derivatives Outside the Animal Production Area**

This includes solid type manure and derivatives that are deposited for subsequent loading and spreading. Waste material having less than 16% solids shall not be stacked in the field. Storage of these materials shall be in facilities meeting the criteria in section V.B.1 and 2. Criteria for unconfined waste stacks are shown in Table 10.

Conservation BMPs shall be used above stacking sites to divert overland flow, and below stacking sites to provide containment or buffering to downstream channels and lakes.

The maximum amount of manure that is stacked on any one field shall be limited to the nutrient needs of fields adjacent to the stacking site in accordance with a 590 nutrient management plan.

Table 10 – Temporary, Unconfined Stacks of Manure and Derivatives Outside the Animal Production Area

1. Waste Consistencies [Note 1]		
	> 32% Solids	16% to 32% Solids [Note 2]
2. Size & Stacking Period		
Stacking Period	8 months	8 months
Maximum Volume/Stack	≤ 40,000 cu ft.	≤ 15,000 cu ft.
Maximum Number of Stacks/40 acres [Note 3]	–	2
Frequency of Stacking Site Use	1 year out of 2	1 year out of 3
3. *Hydrologic Soil Groups*		
	B or C	B or C
4. Subsurface Separation Distance		
Subsurface Saturation	≥ 3 ft.	≥ 3 ft.
Bedrock	≥ 3 ft.	≥ 5 ft.
5. Surface Separation Distance		
Wells [Note 4]	≥ 250 ft.	≥ 250 ft.
Lakes	≥ 1,000 ft.	≥ 1,000 ft.
Sinkholes, or other Karst Features	≥ 1,000 ft.	≥ 1,000 ft.
Quarries	≥ 1,000 ft.	≥ 1,000 ft.
Streams	≥ 300 ft.	≥ 500 ft.
Wetlands and Surface Inlets	≥ 300 ft.	≥ 500 ft.
Areas of Concentrated Flow	≥ 100 ft.	≥ 300 ft.
Land Slope Down Gradient of Stack	≤ 6%	≤ 3%
Floodplain	≥ 100 ft.	≥ 300 ft.
Tile lines	≥ 40 ft.	≥ 40 ft.

Note 1 Refer to AWMFH, Figure 9-1 for consistency values and Chapter 4 for % solids, for specific livestock types.

Note 2 16% to 32% solids represents waste at near saturation conditions where additions of free water from runoff, rain, or snowmelt can result in liquid flow conditions.

Note 3 The separation distance between stacks shall be at least 100 feet.

Note 4 Community water system wells may require larger separation distances (see NR 812).

1. Snap-Plus Sorted By Crop Report For 2015
2. Snap-Plus Sorted By Crop Report For 2016
3. Snap-Plus Sorted By Crop Report for 2017
4. Snap-Plus Lime Application Report
5. Snap-Plus Field Data and 590 Assessment Plan
6. Snap-Plus Application Restriction Compliance Check.

SnapPlus Spreading and Nutrient Management Sorted By Crop Report

Crop Year	**2015**
Reported For	**Gary Bimmel**
Printed	**2017-02-08**
Plan Completion/Update Date	**2001-01-01**
SnapPlus Version 16.3 built on 2016-10-31	
C:\Users\nguilette\OneDrive - Cooperative Resources International\Ag Data\241-Bimmel, Gary\SnapPlus\Gary Bimmel.snapDb	

Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

Soybean Fields						Crop Removal				Soil Test		Adjusted Recs lb/ac			Planned Applications and Credits lb/ac			Over(+) Under(-) Adj. UW Recs lb/ac			Applications			
Name	Ac.	Slp %	Soil Map Symbol (pred) & N Res	Prior Crop	2015 Crop	Yield Goal	P2O5	K2O	Tillage	Avg P	Avg K	N	P2O5	K2O	N	P2O5	K2O	N	P2O5	K2O	Product Name and Analysis	Appln Rate and Method	N-P2O5-K2O credit	Total Amt
1-1	18.1	4	KnB W	missing	Soybeans 7 -10 inch row	56-65	50	85	FCD	15	47	0	80	130	32	81	137	32	1	7	Diammonium phosphate (DAP) 18-46-0	175 lb Spring Unincorp	32-81-0	3168 lb
																					Potassium chloride 0-0-61	225 lb Spring Unincorp	0-0-137	4073 lb
1-2	29.4	4	KnB W	missing	Soybeans 7 -10 inch row	56-65	50	85	FCD	24	80	0	25	115	9	23	122	9	-2	7	Diammonium phosphate (DAP) 18-46-0	50 lb Spring Unincorp	9-23-0	1470 lb
																					Potassium chloride 0-0-61	200 lb Spring Unincorp	0-0-122	5880 lb
1-3	13.2	4	KnB	missing	Soybeans 7 -10 inch row	56-65	50	85	FCD	97	172	0	0	20	0	0	61	0	0	41	Potassium chloride 0-0-61	100 lb Spring Unincorp	0-0-61	1320 lb

SnapPlus Spreading and Nutrient Management Sorted By Crop Report

Soybean Fields					Crop Removal					Soil Test		Adjusted Recs lb/ac			Planned Applications and Credits lb/ac			Over(+) Under(-) Adj. UW Recs lb/ac			Applications			
Name	Ac.	Slp %	Soil Map Symbol (pred) & N Res	Prior Crop	2015 Crop	Yield Goal	P2O5	K2O	Tillage	Avg P	Avg K	N	P2O5	K2O	N	P2O5	K2O	N	P2O5	K2O	Product Name and Analysis	Appln Rate and Method	N-P2O5-K2O credit	Total Amt
1-4	20.8	4	KnB W	missing	Soybeans 7 -10 inch row	56-65	50	85	FCD	101	120	0	0	85	0	0	92	0	0	7	Potassium chloride 0-0-61	150 lb Spring Unincorp	0-0-92	3120 lb
1-5	16	4	MbA W	missing	Soybeans 7 -10 inch row	56-65	50	85	FCD	13	57	0	80	130	32	81	122	32	1	-8	Diammonium phosphate (DAP) 18-46-0	175 lb Spring Unincorp	32-81-0	2800 lb
																					Potassium chloride 0-0-61	200 lb Spring Unincorp	0-0-122	3200 lb
1-6	119.4	4	KnB	missing	Soybeans 7 -10 inch row	56-65	50	85	FCD	15	77	0	80	115	32	81	122	32	1	7	Diammonium phosphate (DAP) 18-46-0	175 lb Spring Unincorp	32-81-0	20895 lb
																					Potassium chloride 0-0-61	200 lb Spring Unincorp	0-0-122	23880 lb
2-2	53.2	9	KnB	missing	Soybeans 7 -10 inch row	56-65	50	85	FCD	13	57	0	80	130	32	81	137	32	1	7	Diammonium phosphate (DAP) 18-46-0	175 lb Spring Unincorp	32-81-0	9310 lb
																					Potassium chloride 0-0-61	225 lb Spring Unincorp	0-0-137	11970 lb
2-3	43.9	9	KnB	missing	Soybeans 7 -10 inch row	56-65	50	85	FCD	24	80	0	25	115	9	23	122	9	-2	7	Diammonium phosphate (DAP) 18-46-0	50 lb Spring Unincorp	9-23-0	2195 lb
																					Potassium chloride 0-0-61	200 lb Spring Unincorp	0-0-122	8780 lb
2-4	13.2	4	KnB	missing	Soybeans 7 -10 inch row	56-65	50	85	FCD	21	77	0	25	115	9	23	122	9	-2	7	Diammonium phosphate (DAP) 18-46-0	50 lb Spring Unincorp	9-23-0	660 lb

SnapPlus Spreading and Nutrient Management Sorted By Crop Report

Soybean Fields					Crop Removal					Soil Test		Adjusted Recs lb/ac			Planned Applications and Credits lb/ac			Over(+) Under(-) Adj. UW Recs lb/ac			Applications			
Name	Ac.	Slp %	Soil Map Symbol (pred) & N Res	Prior Crop	2015 Crop	Yield Goal	P2O5	K2O	Tillage	Avg P	Avg K	N	P2O5	K2O	N	P2O5	K2O	N	P2O5	K2O	Product Name and Analysis	Appln Rate and Method	N-P2O5-K2O credit	Total Amt
2-4	13.2	4	KnB	missing	Soybeans 7 -10 inch row	56-65	50	85	FCD	21	77	0	25	115	9	23	122	9	-2	7	Potassium chloride 0-0-61	200 lb Spring Unincorp	0-0-122	2640 lb
2-5	30.1	9	KnB W	missing	Soybeans 7 -10 inch row	56-65	50	85	FCD	21	110	0	25	85	9	23	92	9	-2	7	Diammonium phosphate (DAP) 18-46-0	50 lb Spring Unincorp	9-23-0	1505 lb
																					Potassium chloride 0-0-61	150 lb Spring Unincorp	0-0-92	4515 lb
3-1	8.7	1	Be	missing	Soybeans 7 -10 inch row	56-65	50	85	FCD	101	120	0	0	85	0	0	92	0	0	7	Potassium chloride 0-0-61	150 lb Spring Unincorp	0-0-92	1305 lb
3-2	7.6	9	WbC2	missing	Soybeans 7 -10 inch row	56-65	50	85	FCD	9	50	0	90	130	36	92	137	36	2	7	Diammonium phosphate (DAP) 18-46-0	200 lb Spring Unincorp	36-92-0	1520 lb
																					Potassium chloride 0-0-61	225 lb Spring Unincorp	0-0-137	1710 lb
3-3	30.3	8	WbC2	missing	Soybeans 7 -10 inch row	56-65	50	85	FCD	6	44	0	90	130	36	92	137	36	2	7	Diammonium phosphate (DAP) 18-46-0	200 lb Spring Unincorp	36-92-0	6060 lb
																					Potassium chloride 0-0-61	225 lb Spring Unincorp	0-0-137	6818 lb
3-4	9.9	8	WbC2 W	missing	Soybeans 7 -10 inch row	56-65	50	85	FCD	9	67	0	90	130	36	92	137	36	2	7	Diammonium phosphate (DAP) 18-46-0	200 lb Spring Unincorp	36-92-0	1980 lb
																					Potassium chloride 0-0-61	225 lb Spring Unincorp	0-0-137	2228 lb

SnapPlus Spreading and Nutrient Management Sorted By Crop Report

Soybean Fields					Crop Removal					Soil Test		Adjusted Recs lb/ac			Planned Applications and Credits lb/ac			Over(+) Under(-) Adj. UW Recs lb/ac			Applications			
Name	Ac.	Slp %	Soil Map Symbol (pred) & N Res	Prior Crop	2015 Crop	Yield Goal	P2O5	K2O	Tillage	Avg P	Avg K	N	P2O5	K2O	N	P2O5	K2O	N	P2O5	K2O	Product Name and Analysis	Appln Rate and Method	N-P2O5-K2O credit	Total Amt
4-1	10.8	9	KpC2	missing	Soybeans 7 -10 inch row	56-65	50	85	FCD	8	56	0	90	130	36	92	137	36	2	7	Diammonium phosphate (DAP) 18-46-0	200 lb Spring Unincorp	36-92-0	2160 lb
																					Potassium chloride 0-0-61	225 lb Spring Unincorp	0-0-137	2430 lb

424.6 planned Soybean acres

53,722 planned lb Diammonium phosphate (DAP)

83,868 planned lb Potassium chloride

425 total planned acres

Total Manure Volume	Manure App Plan	Remaining Manure
0 tons	0	0
0 gals	0	0

53,722 planned lb Diammonium phosphate (DAP)

83,868 planned lb Potassium chloride

List of fields that need new soil tests before plan year 2016

1-4	3-1

Tillage Abbreviations

Abbreviation	Tillage
FCD	Fall Chisel, disked

SnapPlus Spreading and Nutrient Management Sorted By Crop Report

Crop Year	**2016**
Reported For	**Gary Bimmel**
Printed	**2017-02-08**
Plan Completion/Update Date	**2001-01-01**
SnapPlus Version 16.3 built on 2016-10-31	
C:\Users\nguilette\OneDrive - Cooperative Resources International\Ag Data\241-Bimmel, Gary\SnapPlus\Gary Bimmel.snapDb	

Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

Soybean Fields						Crop Removal				Soil Test		Adjusted Recs lb/ac			Planned Applications and Credits lb/ac			Over(+) Under(-) Adj. UW Recs lb/ac			Applications			
Name	Ac.	Slp %	Soil Map Symbol (pred) & N Res	Prior Crop	2016 Crop	Yield Goal	P2O5	K2O	Tillage	Avg P	Avg K	N	P2O5	K2O	N	P2O5	K2O	N	P2O5	K2O	Product Name and Analysis	Appln Rate and Method	N-P2O5-K2O credit	Total Amt
1-1	18.1	4	KnB W	Soybeans 7-10 inch row	Soybeans 7 -10 inch row	56-65	50	85	FCD	15	47	0	79	123	32	81	137	32	2	14	Diammonium phosphate (DAP) 18-46-0	175 lb Spring Unincorp	32-81-0	3168 lb
																					Potassium chloride 0-0-61	225 lb Spring Unincorp	0-0-137	4073 lb
1-2	29.4	4	KnB W	Soybeans 7-10 inch row	Soybeans 7 -10 inch row	56-65	50	85	FCD	24	80	0	25	108	9	23	122	9	-2	14	Diammonium phosphate (DAP) 18-46-0	50 lb Spring Unincorp	9-23-0	1470 lb
																					Potassium chloride 0-0-61	200 lb Spring Unincorp	0-0-122	5880 lb
1-3	13.2	4	KnB	Soybeans 7-10 inch row	Soybeans 7 -10 inch row	56-65	50	85	FCD	97	172	0	0	0	0	0	61	0	0	61	Potassium chloride 0-0-61	100 lb Spring Unincorp	0-0-61	1320 lb

SnapPlus Spreading and Nutrient Management Sorted By Crop Report

Soybean Fields					Crop Removal					Soil Test		Adjusted Recs lb/ac			Planned Applications and Credits lb/ac			Over(+) Under(-) Adj. UW Recs lb/ac			Applications			
Name	Ac.	Slp %	Soil Map Symbol (pred) & N Res	Prior Crop	2016 Crop	Yield Goal	P2O5	K2O	Tillage	Avg P	Avg K	N	P2O5	K2O	N	P2O5	K2O	N	P2O5	K2O	Product Name and Analysis	Appln Rate and Method	N-P2O5-K2O credit	Total Amt
1-4	20.8	4	KnB W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	101	120	0	0	78	0	0	92	0	0	14	Potassium chloride 0-0-61	150 lb Spring Unincorp	0-0-92	3120 lb
1-5	16	4	MbA W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	13	57	0	79	130	32	81	137	32	2	7	Diammonium phosphate (DAP) 18-46-0	175 lb Spring Unincorp	32-81-0	2800 lb
																					Potassium chloride 0-0-61	225 lb Spring Unincorp	0-0-137	3600 lb
1-6	119.4	4	KnB	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	15	77	0	79	108	32	81	122	32	2	14	Diammonium phosphate (DAP) 18-46-0	175 lb Spring Unincorp	32-81-0	20895 lb
																					Potassium chloride 0-0-61	200 lb Spring Unincorp	0-0-122	23880 lb
2-2	53.2	9	KnB	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	13	57	0	79	123	32	81	122	32	2	-1	Diammonium phosphate (DAP) 18-46-0	175 lb Spring Unincorp	32-81-0	9310 lb
																					Potassium chloride 0-0-61	200 lb Spring Unincorp	0-0-122	10640 lb
2-3	43.9	9	KnB	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	24	80	0	25	108	9	23	107	9	-2	-1	Diammonium phosphate (DAP) 18-46-0	50 lb Spring Unincorp	9-23-0	2195 lb
																					Potassium chloride 0-0-61	175 lb Spring Unincorp	0-0-107	7682 lb
2-4	13.2	4	KnB	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	21	77	0	25	108	9	23	122	9	-2	14	Diammonium phosphate (DAP) 18-46-0	50 lb Spring Unincorp	9-23-0	660 lb

SnapPlus Spreading and Nutrient Management Sorted By Crop Report

Soybean Fields						Crop Removal				Soil Test		Adjusted Recs lb/ac			Planned Applications and Credits lb/ac			Over(+) Under(-) Adj. UW Recs lb/ac			Applications			
Name	Ac.	Slp %	Soil Map Symbol (pred) & N Res	Prior Crop	2016 Crop	Yield Goal	P2O5	K2O	Tillage	Avg P	Avg K	N	P2O5	K2O	N	P2O5	K2O	N	P2O5	K2O	Product Name and Analysis	Appln Rate and Method	N-P2O5-K2O credit	Total Amt
2-4	13.2	4	KnB	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	21	77	0	25	108	9	23	122	9	-2	14	Potassium chloride 0-0-61	200 lb Spring Unincorp	0-0-122	2640 lb
2-5	30.1	9	KnB W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	21	110	0	25	78	9	23	92	9	-2	14	Diammonium phosphate (DAP) 18-46-0	50 lb Spring Unincorp	9-23-0	1505 lb
																					Potassium chloride 0-0-61	150 lb Spring Unincorp	0-0-92	4515 lb
3-1	8.7	1	Be	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	101	120	0	0	78	0	0	92	0	0	14	Potassium chloride 0-0-61	150 lb Spring Unincorp	0-0-92	1305 lb
3-2	7.6	9	WbC2	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	9	50	0	88	123	36	92	122	36	4	-1	Diammonium phosphate (DAP) 18-46-0	200 lb Spring Unincorp	36-92-0	1520 lb
																					Potassium chloride 0-0-61	200 lb Spring Unincorp	0-0-122	1520 lb
3-3	30.3	8	WbC2	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	6	44	0	88	123	36	92	122	36	4	-1	Diammonium phosphate (DAP) 18-46-0	200 lb Spring Unincorp	36-92-0	6060 lb
																					Potassium chloride 0-0-61	200 lb Spring Unincorp	0-0-122	6060 lb
3-4	9.9	8	WbC2 W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	9	67	0	88	123	36	92	122	36	4	-1	Diammonium phosphate (DAP) 18-46-0	200 lb Spring Unincorp	36-92-0	1980 lb
																					Potassium chloride 0-0-61	200 lb Spring Unincorp	0-0-122	1980 lb

SnapPlus Spreading and Nutrient Management Sorted By Crop Report

Soybean Fields					Crop Removal					Soil Test		Adjusted Recs lb/ac			Planned Applications and Credits lb/ac			Over(+) Under(-) Adj. UW Recs lb/ac			Applications			
Name	Ac.	Slp %	Soil Map Symbol (pred) & N Res	Prior Crop	2016 Crop	Yield Goal	P2O5	K2O	Tillage	Avg P	Avg K	N	P2O5	K2O	N	P2O5	K2O	N	P2O5	K2O	Product Name and Analysis	Appln Rate and Method	N-P2O5-K2O credit	Total Amt
4-1	10.8	9	KpC2	Soybeans 7-10 inch row	Soybeans 7 -10 inch row	56-65	50	85	FCD	8	56	0	88	123	36	92	122	36	4	-1	Diammonium phosphate (DAP) 18-46-0	200 lb Spring Unincorp	36-92-0	2160 lb
																					Potassium chloride 0-0-61	200 lb Spring Unincorp	0-0-122	2160 lb

424.6 planned Soybean acres

53,722 planned lb Diammonium phosphate (DAP)

80,375 planned lb Potassium chloride

425 total planned acres

Total Manure Volume	Manure App Plan	Remaining Manure
0 tons	0	0
0 gals	0	0

53,722 planned lb Diammonium phosphate (DAP)

80,375 planned lb Potassium chloride

List of fields that need new soil tests before plan year 2017

1-1	1-2
1-3	1-4
1-5	1-6
2-2	2-3
2-4	3-1
3-2	3-3
3-4	4-1

Tillage Abbreviations

Abbreviation	Tillage
FCD	Fall Chisel, disked

SnapPlus Spreading and Nutrient Management Sorted By Crop Report

Crop Year	**2017**
Reported For	**Gary Bimmel**
Printed	**2017-02-08**
Plan Completion/Update Date	**2001-01-01**
SnapPlus Version 16.3 built on 2016-10-31	
C:\Users\nguilette\OneDrive - Cooperative Resources International\Ag Data\241-Bimmel, Gary\SnapPlus\Gary Bimmel.snapDb	

Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

Soybean Fields					Crop Removal					Soil Test		Adjusted Recs lb/ac			Planned Applications and Credits lb/ac			Over(+) Under(-) Adj. UW Recs lb/ac			Applications			
Name	Ac.	Slp %	Soil Map Symbol (pred) & N Res	Prior Crop	2017 Crop	Yield Goal	P2O5	K2O	Tillage	Avg P	Avg K	N	P2O5	K2O	N	P2O5	K2O	N	P2O5	K2O	Product Name and Analysis	Appln Rate and Method	N-P2O5-K2O credit	Total Amt
1-1	18.1	4	KnB W	Soybeans 7-10 inch row	Soybeans 7 -10 inch row	56-65	50	85	FCD	15	47	0	78	116	32	81	137	32	3	21	Diammonium phosphate (DAP) 18-46-0	175 lb Spring Unincorp	32-81-0	3168 lb
																					Potassium chloride 0-0-61	225 lb Spring Unincorp	0-0-137	4073 lb
1-2	29.4	4	KnB W	Soybeans 7-10 inch row	Soybeans 7 -10 inch row	56-65	50	85	FCD	24	80	0	25	101	9	23	122	9	-2	21	Diammonium phosphate (DAP) 18-46-0	50 lb Spring Unincorp	9-23-0	1470 lb
																					Potassium chloride 0-0-61	200 lb Spring Unincorp	0-0-122	5880 lb
1-3	13.2	4	KnB	Soybeans 7-10 inch row	Soybeans 7 -10 inch row	56-65	50	85	FCD	97	172	0	0	0	0	0	0	0	0	0				

SnapPlus Spreading and Nutrient Management Sorted By Crop Report

Soybean Fields						Crop Removal				Soil Test		Adjusted Recs lb/ac			Planned Applications and Credits lb/ac			Over(+) Under(-) Adj. UW Recs lb/ac			Applications			
Name	Ac.	Slp %	Soil Map Symbol (pred) & N Res	Prior Crop	2017 Crop	Yield Goal	P2O5	K2O	Tillage	Avg P	Avg K	N	P2O5	K2O	N	P2O5	K2O	N	P2O5	K2O	Product Name and Analysis	Appln Rate and Method	N-P2O5-K2O credit	Total Amt
1-4	20.8	4	KnB W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	101	120	0	0	71	0	0	92	0	0	21	Potassium chloride 0-0-61	150 lb Spring Unincorp	0-0-92	3120 lb
1-5	16	4	MbA W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	13	57	0	78	123	32	81	137	32	3	14	Diammonium phosphate (DAP) 18-46-0	175 lb Spring Unincorp	32-81-0	2800 lb
																					Potassium chloride 0-0-61	225 lb Spring Unincorp	0-0-137	3600 lb
1-6	119.4	4	KnB	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	15	77	0	78	101	32	81	122	32	3	21	Diammonium phosphate (DAP) 18-46-0	175 lb Spring Unincorp	32-81-0	20895 lb
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2-2	53.2	9	KnB	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	13	57	0	78	130	32	81	137	32	3	7	Diammonium phosphate (DAP) 18-46-0	175 lb Spring Unincorp	32-81-0	9310 lb
																					Potassium chloride 0-0-61	225 lb Spring Unincorp	0-0-137	11970 lb
2-3	43.9	9	KnB	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	24	80	0	25	115	9	23	122	9	-2	7	Diammonium phosphate (DAP) 18-46-0	50 lb Spring Unincorp	9-23-0	2195 lb
																					Potassium chloride 0-0-61	200 lb Spring Unincorp	0-0-122	8780 lb
2-4	13.2	4	KnB	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	21	77	0	25	101	9	23	122	9	-2	21	Diammonium phosphate (DAP) 18-46-0	50 lb Spring Unincorp	9-23-0	660 lb

SnapPlus Spreading and Nutrient Management Sorted By Crop Report

Soybean Fields						Crop Removal				Soil Test		Adjusted Recs lb/ac			Planned Applications and Credits lb/ac			Over(+) Under(-) Adj. UW Recs lb/ac			Applications			
Name	Ac.	Slp %	Soil Map Symbol (pred) & N Res	Prior Crop	2017 Crop	Yield Goal	P2O5	K2O	Tillage	Avg P	Avg K	N	P2O5	K2O	N	P2O5	K2O	N	P2O5	K2O	Product Name and Analysis	Appln Rate and Method	N-P2O5-K2O credit	Total Amt
2-4	13.2	4	KnB	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	21	77	0	25	101	9	23	122	9	-2	21	Potassium chloride 0-0-61	200 lb Spring Unincorp	0-0-122	2640 lb
2-5	30.1	9	KnBW	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	21	110	0	25	71	9	23	92	9	-2	21	Diammonium phosphate (DAP) 18-46-0	50 lb Spring Unincorp	9-23-0	1505 lb
																					Potassium chloride 0-0-61	150 lb Spring Unincorp	0-0-92	4515 lb
3-1	8.7	1	Be	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	101	120	0	0	71	0	0	92	0	0	21	Potassium chloride 0-0-61	150 lb Spring Unincorp	0-0-92	1305 lb
3-2	7.6	9	WbC2	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	9	50	0	86	130	36	92	137	36	6	7	Diammonium phosphate (DAP) 18-46-0	200 lb Spring Unincorp	36-92-0	1520 lb
																					Potassium chloride 0-0-61	225 lb Spring Unincorp	0-0-137	1710 lb
3-3	30.3	8	WbC2	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	6	44	0	86	130	36	92	137	36	6	7	Diammonium phosphate (DAP) 18-46-0	200 lb Spring Unincorp	36-92-0	6060 lb
																					Potassium chloride 0-0-61	225 lb Spring Unincorp	0-0-137	6818 lb
3-4	9.9	8	WbC2W	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	50	85	FCD	9	67	0	86	130	36	92	137	36	6	7	Diammonium phosphate (DAP) 18-46-0	200 lb Spring Unincorp	36-92-0	1980 lb
																					Potassium chloride 0-0-61	225 lb Spring Unincorp	0-0-137	2228 lb

SnapPlus Spreading and Nutrient Management Sorted By Crop Report

Soybean Fields					Crop Removal					Soil Test		Adjusted Recs lb/ac			Planned Applications and Credits lb/ac			Over(+) Under(-) Adj. UW Recs lb/ac			Applications			
Name	Ac.	Slp %	Soil Map Symbol (pred) & N Res	Prior Crop	2017 Crop	Yield Goal	P2O5	K2O	Tillage	Avg P	Avg K	N	P2O5	K2O	N	P2O5	K2O	N	P2O5	K2O	Product Name and Analysis	Appln Rate and Method	N-P2O5-K2O credit	Total Amt
4-1	10.8	9	KpC2	Soybeans 7-10 inch row	Soybeans 7 -10 inch row	56-65	50	85	FCD	8	56	0	86	130	36	92	137	36	6	7	Diammonium phosphate (DAP) 18-46-0	200 lb Spring Unincorp	36-92-0	2160 lb
																					Potassium chloride 0-0-61	225 lb Spring Unincorp	0-0-137	2430 lb

424.6 planned Soybean acres

53,722 planned lb Diammonium phosphate (DAP)

82,948 planned lb Potassium chloride

425 total planned acres

Total Manure Volume	Manure App Plan	Remaining Manure
0 tons	0	0
0 gals	0	0

53,722 planned lb Diammonium phosphate (DAP)

82,948 planned lb Potassium chloride

List of fields that need new soil tests before plan year 2018

1-1	1-2
1-3	1-4
1-5	1-6
2-2	2-3
2-4	2-5
3-1	3-2
3-3	3-4
4-1	

Tillage Abbreviations

Abbreviation	Tillage
FCD	Fall Chisel, disked

SnapPlus Lime Application Report

Data retrieval failed for the subreport, 'Subreport1', locat

Field Data For Soil Tests Selected in 2017

Field Name	Acres	Soil Test Date	Soil Test pH	Target pH	Recommended 60-69 (80-89) t/ac	Lime Year	Lime Source Name	Rate (tons/ac)	NI	Total Amount
1-1	18.1	2012-11-16	7.1	6.3	0(0)					
1-2	29.4	2012-11-16	7.2	6.3	0(0)					
1-3	13.2	2012-11-16	7.6	6.3	0(0)					
1-4	20.8	2008-02-06	7.0	6.3	0(0)					
1-5	16	2012-11-16	7.5	6.3	0(0)					
1-6	119.4	2012-11-16	7.3	6.3	0(0)					
2-2	53.2	2012-11-16	7.3	6.3	0(0)					
2-3	43.9	2012-11-16	7.2	6.3	0(0)					
2-4	13.2	2012-11-16	7.5	6.3	0(0)					
2-5	30.1	2013-10-31	7.3	6.3	0(0)					
3-1	8.7	2008-02-06	7.0	6.3	0(0)					
3-2	7.6	2012-11-16	7.4	6.3	0(0)					
3-3	30.3	2012-11-16	7.4	6.3	0(0)					
3-4	9.9	2012-11-16	7.3	6.3	0(0)					
4-1	10.8	2012-11-16	7.4	6.3	0(0)					

SnapPlus Field Data and 590 Assessment Plan

Reported For	**Gary Bimmel**
Printed	**2017-02-08**
Plan Completion/Update Date	**2001-01-01**
SnapPlus Version 16.3 built on 2016-10-31	
C:\Users\nguilette\OneDrive - Cooperative Resources International\Ag Data\241-Bimmel, Gary\SnapPlus\Gary Bimmel.snapDb	

Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

Field Data: 425 Total Acres Reported.

Field Name	SubFarm	FSA Trct	FSA Fld	Acres	County	Critical Soil Series & Symbol	F. Slp %	F.Slp Len ft	Below Field Slope To Water %	Dist.To Water ft	N/Fld Res	Contour/ Filters	Irrig	Tiled	Rotation	Tillage	Report Period	Field "T" t/ac	Rot Avg Soil Loss t/ac	SCI	Rot Avg PI	Soil Test P ppm	Rot P2O5 Bal lb/ac	P2O5 Bal Target lb/ac
1-1				18.1	Sheboygan	KEWAU NEE KnB	4	200	0 - 2	1001 - 5000	W	No / No	No	No	Sg7-Sg7-Sg7-Sg7-Sg7-Sg7-Sg7	FCD-FCD-NT-NT-NT-NT-NT	2016-2022	**3**	**2.9**	**0.1**	**4**	15	55	-
1-2				29.4	Sheboygan	KEWAU NEE KnB	4	200	0 - 2	1001 - 5000	W %	No / No	No	No	Sg7-Sg7-Sg7-Sg7-Sg7-Sg7	FCD-FCD-NT-NT-NT-NT-NT	2016-2022	**3**	**2.9**	**0.1**	**2**	24	-304	-
1-3				13.2	Sheboygan	KEWAU NEE KnB	4	200	0 - 2	1001 - 5000		No / No	No	No	Sg7-Sg7-Sg7-Sg7-Sg7-Sg7-Sg7	FCD-FCD-NT-NT-NT-NT-NT	2016-2022	**3**	**2.9**	**0.1**	**4**	97	-350	0
1-4				20.8	Sheboygan	KEWAU NEE KnB	4	200	0 - 2	301 - 1000	W S	No / No	No	No	Sg7-Sg7-Sg7-Sg7-Sg7-Sg7-Sg7	FCD-FCD-NT-NT-NT-NT-NT	2016-2022	**3**	**2.9**	**0.1**	**4**	101	-350	-88
1-5				16	Sheboygan	KEWAU NEE KnB	4	200	0 - 2	1001 - 5000	W	No / No	No	No	Sg7-Sg7-Sg7-Sg7-Sg7-Sg7-Sg7	FCD-FCD-NT-NT-NT-NT-NT	2016-2022	**3**	**2.9**	**0.1**	**3**	13	-188	-
1-6				119.4	Sheboygan	KEWAU NEE KnB	4	200	0 - 2	301 - 1000	S	No / No	No	No	Sg7-Sg7-Sg7-Sg7-Sg7-Sg7-Sg7	FCD-FCD-NT-NT-NT-NT-NT	2016-2022	**3**	**2.9**	**0.1**	**3**	15	-188	-

Field Name	SubFarm	FSA Trct	FSA Fld	Acres	County	Critical Soil Series & Symbol	F. Slp %	F.Slp Len ft	Below Field Slope To Water %	Dist.To Water ft	N/Fld Res	Contour/ Filters	Irrig	Tiled	Rotation	Tillage	Report Period	Field "T" t/ac	Rot Avg Soil Loss t/ac	SCI	Rot Avg PI	Soil Test P ppm	Rot P2O5 Bal lb/ac	P2O5 Bal Target lb/ac
2-2				53.2	Sheboygan	KEWAUNEE KpC2	9	150	0 - 2	301 - 1000	S %	No / No	No	No	Sg7-Sg7-Sg7-Sg7-Sg7-Sg7-Sg7-Sg7	FCD-NT-NT-NT-NT-NT-NT-NT	2017-2023	3	2.9	0.3	3	13	-269	-
2-3				43.9	Sheboygan	KEWAUNEE KpC2	9	150	0 - 2	1001 - 5000	%	No / No	No	No	Sg7-Sg7-Sg7-Sg7-Sg7-Sg7-Sg7-Sg7	FCD-NT-NT-NT-NT-NT-NT-NT	2017-2023	3	2.9	0.3	2	24	-327	-
2-4				13.2	Sheboygan	KEWAUNEE KnB	4	200	0 - 2	1001 - 5000	%	No / No	No	No	Sg7-Sg7-Sg7-Sg7-Sg7-Sg7-Sg7-Sg7	FCD-FCD-NT-NT-NT-NT-NT-NT	2016-2022	3	2.9	0.1	3	21	-304	-
2-5				30.1	Sheboygan	KEWAUNEE KpC2	9	150	2.1 - 6	1001 - 5000	W C %	No / No	No	No	Sg7-Sg7-Sg7-Sg7-Sg7-Sg7-Sg7-Sg7	FCD-NT-NT-NT-NT-NT-NT-NT	2017-2023	3	2.9	0.3	2	21	-327	-
3-1				8.7	Sheboygan	BELLEVUE Be	1	250	2.1 - 6	0 - 300	S C	No / No	No	No	Sg7-Sg7-Sg7-Sg7	FCD-FCD-FCD-FCD	2015-2018	5	1.1	0.0	2	101	-200	-50
3-2				7.6	Sheboygan	KEWAUNEE KpC2	9	150	6.1 - 12	0 - 300	S C %	No / No	No	No	Sg7-Sg7-Sg7-Sg7-Sg7-Sg7-Sg7-Sg7	FCD-NT-NT-NT-NT-NT-NT-NT	2017-2023	3	2.9	0.3	3	9	-258	-
3-3				30.3	Sheboygan	WAYMOR WbC2	8	150	2.1 - 6	301 - 1000	S C %	No / No	No	No	Sg7-Sg7-Sg7-Sg7-Sg7-Sg7-Sg7-Sg7	FCD-FCD-FCD-NT-NT-NT-NT-NT	2015-2022	5	4.8	0.0	5	6	-124	-
3-4				9.9	Sheboygan	WAYMOR WbC2	8	150	0 - 2	1001 - 5000	W S C %	No / No	No	No	Sg7-Sg7-Sg7-Sg7-Sg7-Sg7-Sg7-Sg7	FCD-FCD-FCD-NT-NT-NT-NT-NT	2015-2022	5	4.8	0.0	5	9	-124	-
4-1				10.8	Sheboygan	KEWAUNEE KpC2	9	150	2.1 - 6	0 - 300	S %	No / No	No	No	Sg7-Sg7-Sg7-Sg7-Sg7-Sg7-Sg7-Sg7	FCD-NT-NT-NT-NT-NT-NT-NT	2017-2023	3	2.9	0.3	3	8	-258	-

Crop Abbreviations

Abbreviation	Crop
Sg7	Soybeans 7-10 inch row

Tillage Abbreviations

Abbreviation	Tillage
FCD	Fall Chisel, disked

NT	No Till

Restriction Legend

Code	Description of Code
S	Field is in SWQMA
D	Drinking water well within 50 feet of field.
C	Conduit to groundwater within 200 feet upslope of field.
L	Local restrictions on nutrient applications.
%	Slope restriction for winter applications
P	High permeability N restricted soils
R	N restricted soils with less than 20 inches to bedrock
W	N restricted soils with less than 12 inches to apparent water table
+	This map unit may have any of the N restrictive features, however an on-site investigation is needed to identify which restrictions may actually be present.

SnapPlus Application Restriction Compliance Check Report

For Years	**2015 - 2022**
Plan Year	**2017**
Reported For	**Gary Bimmel**
Printed	**2017-02-08**
Plan Completion/Update Date	**2001-01-01**
SnapPlus Version 16.3 built on 2016-10-31	
C:\Users\nguilette\OneDrive - Cooperative Resources International\Ag Data\241-Bimmel, Gary\SnapPlus\Gary Bimmel.snapDb	

Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

This farm uses both PI and Soil Test P for P2O5 590 Compliance

Rotational Restriction Problems

No Rotational Problems found

Soil Test Problems

Field Name	Soil Test Date	Too Few Soil Samples	Soil Test Too Old
1-1	2012-11-16		X
1-2	2012-11-16		X
1-3	2012-11-16		X
1-4	2008-02-06	X	X
1-5	2012-11-16		X
1-6	2012-11-16		X
2-2	2012-11-16		X
2-3	2012-11-16		X

Field Name	Soil Test Date	Too Few Soil Samples	Soil Test Too Old
2-4	2012-11-16		X
3-1	2008-02-06	X	X
3-2	2012-11-16		X
3-3	2012-11-16		X
3-4	2012-11-16		X
4-1	2012-11-16		X

Application Restriction Problems

Field Name	Year	Problem	Explanation
2-5	2015	Unincorporated applications upslope of conduits to groundwater: well within 200 feet	Spreading restriction maps have been provided and will need to be followed in order to comply with NRCS CPS 590.
2-5	2016	Unincorporated applications upslope of conduits to groundwater: well within 200 feet	Spreading restriction maps have been provided and will need to be followed in order to comply with NRCS CPS 590.
2-5	2017	Unincorporated applications upslope of conduits to groundwater: well within 200 feet	Spreading restriction maps have been provided and will need to be followed to ensure compliance with NRCS CPS 590.
3-2	2015	Unincorporated applications upslope of conduits to groundwater: well within 200 feet	Spreading restriction maps have been provided and will need to be followed in order to comply with NRCS CPS 590.
3-2	2016	Unincorporated applications upslope of conduits to groundwater: well within 200 feet	Spreading restriction maps have been provided and will need to be followed in order to comply with NRCS CPS 590.
3-2	2017	Unincorporated applications upslope of conduits to groundwater: well within 200 feet	Spreading restriction maps have been provided and will need to be followed in order to comply with NRCS CPS 590.

Field Name	Year	Problem	Explanation
3-3	2015	Unincorporated applications upslope of conduits to groundwater: well within 200 feet	Spreading restriction maps have been provided and will need to be followed in order to comply with NRCS CPS 590.
3-3	2016	Unincorporated applications upslope of conduits to groundwater: well within 200 feet	Spreading restriction maps have been provided and will need to be followed in order to comply with NRCS CPS 590.
3-3	2017	Unincorporated applications upslope of conduits to groundwater: well within 200 feet	Spreading restriction maps have been provided and will need to be followed in order to comply with NRCS CPS 590.
3-4	2015	Unincorporated applications upslope of conduits to groundwater: well within 200 feet	Spreading restriction maps have been provided and will need to be followed in order to comply with NRCS CPS 590.
3-4	2016	Unincorporated applications upslope of conduits to groundwater: well within 200 feet	Spreading restriction maps have been provided and will need to be followed in order to comply with NRCS CPS 590.
3-4	2017	Unincorporated applications upslope of conduits to groundwater: well within 200 feet	Spreading restriction maps have been provided and will need to be followed in order to comply with NRCS CPS 590.

Excess N Problems

No Excess N Problems found

Soil Test Problems Legend	
Too Few Soil Samples	Less than one sample per five acres.
Soil Test Data Too Old	Soil test is greater than 4 years old

Daily Manure Application Log

Date	Field	Acres Applied	Source:	# of Loads & Size of Loads or Amt Applied	Applicator	Application Method: (Circle)	Soil Conditions: (Circle)	Weather During Application: (Circle)	Temp	Notes:
						Surface, Incorp, Inject	Dry, Wet, Frozen, Snow Covered	Sunny, Cloudy, Mist, Raining, Snowing		
						Surface, Incorp, Inject	Dry, Wet, Frozen, Snow Covered	Sunny, Cloudy, Raining, Snowing		
						Surface, Incorp, Inject	Dry, Wet, Frozen, Snow Covered	Sunny, Cloudy, Raining, Snowing		
						Surface, Incorp, Inject	Dry, Wet, Frozen, Snow Covered	Sunny, Cloudy, Raining, Snowing		
						Surface, Incorp, Inject	Dry, Wet, Frozen, Snow Covered	Sunny, Cloudy, Raining, Snowing		
						Surface, Incorp, Inject	Dry, Wet, Frozen, Snow Covered	Sunny, Cloudy, Raining, Snowing		
						Surface, Incorp, Inject	Dry, Wet, Frozen, Snow Covered	Sunny, Cloudy, Raining, Snowing		
						Surface, Incorp, Inject	Dry, Wet, Frozen, Snow Covered	Sunny, Cloudy, Raining, Snowing		
						Surface, Incorp, Inject	Dry, Wet, Frozen, Snow Covered	Sunny, Cloudy, Raining, Snowing		
						Surface, Incorp, Inject	Dry, Wet, Frozen, Snow Covered	Sunny, Cloudy, Raining, Snowing		
						Surface, Incorp, Inject	Dry, Wet, Frozen, Snow Covered	Sunny, Cloudy, Raining, Snowing		
						Surface, Incorp, Inject	Dry, Wet, Frozen, Snow Covered	Sunny, Cloudy, Raining, Snowing		
						Surface, Incorp, Inject	Dry, Wet, Frozen, Snow Covered	Sunny, Cloudy, Raining, Snowing		
						Surface, Incorp, Inject	Dry, Wet, Frozen, Snow Covered	Sunny, Cloudy, Raining, Snowing		

FERTILIZER APPLICATION LOG

DATE APPLIED	FIELD	ACRES SPREAD	FERTILIZER ANALYSIS	GAL. OR LBS	RATE OF APPLICATION	METHOD OF PLACEMENT	TOTAL PRODUCT USED

Record of Manure Transported to or Received From Third Party

Date	Recipient of Manure	Contact Information	Source	Amount Transported (units)

Soil Test Report - Field: 2-2 Acres: 50.0

ROCK RIVER LABORATORY, INC.
AGRICULTURAL ANALYSIS

Account: 235
Adell Cooperative Union
607 Mill Street
Adell, WI 53001

Report For:
Gary Bimmel

Lab #204843
County SHEBOYGAN
Received 11/1/2017
Slope 0%
Field
2-2
Acres 50.0
Plow Depth 8.0
Soil Name
Kewaunee
Previous Crop

Nutrient Recommendations

Cropping Sequence	Yield Goal (per acre)	Crop Nutrient Need (lbs/acre)			Fertilizer Credit (lbs/acre)				Nutrients to Apply(lbs/acre)		
		N	P2O5	K2O	Legume N	Manure N	P2O5	K2O	N	P2O5	K2O
Soybean, grain	66-75 bu	0	85	145	0	0	0	0	0	85	145
Corn, grain	171-190 bu	*	100	95	0	0	0	0	*	100	95
Wheat, grain + straw	81-100 bu	0	85	145	0	0	0	0	0	85	145

*For information on the new N application rate guidelines for corn see http://uwlab.soils.wisc.edu/pubs/MRTN
There is no lime recommendation.

Laboratory Analysis for Field 2-2, Lab No 204843

Sample Num	Soil pH	Om %	P ppm	K ppm	60-69 Lime Req(T/a)	Ca ppm	Mg ppm	Est Cec	B ppm	Mn ppm	Zn ppm	Sulfate-S ppm	Texture Code	Sample Density	Buffer Code
1	7.4	1.7	14	66		1921	552	15					2	1.10	N.R.
2	7.1	1.3	21	68		1535	478	12					1	1.15	N.R.
3	7.5	1.5	21	65		1514	475	11					2	1.23	N.R.
4	7.7	1.5	7	68		2272	791	19					2	1.12	N.R.
5	7.7	2.3	21	64		2559	718	18					2	1.26	N.R.
6	7.7	1.9	15	63		2008	605	16					2	1.10	N.R.
7	7.6	2.0	21	70		2090	624	18					2	1.05	N.R.
8	7.8	1.7	15	62		2022	576	16					2	1.10	N.R.
9	7.8	1.7	14	49		2076	626	16					2	1.12	N.R.
10	7.8	2.0	8	57		2063	641	17					2	1.06	N.R.
11	7.8	2.1	11	57		2673	795	21					2	1.13	N.R.
Adj Avg	**7.6**	**1.8**	**14**	**63**		**2067**	**626**								

Additional Information, Secondary & Micronutrient Recommendations

N.R.=Not required for calculation of lime requirement when soil pH is 6.6 or higher.
Year 2: If corn is harvested for silage instead of grain add extra 30 lbs P2O5 per acre and 90 lbs K2O per acre to next crop.
Starter fertilizer (e.g. 10+20+20 lbs N+P2O5+K2O/a) is advisable for row crops on soils slow to warm in the spring.
Recommended rates are the total amount of nutrients to apply (N-P-K), including starter fertilizer.
Ca - H Mg-H
%Base Saturation: Ca 66.1% Mg 32.8% K 1.0%
Response to added Ca is unlikely.
Response to added Mg is unlikely.

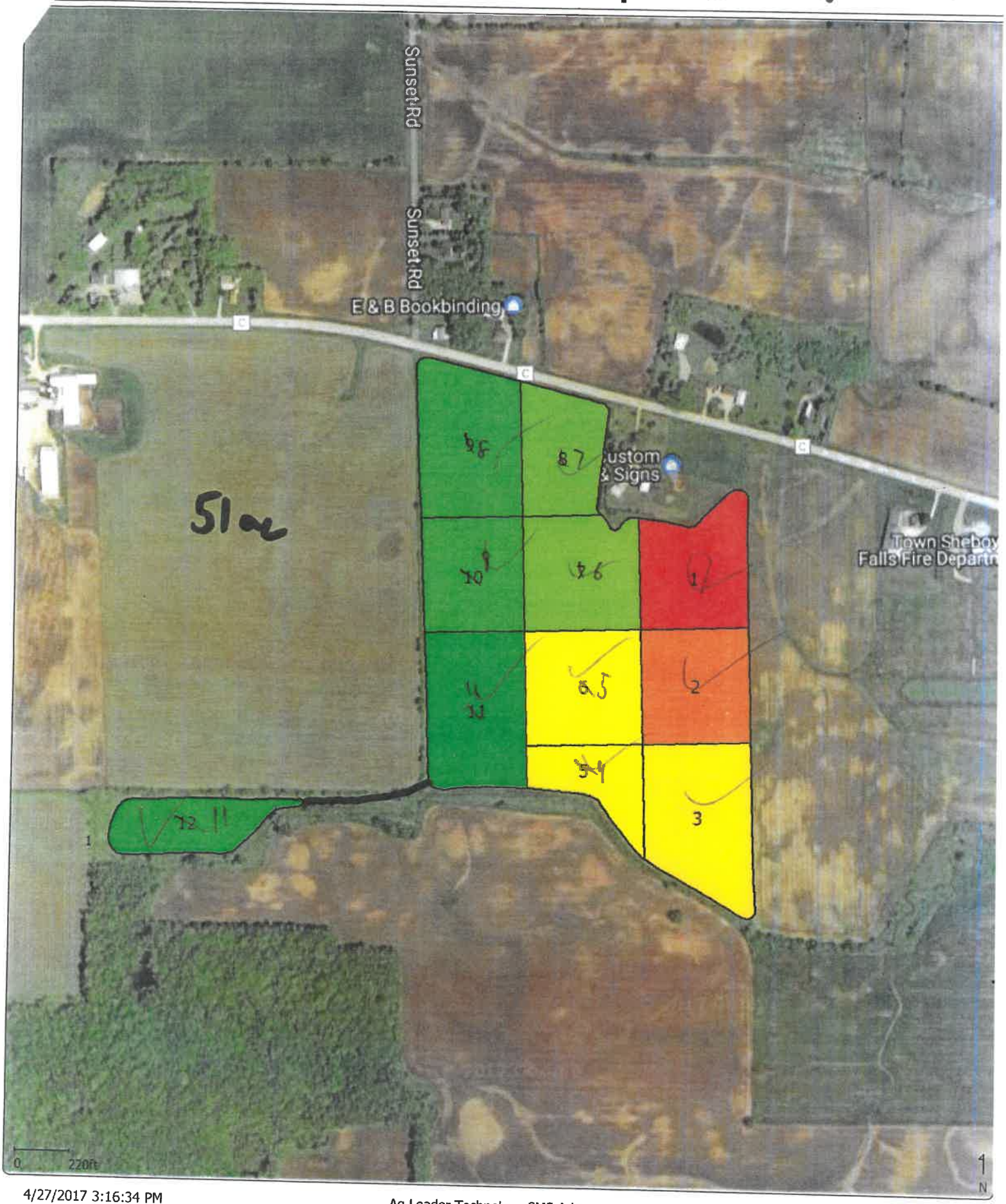
Test Interpretation for Field 2-2, Lab No 204843

Crop Name	Very Low	Low	Optimum	High	Very High	Excessive	Very Low	Low	Optimum	High	Very High	Excessive
Wheat, grain + straw	P						K					
Rotation pH	pH											

These recommendations are based on University of Wisconsin publication A2809. Data represents the soil sample, not necessarily the entire field.

2-2

SMS Map no sample #4



Soil Test Report - Field: 1-1&2&3 Acres: 100.0

ROCK RIVER LABORATORY, INC.
AGRICULTURAL ANALYSIS

Account: 235
Adell Cooperative Union
607 Mill Street
Adell, WI 53001

Report For:
Gary Bimmel

Lab #204849
County SHEBOYGAN
Received 11/1/2017
Slope 0%
Field
1-1&2&3
Acres 100.0
Plow Depth 8.0
Soil Name
Kewaunee
Previous Crop

Nutrient Recommendations

Cropping Sequence	Yield Goal (per acre)	Crop Nutrient Need (lbs/acre) N	P2O5	K2O	Fertilizer Credit (lbs/acre) Legume N	Manure N	P2O5	K2O	Nutrients to Apply(lbs/acre) N	P2O5	K2O
Soybean, grain	66-75 bu	0	55	145	0	0	0	0	0	55	145
Corn, grain	171-190 bu	*	70	95	0	0	0	0	*	70	95
Wheat, grain + straw	81-100 bu	0	55	145	0	0	0	0	0	55	145

*For information on the new N application rate guidelines for corn see http://uwlab.soils.wisc.edu/pubs/MRTN
There is no lime recommendation.

Laboratory Analysis for Field 1-1&2&3, Lab No 204849

Sample Num	Soil pH	Om %	P ppm	K ppm	60-69 Lime Req(T/a)	Ca ppm	Mg ppm	Est Cec	B ppm	Mn ppm	Zn ppm	Sulfate-S ppm	Texture Code	Sample Density	Buffer Code
1	7.7	3.3	45	139		2059	562	17					2	1.04	N.R.
2	8.0	2.2	58	138		4096	688	26					2	1.20	N.R.
3	8.0	2.2	42	125		2522	553	19					2	1.07	N.R.
4	7.6	2.7	37	131		2135	618	15					2	1.28	N.R.
5	8.0	2.4	29	120		2626	708	21					2	1.08	N.R.
6	7.8	2.1	16	75		1888	605	14					2	1.22	N.R.
7	8.0	2.4	26	83		2124	618	16					2	1.16	N.R.
8	7.7	1.7	16	73		2294	746	19					2	1.13	N.R.
9	7.8	1.9	9	76		2607	937	22					2	1.14	N.R.
10	7.3	2.4	15	67		2454	748	20					2	1.08	N.R.
11	8.0	1.9	20	73		2240	740	18					2	1.13	N.R.
12	7.6	2.2	21	63		2770	839	21					2	1.19	N.R.
13	7.6	3.5	29	110		2979	797	26					2	0.99	N.R.
14	7.8	2.3	30	126		2845	766	24					2	1.02	N.R.
15	7.4	2.6	22	56		2378	617	19					2	1.08	N.R.
16	7.7	2.9	20	55		2633	740	21					2	1.10	N.R.
17	7.6	2.6	16	65		2488	663	20					2	1.08	N.R.
18	7.6	2.2	14	65		2557	791	20					2	1.16	N.R.
19	7.7	2.2	5	67		2182	763	19					2	1.08	N.R.
20	7.7	1.7	8	55		1904	610	15					2	1.12	N.R.
21	7.3	2.1	11	47		1588	436	12					2	1.14	N.R.
22	7.3	2.2	10	45		2053	620	19					2	0.98	N.R.
23	7.5	2.5	13	44		2138	676	17					2	1.14	N.R.
24	7.7	1.7	12	46		1267	334	9					2	1.18	N.R.
Adj Avg	**7.7**	**2.3**	**20**	**76**		**2368**	**675**								

Additional Information, Secondary & Micronutrient Recommendations

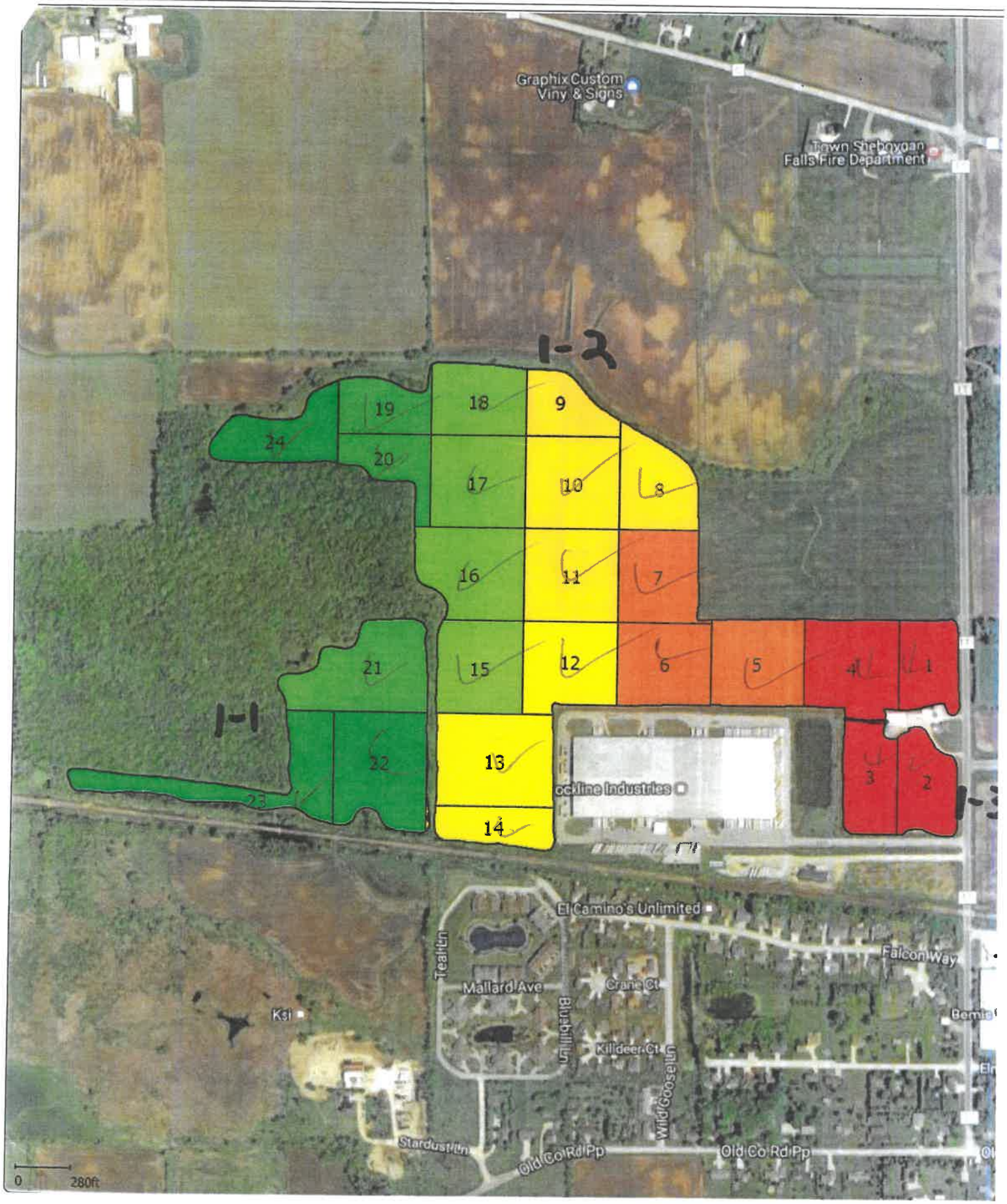
N.R.=Not required for calculation of lime requirement when soil pH is 6.6 or higher.
Year 2: If corn is harvested for silage instead of grain add extra 30 lbs P2O5 per acre and 90 lbs K2O per acre to next crop.
Starter fertilizer (e.g. 10+20+20 lbs N+P2O5+K2O/a) is advisable for row crops on soils slow to warm in the spring.
Recommended rates are the total amount of nutrients to apply (N-P-K), including starter fertilizer.
Ca - H Mg-H
%Base Saturation: Ca 67.4% Mg 31.5% K 1.1%
Response to added Ca is unlikely.
Response to added Mg is unlikely.

Test Interpretation for Field 1-1&2&3, Lab No 204849

Crop Name	Very Low	Low	Optimum	High	Very High	Excessive	Very Low	Low	Optimum	High	Very High	Excessive
Wheat, grain + straw	P						K					
Rotation pH	pH											

These recommendations are based on University of Wisconsin publication A2809. Data represents the soil sample, not necessarily the entire field.

1-1, 1-2, 1-3 SMS Map



ROCK RIVER LABORATORY, INC.
AGRICULTURAL ANALYSIS

Soil Test Report - Field: 1-4 N Acres: 4.0

Account: 235
Adell Cooperative Union
607 Mill Street
Adell, WI 53001

Report For:
Gary Bimmel

Lab #205364
County SHEBOYGAN
Received 11/8/2017
Slope 0%
Field
1-4 N
Acres 4.0
Plow Depth 8.0
Soil Name
Kewaunee
Previous Crop

Nutrient Recommendations

Cropping Sequence	Yield Goal (per acre)	Crop Nutrient Need (lbs/acre)			Fertilizer Credit (lbs/acre)				Nutrients to Apply(lbs/acre)		
		N	P2O5	K2O	Legume N	Manure N	P2O5	K2O	N	P2O5	K2O
Corn, grain	171-190 bu	*	70	95	0	0	0	0	*	70	95
Soybean, grain	66-75 bu	0	55	145	0	0	0	0	0	55	145
Wheat, grain + straw	81-100 bu	0	55	145	0	0	0	0	0	55	145

*For information on the new N application rate guidelines for corn see http://uwlab.soils.wisc.edu/pubs/MRTN
There is no lime recommendation.

Laboratory Analysis for Field 1-4 N, Lab No 205364

Sample Num	Soil pH	Om %	P ppm	K ppm	60-69 Lime Req(T/a)	Ca ppm	Mg ppm	Est Cec	B ppm	Mn ppm	Zn ppm	Sulfate-S ppm	Texture Code	Sample Density	Buffer Code
1	7.6	2.1	19	86		2606	720	19					2	1.21	N.R.

Additional Information, Secondary & Micronutrient Recommendations

N.R.=Not required for calculation of lime requirement when soil pH is 6.6 or higher.
Year 1: If corn is harvested for silage instead of grain add extra 30 lbs P2O5 per acre and 90 lbs K2O per acre to next crop.
Starter fertilizer (e.g. 10+20+20 lbs N+P2O5+K2O/a) is advisable for row crops on soils slow to warm in the spring.
Recommended rates are the total amount of nutrients to apply (N-P-K), including starter fertilizer.
Ca - H Mg-H
%Base Saturation: Ca 68.0% Mg 30.8% K 1.2%
Response to added Ca is unlikely.
Response to added Mg is unlikely.

Test Interpretation for Field 1-4 N, Lab No 205364

Crop Name	Very Low	Low	Optimum	High	Very High	Excessive	Very Low	Low	Optimum	High	Very High	Excessive
Wheat, grain + straw	P						K					
Rotation pH	pH											

These recommendations are based on University of Wisconsin publication A2809. Data represents the soil sample, not necessarily the entire field.

ROCK RIVER LABORATORY, INC.
AGRICULTURAL ANALYSIS

Soil Test Report - Field: 1-4 S Acres: 16.0

Account: 235
Adell Cooperative Union
607 Mill Street
Adell, WI 53001

Report For:
Gary Bimmel

Lab #205364
County SHEBOYGAN
Received 11/8/2017
Slope 0%
Field
1-4 S
Acres 16.0
Plow Depth 8.0
Soil Name
Kewaunee
Previous Crop

Nutrient Recommendations

Cropping Sequence	Yield Goal (per acre)	Crop Nutrient Need (lbs/acre)			Fertilizer Credit (lbs/acre)				Nutrients to Apply(lbs/acre)		
		N	P2O5	K2O	Legume N	Manure N	P2O5	K2O	N	P2O5	K2O
Corn, grain	171-190 bu	*	70	95	0	0	0	0	*	70	95
Soybean, grain	66-75 bu	0	55	145	0	0	0	0	0	55	145
Wheat, grain + straw	81-100 bu	0	55	145	0	0	0	0	0	55	145

*For information on the new N application rate guidelines for corn see http://uwlab.soils.wisc.edu/pubs/MRTN
There is no lime recommendation.

Laboratory Analysis for Field 1-4 S, Lab No 205364

Sample Num	Soil pH	Om %	P ppm	K ppm	60-69 Lime Req(T/a)	Ca ppm	Mg ppm	Est Cec	B ppm	Mn ppm	Zn ppm	Sulfate-S ppm	Texture Code	Sample Density	Buffer Code
1	8.0	1.9	18	78		5887	796	37					2	1.15	N.R.
2	7.9	2.2	29	93		2420	519	18					2	1.08	N.R.
3	7.9	2.2	20	92		3024	712	23					2	1.08	N.R.
Adj Avg	**7.9**	**2.1**	**20**	**88**		**3777**	**676**								

Additional Information, Secondary & Micronutrient Recommendations

N.R.=Not required for calculation of lime requirement when soil pH is 6.6 or higher.
Year 1: If corn is harvested for silage instead of grain add extra 30 lbs P2O5 per acre and 90 lbs K2O per acre to next crop.
Starter fertilizer (e.g. 10+20+20 lbs N+P2O5+K2O/a) is advisable for row crops on soils slow to warm in the spring.
Recommended rates are the total amount of nutrients to apply (N-P-K), including starter fertilizer.
Ca - H Mg-H
%Base Saturation: Ca 76.6% Mg 22.5% K 0.9%
Response to added Ca is unlikely.
Response to added Mg is unlikely.

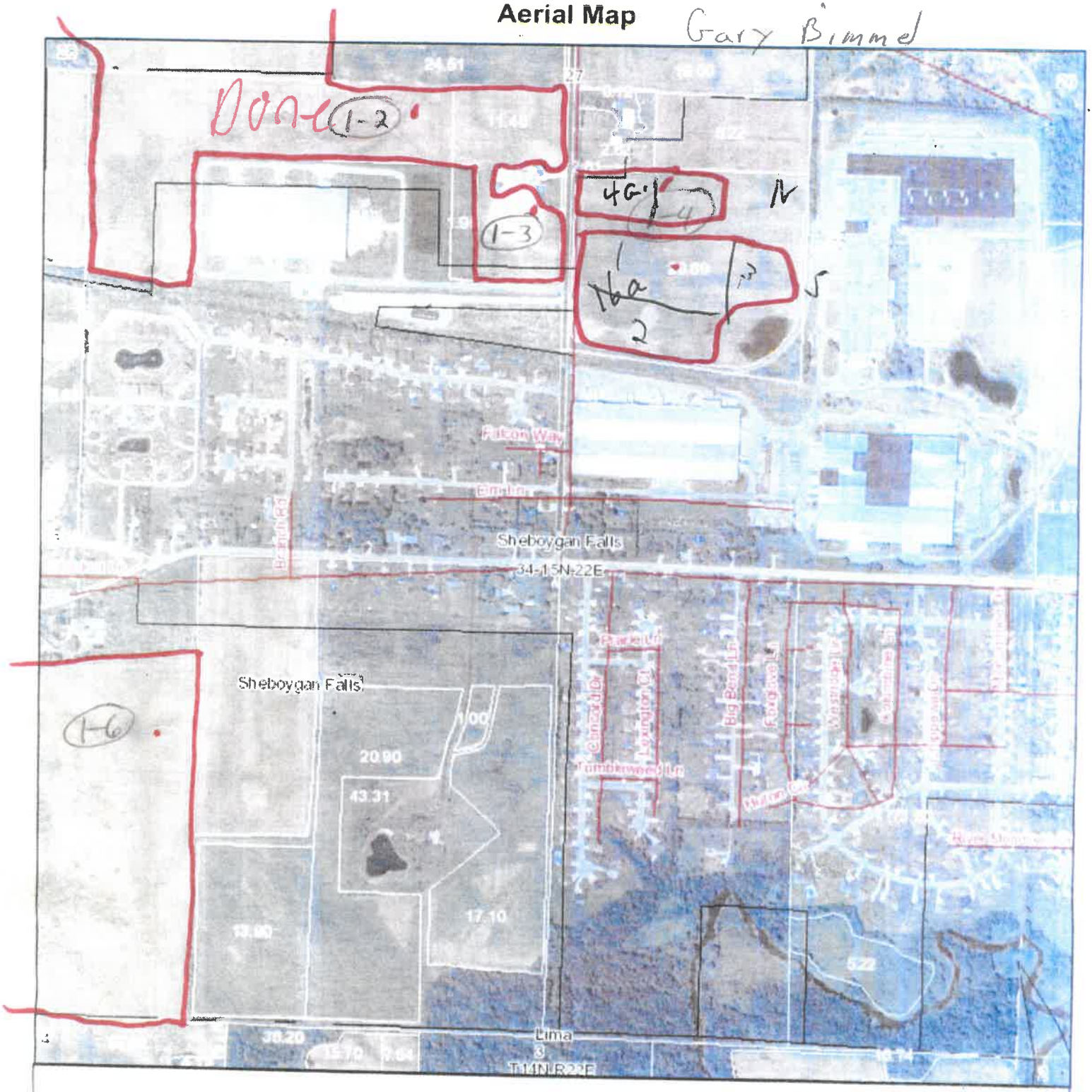
Test Interpretation for Field 1-4 S, Lab No 205364

Crop Name	Very Low	Low	Optimum	High	Very High	Excessive	Very Low	Low	Optimum	High	Very High	Excessive
Wheat, grain + straw	P						K					
Rotation pH	pH											

These recommendations are based on University of Wisconsin publication A2809, Data represents the soil sample, not necessarily the entire field.

Aerial Map

Gary Bimmel



map center: 43° 43' 32.27", 87° 51' 0.91"
scale: 1006.2

34-15N-22E
Sheboygan County
Wisconsin

Maps provided by surety

©AgriData, Inc. 2012
www.AgriDataInc.com

4/6/2012

Field borders provided by Farm Service Agency as of 5/21/2008. Aerial photography provided by Aerial Photography Field Office

ATTACHMENT D

SnapPlus Modeling Reports (Current)

NM1: Narrative and Crops Report

Starting Year	**2019**
Reported For	**Gary Bimmel**
Printed	**2018-09-12**
Plan Completion/Update Date:	**2018-04-20**
SnapPlus Version 17.0 built on 2018-03-26	
W:\Clients\Bemis\Sheboygan Falls, WI\5198_Phosphorus Compliance \Permitting & Regulations\WQT\SnapPlus\Bemis - Gary Bimmel_Existing Fields.snapDb	

Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

Farm has 2 fields totalling 54 acres
Farm Narrative: None

Annual Farm Notes:

No Annual Farm Notes

Spreader Calibration Methods: Amount applied / Acres

Narrative and Crops:

Field Name	Acres	2019	2020	2021	2022	2023	2024	2025	2026
2-2	22	Soybeans 7-10 inch row Fall Chisel, disked 56-65 bu/acre	Soybeans 7-10 inch row No Till 56-65 bu/acre	Soybeans 7-10 inch row Fall Chisel, disked 56-65 bu/acre	Soybeans 7-10 inch row Fall Chisel, disked 56-65 bu/acre	Soybeans 7-10 inch row No Till 56-65 bu/acre	Soybeans 7-10 inch row Fall Chisel, disked 56-65 bu/acre	Soybeans 7-10 inch row Fall Chisel, disked 56-65 bu/acre	Soybeans 7-10 inch row No Till 56-65 bu/acre
2-3	32	Soybeans 7-10 inch row Fall Chisel, disked 56-65 bu/acre	Soybeans 7-10 inch row No Till 56-65 bu/acre	Soybeans 7-10 inch row Fall Chisel, disked 56-65 bu/acre	Soybeans 7-10 inch row Fall Chisel, disked 56-65 bu/acre	Soybeans 7-10 inch row No Till 56-65 bu/acre	Soybeans 7-10 inch row Fall Chisel, disked 56-65 bu/acre	Soybeans 7-10 inch row Fall Chisel, disked 56-65 bu/acre	Soybeans 7-10 inch row No Till 56-65 bu/acre

Summary by Crop:
NOTE: Yields calculated using the midpoint of the SnapPlus yield goal range for each crop.

Crops Grouped By Category		2019	2020	2021	2022	2023	2024	2025	2026
Soybeans 7-10 inch row	Acres bu	54 3,267	54 3,267	54 3,267	54 3,267	54 3,267	54 3,267	54 3,267	54 3,267

FM6: Soil Test Report

Reported For	Gary Bimmel
Printed	2018-09-12
Plan Completion/Update Date	2018-04-20
SnapPlus Version 17.0 built on 2018-03-26	
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Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

			Predominant					Samples				in ppm			
Field Name	Subfarm	Acres	Soil Map Symbol	Soil Name	Soil Test Date	Soil Test Lab	Lab Number	Rec. #	Actual #	pH	OM%	P	K	S	CEC
2-2		22	KnB	KEWAUNEE	2017-11-01	ROCK RIVER LAB	204843	**4**	**11**	7.6	1.8	15	63	0	16
2-2		22	KnB	KEWAUNEE	2012-11-16	Rock River Lab	152027	**4**	**13**	7.3	2.5	13	57	0	0
2-3		32	KnB	KEWAUNEE	2017-11-01	ROCK RIVER LAB	204849	**6**	**11**	7.7	2.2	13	66	0	18
2-3		32	KnB	KEWAUNEE	2012-11-16	Rock River Lab	152027	**6**	**20**	7.2	2.6	24	80	0	0

Crop Year Soil Test Needed

Field Name	Soil Test Date	2017	2018	2019	2020	2021	2022	2023
2-2	2017-11-01						X	
2-3	2017-11-01						X	

FM2: Application Summary Report

Starting Year	**2019**
Reported For	**Gary Bimmel**
Printed	**2018-09-12**
Plan Completion/Update Date:	**2018-04-20**
SnapPlus Version 17.0 built on 2018-03-26	
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Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

Annual Manure Production And Use By Source

Total Value = $ Value of all nutrients, incorporated including S.

Source	

Application Results Reported For Farm All

Annual Pounds Of Available N, P2O5 And K2O Applied From Manure and Fertilizer.								
		2019	2020	2021	2022	2023	2024	2025
Produced from Manure (lb)	Ninj P2O5 K2O	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0
Total Available Manure Nutrients Applied (lb)	Ninj P2O5 K2O	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0
Total Fertilizer Nutrients Applied (lb)	N P2O5 K2O	1,674 4,320 6,588	1,674 4,320 6,588	1,674 4,320 6,588	1,674 4,320 6,588	1,674 4,320 6,588	1,674 4,320 6,588	1,674 4,320 6,588
Total Crop Removal (lb)	P2O5 K2O	2,700 4,590	2,700 4,590	2,700 4,590	2,700 4,590	2,700 4,590	2,700 4,590	2,700 4,590
Nutrient Balance (Applied - Crop removal, lb)	P2O5 K2O	1,620 1,998	1,620 1,998	1,620 1,998	1,620 1,998	1,620 1,998	1,620 1,998	1,620 1,998

Annual Pounds Of Available N, P2O5 And K2O Applied From Manure and Fertilizer.		
		2026
Produced from Manure (lb)	Ninj P2O5 K2O	0 0 0
Total Available Manure Nutrients Applied (lb)	Ninj P2O5 K2O	0 0 0
Total Fertilizer Nutrients Applied (lb)	N P2O5 K2O	1,674 4,320 6,588
Total Crop Removal (lb)	P2O5 K2O	2,700 4,590
Nutrient Balance (Applied - Crop removal, lb)	P2O5 K2O	1,620 1,998

NM3: Field Data and 590 Assessment Plan

Reported For	Gary Bimmel
Printed	2018-09-12
Plan Completion/Update Date	2018-04-20
SnapPlus Version 17.0 built on 2018-03-26	
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Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

Field Data: 54 Total Acres Reported.

Field Name	SubFarm	FSA Trct	FSA Fld	Acres	County	Critical Soil Series & Symbol	F. Slp %	F.Slp Len ft	Below Field Slope To Water %	Dist.To Water ft	N/Fld Res	Contour/ Filters	Irrig	Tiled	Rotation	Tillage	Report Period	Field "T" t/ac	Rot Avg Soil Loss t/ac	SCI	Rot Avg PI	Soil Test P ppm	Rot P2O5 Bal lb/ac	P2O5 Bal Target lb/ac
2-2				22	Sheboygan	KEWAUNEE KpC2	9	100	0 - 2	301 - 1000	S %	No / No	No	No	Sg7-Sg7-Sg7	FCD-FCD-NT	2018-2020	**3**	**5.9**	**-0.2**	**7**	15	90	-
2-3				32	Sheboygan	KEWAUNEE KpC2	9	150	0 - 2	1001 - 5000	%	No / No	No	No	Sg7-Sg7-Sg7	FCD-FCD-NT	2018-2020	**3**	**6.9**	**-0.3**	**8**	13	90	-

Crop Abbreviations

Abbreviation	Crop
Sg7	Soybeans 7-10 inch row

Tillage Abbreviations

Abbreviation	Tillage
FCD	Fall Chisel, disked
NT	No Till

Restriction Legend

Code	Description of Code
S	Field is in SWQMA
D	Drinking water well within 50 feet of field.
C	Conduit to groundwater within 300 feet
L	Local restrictions on nutrient applications.
%	Slope restriction for winter applications
P	High permeability N restricted soils
R	N restricted soils with less than 20 inches to bedrock
W	N restricted soils with less than 12 inches to apparent water table
+	This map unit may have any of the N restrictive features, however an on-site investigation is needed to identify which restrictions may actually be present.

FM9: Nutrient Management Report

Crop Year	**2019**
Reported For	**Gary Bimmel**
Printed	**2018-09-12**
Plan Completion/Update Date	**2018-04-20**
SnapPlus Version 17.0 built on 2018-03-26	
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Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

Field data: 54 total acres reported.

Field Data			Soil Test ppm		Crop Data				Recommendations			Planned Applications and Credits			Over(+)/Under(-) UW Recs		
Field Name	Ac	Predominant Soil and N Restrictions	Avg P	Avg K	2018 Crop	2019 Crop	Yield Goal	Tillage	N lb/ac	P2O5 lb/ac	K2O lb/ac	N lb/ac	P2O5 lb/ac	K2O lb/ac	N lb/ac	P2O5 lb/ac	K2O lb/ac
2-2	22	KEWAUNEE KnB	15	63	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	Fall Chisel, disked	0	80	130	51	80	122	51	0	-8
2-3	32	KEWAUNEE KnB	13	66	Soybeans 7-10 inch row	Soybeans 7-10 inch row	56-65	Fall Chisel, disked	0	80	130	51	80	122	51	0	-8

Restriction Legend

Code	Description of Code
S	Field is in SWQMA
D	Drinking water well within 50 feet of field.
C	Conduit to groundwater within 300 feet
L	Local restrictions on nutrient applications.
%	Slope restriction for winter applications
P	High permeability N restricted soils
R	N restricted soils with less than 20 inches to bedrock
W	N restricted soils with less than 12 inches to apparent water table
+	This map unit may have any of the N restrictive features, however an on-site investigation is needed to identify which restrictions may actually be present.

WQ1: P Trade Report

Reported For	Gary Bimmel
Printed	2018-09-12
Plan Completion/Update Date	2018-04-20
SnapPlus Version 17.0 built on 2018-03-26	
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Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

The P Trade Report estimates the annual pounds of phosphorus (P) in surface runoff from cropland entering surface waters. These P loss calculations are based on a field's soil test P concentration, crops, tillage, nutrient management practices and estimates of average runoff and sheet and rill erosion for the predominant soil type. Losses from concentrated flow channel or gully erosion with a field are not included in these calculations. Field runoff losses are calculated for each year as **PTP** (lb P/field/yr). Fields are only included if there are at least 2 years of crops before the selected start year. Before using this report as part of a Water Quality Trade activity, phosphorus losses (PTP) must be converted into 'P credits' according to DNR guidance.

For more information go to **http://dnr.wi.gov/** and type keyword: **Water Quality Trading**

Questions? Please contact DNRphosphorus@wisconsin.gov

This report was developed for Wisconsin DNR Water Quality Trading and Adaptive Management purposes and cannot be used to demonstrate compliance with NR 151 or NRCS 590 NM plan requirements.

P Trade Report				PTP							
Field Name	Soil Series	Soil Symbol	Acres	2019	2020	2021	2022	2023	2024	2025	2026
2-2	KEWAUNEE	KnB	22	166	96	163	169	98	165	171	101
2-3	KEWAUNEE	KnB	32	235	134	230	238	138	233	241	141
Total			**54**	**401**	**230**	**393**	**407**	**236**	**399**	**413**	**242**

ATTACHMENT E

SnapPlus Modeling Reports (Prairie)

NM1: Narrative and Crops Report

Starting Year	**2019**
Reported For	**Gary Bimmel**
Printed	**2018-09-12**
Plan Completion/Update Date:	**2018-04-20**
SnapPlus Version 17.0 built on 2018-03-26	
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Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

Farm has 2 fields totalling 54 acres
Farm Narrative: None

Annual Farm Notes:

No Annual Farm Notes

Spreader Calibration Methods: Amount applied / Acres

Narrative and Crops:

Field Name	Acres	2019	2020	2021	2022	2023	2024	2025	2026
2-2	22	Grasslands, permanent, not harvested None 0-0 none/acre	Grasslands, permanent, not harvested None 0-0 none/acre	Grasslands, permanent, not harvested None 0-0 none/acre	Grasslands, permanent, not harvested None 0-0 none/acre	Grasslands, permanent, not harvested None 0-0 none/acre	Grasslands, permanent, not harvested None 0-0 none/acre	Grasslands, permanent, not harvested None 0-0 none/acre	Grasslands, permanent, not harvested None 0-0 none/acre
2-3	32	Grasslands, permanent, not harvested None 0-0 none/acre	Grasslands, permanent, not harvested None 0-0 none/acre	Grasslands, permanent, not harvested None 0-0 none/acre	Grasslands, permanent, not harvested None 0-0 none/acre	Grasslands, permanent, not harvested None 0-0 none/acre	Grasslands, permanent, not harvested None 0-0 none/acre	Grasslands, permanent, not harvested None 0-0 none/acre	Grasslands, permanent, not harvested None 0-0 none/acre

Summary by Crop:
NOTE: Yields calculated using the midpoint of the SnapPlus yield goal range for each crop.

Crops Grouped By Category		2019	2020	2021	2022	2023	2024	2025	2026
Grasslands, permanent, not harvested	Acres none	54 0	54 0	54 0	54 0	54 0	54 0	54 0	54 0

FM6: Soil Test Report

Reported For	Gary Bimmel
Printed	2018-09-12
Plan Completion/Update Date	2018-04-20
SnapPlus Version 17.0 built on 2018-03-26	
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Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

			Predominant					Samples				in ppm			
Field Name	Subfarm	Acres	Soil Map Symbol	Soil Name	Soil Test Date	Soil Test Lab	Lab Number	Rec. #	Actual #	pH	OM%	P	K	S	CEC
2-2		22	KnB	KEWAUNEE	2017-11-01	ROCK RIVER LAB	204843	**4**	**11**	7.6	1.8	15	63	0	16
2-2		22	KnB	KEWAUNEE	2012-11-16	Rock River Lab	152027	**4**	**13**	7.3	2.5	13	57	0	0
2-3		32	KnB	KEWAUNEE	2017-11-01	ROCK RIVER LAB	204849	**6**	**11**	7.7	2.2	13	66	0	18
2-3		32	KnB	KEWAUNEE	2012-11-16	Rock River Lab	152027	**6**	**20**	7.2	2.6	24	80	0	0

Crop Year Soil Test Needed

Field Name	Soil Test Date	2017	2018	2019	2020	2021	2022	2023
2-2	2017-11-01						X	
2-3	2017-11-01						X	

FM2: Application Summary Report

Starting Year	**2019**
Reported For	**Gary Bimmel**
Printed	**2018-09-12**
Plan Completion/Update Date:	**2018-04-20**
SnapPlus Version 17.0 built on 2018-03-26	
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Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

Annual Manure Production And Use By Source

Total Value = $ Value of all nutrients, incorporated including S.

Source	

Application Results Reported For Farm All

Annual Pounds Of Available N, P2O5 And K2O Applied From Manure and Fertilizer.								
		2019	2020	2021	2022	2023	2024	2025
Produced from Manure (lb)	Ninj P2O5 K2O	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0
Total Available Manure Nutrients Applied (lb)	Ninj P2O5 K2O	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0
Total Fertilizer Nutrients Applied (lb)	N P2O5 K2O	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0
Total Crop Removal (lb)	P2O5 K2O	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Nutrient Balance (Applied - Crop removal, lb)	P2O5 K2O	0 0	0 0	0 0	0 0	0 0	0 0	0 0

Annual Pounds Of Available N, P2O5 And K2O Applied From Manure and Fertilizer.		
		2026
Produced from Manure (lb)	Ninj P2O5 K2O	0 0 0
Total Available Manure Nutrients Applied (lb)	Ninj P2O5 K2O	0 0 0
Total Fertilizer Nutrients Applied (lb)	N P2O5 K2O	0 0 0
Total Crop Removal (lb)	P2O5 K2O	0 0
Nutrient Balance (Applied - Crop removal, lb)	P2O5 K2O	0 0

NM3: Field Data and 590 Assessment Plan

Reported For	Gary Bimmel
Printed	**2018-09-12**
Plan Completion/Update Date	**2018-04-20**
SnapPlus Version 17.0 built on 2018-03-26	
W:\Clients\Bemis\Sheboygan Falls, WI\5198_Phosphorus Compliance \Permitting & Regulations\WQT\SnapPlus\Bemis - Gary Bimmel_Prairie.snapDb	

Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

Field Data: 54 Total Acres Reported.

Field Name	SubFarm	FSA Trct	FSA Fld	Acres	County	Critical Soil Series & Symbol	F. Slp %	F.Slp Len ft	Below Field Slope To Water %	Dist.To Water ft	N/Fld Res	Contour/ Filters	Irrig	Tiled	Rotation	Tillage	Report Period	Field "T" t/ac	Rot Avg Soil Loss t/ac	SCI	Rot Avg PI	Soil Test P ppm	Rot P2O5 Bal lb/ac	P2O5 Bal Target lb/ac
2-2				22	Sheboygan	KEWAUNEE KpC2	9	100	0 - 2	301 - 1000	S %	No / No	No	No	Gnh-Gnh-Gnh	None-None-None	2018-2020	**3**	**0**	**1.9**	**0**	15	0	-
2-3				32	Sheboygan	KEWAUNEE KpC2	9	150	0 - 2	1001 - 5000	%	No / No	No	No	Gnh-Gnh-Gnh	None-None-None	2018-2020	**3**	**0**	**1.9**	**0**	13	0	-

Crop Abbreviations	
Abbreviation	**Crop**
Gnh	Grasslands, permanent, not harvested

Tillage Abbreviations	
Abbreviation	**Tillage**
None	None

Restriction Legend

Code	Description of Code
S	Field is in SWQMA
D	Drinking water well within 50 feet of field.
C	Conduit to groundwater within 300 feet
L	Local restrictions on nutrient applications.
%	Slope restriction for winter applications
P	High permeability N restricted soils
R	N restricted soils with less than 20 inches to bedrock
W	N restricted soils with less than 12 inches to apparent water table
+	This map unit may have any of the N restrictive features, however an on-site investigation is needed to identify which restrictions may actually be present.

FM9: Nutrient Management Report

Crop Year	**2019**
Reported For	**Gary Bimmel**
Printed	**2018-09-12**
Plan Completion/Update Date	**2018-04-20**
SnapPlus Version 17.0 built on 2018-03-26	
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Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

Field data: 54 total acres reported.

Field Data			Soil Test ppm		Crop Data				Recommendations			Planned Applications and Credits			Over(+)/Under(-) UW Recs		
Field Name	Ac	Predominant Soil and N Restrictions	Avg P	Avg K	2018 Crop	2019 Crop	Yield Goal	Tillage	N lb/ac	P2O5 lb/ac	K2O lb/ac	N lb/ac	P2O5 lb/ac	K2O lb/ac	N lb/ac	P2O5 lb/ac	K2O lb/ac
2-2	22	KEWAUNEE KnB	15	63	Grasslands, permanent, not harvested	Grasslands, permanent, not harvested	0-0	None	0	0	0	0	0	0	0	0	0
2-3	32	KEWAUNEE KnB	13	66	Grasslands, permanent, not harvested	Grasslands, permanent, not harvested	0-0	None	0	0	0	0	0	0	0	0	0

Restriction Legend

Code	Description of Code
S	Field is in SWQMA
D	Drinking water well within 50 feet of field.
C	Conduit to groundwater within 300 feet
L	Local restrictions on nutrient applications.
%	Slope restriction for winter applications
P	High permeability N restricted soils
R	N restricted soils with less than 20 inches to bedrock
W	N restricted soils with less than 12 inches to apparent water table
+	This map unit may have any of the N restrictive features, however an on-site investigation is needed to identify which restrictions may actually be present.

WQ1: P Trade Report

Reported For	Gary Bimmel
Printed	2018-09-12
Plan Completion/Update Date	2018-04-20
SnapPlus Version 17.0 built on 2018-03-26	
W:\Clients\Bemis\Sheboygan Falls, WI\5198_Phosphorus Compliance \Permitting & Regulations\WQT\SnapPlus\Bemis - Gary Bimmel_Prairie.snapDb	

Prepared for:
Gary Bimmel
attn:Gary Bimmel
5268 County Road TT
Sheboygan Falls, 53085

The P Trade Report estimates the annual pounds of phosphorus (P) in surface runoff from cropland entering surface waters. These P loss calculations are based on a field's soil test P concentration, crops, tillage, nutrient management practices and estimates of average runoff and sheet and rill erosion for the predominant soil type. Losses from concentrated flow channel or gully erosion with a field are not included in these calculations. Field runoff losses are calculated for each year as **PTP** (lb P/field/yr). Fields are only included if there are at least 2 years of crops before the selected start year. Before using this report as part of a Water Quality Trade activity, phosphorus losses (PTP) must be converted into 'P credits' according to DNR guidance.

For more information go to **http://dnr.wi.gov/** and type keyword: **Water Quality Trading**

Questions? Please contact DNRphosphorus@wisconsin.gov

This report was developed for Wisconsin DNR Water Quality Trading and Adaptive Management purposes and cannot be used to demonstrate compliance with NR 151 or NRCS 590 NM plan requirements.

P Trade Report				PTP							
Field Name	Soil Series	Soil Symbol	Acres	2019	2020	2021	2022	2023	2024	2025	2026
2-2	KEWAUNEE	KnB	22	3	2	2	2	2	2	2	2
2-3	KEWAUNEE	KnB	32	4	3	3	3	3	3	3	3
Total			**54**	**8**	**6**	**5**	**5**	**5**	**5**	**5**	**5**

ATTACHMENT F

Prairie Establishment Plan

Bemis Manufacturing
Sheboygan Falls, Wisconsin Site
Establishment Plan

This Establishment Plan was developed to establish permanent conservation cover consistent with the requirements and recommendations of Natural Resources Conservation Service (NRCS) Technical Standard 327. The primary purpose of the installation of conservation cover at the sites is to reduce downstream surface water quality degradation by nutrients and sedimentation.

Soil Preparation

The site was planted with soybeans in 2018. If necessary, weeds will be sprayed with glyphosate and 2,4-D a week prior to planting. It is likely that the seedbed will otherwise be acceptable, but if there is unevenness or the soil is overly compacted, overly loose, or inconsistent, the site will be disced and cultipacked.

Seed Products

Seed, with the exception of cover crop, shall be species native to northeastern Wisconsin and from a genetic source within the Midwest. Species selected are known to grow in these counties as listed by the University of Wisconsin state herbarium records. Seed provided shall be measured as pure live seed, properly labeled and shipped in accordance with Wisconsin law. The species chosen, have been carefully selected to ensure they are adapted to the local soils, ecological conditions and climactic conditions of the region.

Two seeding mixes will be used to ensure that species planted are adapted to the particular area of the site where they will be installed. The seed mixes include a heavier seeding of grasses than is typical because the primary purpose of the conservation cover is to reduce downstream surface water quality degradation by nutrients and sedimentation and to ensure quick site stabilization. Further, each unit includes a fairly dense seeding of Elymus canadensis (Canada wild rye), which establishes quickly. Unlike the other prairie grass species, Elymus canadensis is a cool season grass that typically germinates more readily without stratification and will provide a secondary cover after the oat cover crop (described below) begins to senesce in the mid-summer. The remaining warm season grasses are slower to establish but will eventually come to dominate the site and provide a permanent cover that, if properly maintained, will last indefinitely. These species have deep root systems and will completely stabilize the soil at maturity.

In order to ensure that the primary purpose of the conservation cover will be met, seed for native grass species in uplands will be applied at a minimum rate of 10 pounds per acre (lbs/ac). Oats will be seeded at a rate of 35 lbs/ac and used as a cover crop during the first year. Oats will be used as a cover crop because they germinate quickly and will provide ample cover within a few weeks. Other cover crop

species have various drawbacks that oats do not have, such as an allelopathic effect (winter rye or winter wheat) and or they tend to persist longer than desired (annual rye).

The property has been broken into two units: Planting Zone 1 (knolls and side slopes), and Planting Zone 2 (lowland flat areas along the creek). The same mix will be planted in both Planting Zone 1 and 2, but planting zone 2 will receive an additional augmentation of a few wet species. In addition, a seed mix specifically designed to reduce erosion will be installed under erosion control blanket per the erosion plan. The seed species and quantities are described below:

Planting Zone 1: These areas are on the top and sides of knolls. These areas have silt loam soils that are gently sloped and well drained. They will support and mesic prairie habitat.

Zone 1 - Upland	46.9	ac		
Scientific Name	*Common Name*	*Rate/Ac*	*Unit*	*Total Seed Qty*
Andropogon scoparius	Little Bluestem	3.000	lb	140.700
Bouteloua curtipendula	Side-oats Grama	2.000	lb	93.800
Andropogon gerardii	Big bluestem	0.500	lb	23.450
Sorghastrum nutans	Indiangrass	0.500	lb	23.450
Elymus canadensis	Canada Wild Rye	3.000	lb	140.700
Panicum virgatum	Switch Grass	1.000	lb	46.900
	Total Grasses	10.000	lb	469.000

Planting Zone 2: This unit is in flatter areas at the bottom of the slope. Soils are silt loam and less well drained than the upland soils. The seed mix is the same as zone 1 with a few additional wet mesic species added.

Zone 2 - Lowland	7.1	ac		
Scientific Name	*Common Name*	*Rate/Ac*	*Unit*	*Total Seed Qty*
Andropogon scoparius	Little Bluestem	3.000	lb	21.300
Bouteloua curtipendula	Side-oats Grama	2.000	lb	14.200
Andropogon gerardii	Big bluestem	0.500	lb	3.550
Sorghastrum nutans	Indiangrass	0.500	lb	3.550
Elymus canadensis	Canada Wild Rye	3.000	lb	21.300
Panicum virgatum	Switch Grass	1.000	lb	7.100
Carex brevior	Plains oval sedge	0.100	lb	0.710
Carex crinita	Fringed Sedge	0.100	lb	0.710
Carex vulpinoidea	Brown Fox Sedge	0.100	lb	0.710
Carex scoparia	Broom sedge	0.100	lb	0.710
Spartina pectinata	Cord grass	0.100	lb	0.710
	Total grasses and sedges	*10.500*	lb	*74.550*

Erosion Control: Areas that receive Type 1 and Type 2 erosion matting will be seeded with the seed mix that corresponds to the Planting Zone they are located in. Before installing the mat, seed from the species below will also be installed.

Scientific Name	*Common Name*	*Qty*	*Unit*	*Total Seed Qty*
Spartina pectinata	Cord grass	1.000	lb	1.000
Bromus ciliatus	Fringed brome	1.000	lb	1.000
Carex comosa	Bristly sedge	2.000	lb	1.000

The seeding mixes will be installed in the planting zones in accordance with the attached map.

Existing Grassed Swales

Grassed swales are currently stable and have been planted with cool season pasture grasses, perhaps smooth brome and orchard grass. In order to maintain stability, these swales will not be treated with herbicide, but seed for the zones in which they exist will be installed into the sod using a no-till drill. We expect that the native species will eventually overtake the cool season pasture grasses as they mature and become dominant.

Seed Installation

After soil preparation described above, seed will be planted prior to June 30, 2019 depending on site conditions. Seed will be installed using a no-till drill specifically manufactured for the purpose of planting prairie seed.

Erosion Control

A number of significant gullies are present on site and are identified on the erosion control plan. These will be re-graded to a consistent U-shaped profile and covered with straw erosion mat described below. Type 1 and Type 2 erosion mat will be used per the erosion control plan. If additional gullies develop, they too will be graded and covered with erosion mat after seeding.

Type 1 is defined as: Class 1 Type A Urban (EG1SNN) is the single net straw with biodegradable net

- Single net straw: 100% straw with a single biodegradable jute netting. It is designed to provide erosion protection and assist with vegetation establishment for 8 to 12 months on slopes up to 3:1 and low-flow channels.

Type 2 is defined as: Class 1 Type B Urban (EG2SNN) is the double net straw with biodegradable nets

- Double net straw: 100% straw between two biodegradable jute nettings. It is designed to provide erosion control and assist with vegetation establishment assistance for 8 to 12 months on 2:1 to 3:1 slopes and in moderate-flow channels.

Several of the gullies are quite long and straw bale check dams will be installed using the NRCS standard in the locations shown on the Erosion Control Plan. Additional straw bale check dams or other erosion control methods may be installed as needed although they are not anticipated at this time.

Seed Establishment Standards

Standards for 2019, the Year of Planting

- Germination of cover crop shall occur within 20 days of installation. Cover crop establishment shall be uniform and consistent. Any area of more than one square yard that is devoid of cover crop shall be reseeded within three weeks of installation.
- Germination of native grass species shall be apparent by mid-July. Areas of erosion where seed has likely been lost will be reseeded and appropriate erosion control measures applied.
- Establishment of native grasses should be consistent and widespread by the middle of September 2019, although seedlings are likely to be inconspicuous. Areas greater than 100 square yards that do not have native grasses shall be reseeded with native grasses as soon as possible.

Seed Establishment Activities

Mowing: The purpose of mowing is to keep weeds from going to seed and to allow sunlight to penetrate to native grasses seedlings and to limit competition for water by weed species.

During the Year of Planting, seeded areas shall be mowed at a height of 8 to 12 inches when vegetation has reached a height of 18 inches. Depending on the growing conditions, this may require mowing as frequently as every two weeks. In no event will mowing be conducted at a height less than 8 inches.

Herbicide Applications: Herbicide shall be applied to perennial weeds such as Canada thistle or woody plants that invade the areas seeded with prairie seed. The herbicide used shall be the most selective possible given the target species and shall be applied only to the target species to the extent practicable. Herbicide shall not be applied to annual weeds unless they cannot be controlled by mowing and if they have developed a monoculture that precludes establishment of native grasses.

Site Inspections

The sites will be inspected one month after installation by Mr. Carl Korfmacher of Midwest Prairies, LLC to ensure cover crop germination. The site will also be inspected to confirm initial germination of native grasses in mid-September 2019 in order to provide ample time to develop a cover cropping plan for winter, if necessary. After that, the sites will be inspected per the operation and maintenance standards.

Plan Preparation

This Plan was prepared by Mr. Carl Korfmacher, Owner, Midwest Prairies, LLC, 11847 Washington Road Edgerton, WI 53534, 800.382.1132, on behalf of The Probst Group and Bemis Manufacturing Company for inclusion in the Water Quality Trading Plan.

ATTACHMENT G

Prairie Operation and Maintenance Plan

Bemis Manufacturing
Sheboygan Falls Site
Operation and Maintenance Plan for WQT Plantings

The goal of this Operation and Maintenance Plan is to ensure native cover remains consistently and exclusively throughout the site in perpetuity. The primary purpose of the installation and maintenance of conservation cover at the site is to reduce downstream surface water quality degradation by nutrients and sedimentation. This Maintenance Plan was developed to ensure this goal is achieved and is consistent with the requirements and recommendations of NRCS Technical Standard 327.

Prairie plants require regular maintenance and management to remain healthy. The concept of adaptive management is critical. Adaptive management implies that while we can and will prepare for certain activities to occur on site, we also must respond to changing conditions that are not always predictable. As a result, this Plan outlines certain activities to ensure the prairie plants remain healthy, but management practices will remain flexible and consistent with the principles outlined below, in order to adapt to any changing circumstances on-site.

As outlined below, the site will be inspected to ensure that management tools are used appropriately. The inspector will walk the entire site and take photos and notes regarding plant diversity, density, overall ecological health, and any erosion issues. Based on those findings, a more detailed prescription for remedial and maintenance activities will be developed specific to the current conditions on the site to ensure that consistent, perennial native cover remains on the site. The prescriptions for such activities will follow the standards and practices below.

Prairie Cover Standards for Seasons after the First Season

Standards for Second Growing Season:

- Native grasses shall be found consistently throughout the site by mid-July 2020. Areas greater than 25 square yards that exclusively have plants that are not native grasses shall be reseeded with native grasses prior to November 30, 2020.

Standards for Third and Fourth Growing Seasons:

- Native grasses shall be found consistently throughout the site by mid-July 2021 and 2022. Areas greater than 5 square yards that exclusively have plants that are not native grasses shall be reseeded with native grasses prior to the end of November 2021 and 2022. Alternatively, native grasses may be installed with a no-till drill in the spring.

Standards for the Fifth Growing Season and Subsequent Seasons:

- Native grasses shall be found consistently throughout the site as determined during the annual inspection each year. Areas greater than 5 square yards that exclusively have plants that are not native grasses shall be reseeded with native grasses in November of that same year. Alternatively, native grasses may be installed with a no-till drill in the spring.

Reseeding activities shall continue in following seasons as necessary to ensure the standards for the Fifth Growing Season continue to be met in later years.

Early Maintenance Activities for Prairie Through 2023

Herbicide Applications: Herbicide shall be applied to perennial weeds such as Canada thistle or woody plants that invade the areas seeded with prairie seed. The herbicide used shall be the most selective possible given the target species and shall be applied only to the target species to the extent practicable. Herbicide shall not be applied to annual weeds unless they cannot be controlled by mowing or burning and if they have a developed a monoculture that precludes native grasses.

Prescribed Burning: The primary management tool for prairies is prescribed burning. Prescribed burning simulates the effects of wildfires that were part of Wisconsin's pre-settlement environment in which native plant communities, including prairies, thrived. Native prairie grasses, including those species planted at the site, develop deep roots and buds beneath the soil, enabling them to withstand the heat of a fire. The deep roots of native prairie plants also stabilize the site after a fire and enable native prairie plants to quickly regenerate. The Wisconsin Department of Natural Resources has additional information regarding prescribed burning and its benefits to native plant communities, such as prairies, on its website at: http://dnr.wi.gov/topic/wildlifehabitat/burn.html.

Because fire is a critical element in sustaining native prairies, prescribed burning will be used as a management tool at the site. If fuel levels allow, seeded areas may be burned in the spring of 2021 or 2022. Prescribed burning will only occur if fuel levels and weather conditions are appropriate to ensure a prescribed burn can be conducted in a safe and controlled manner and that the site will benefit ecologically from the burn. Because burning will occur at the earliest in the fourth growing season after native vegetation is well-established, nutrient runoff is not expected. However, after a burn is conducted, the site will be monitored for any erosion issues. If erosion issues are identified, they will be addressed pursuant to the below sections titled, "Methods to Address Minor Erosion Control Concerns" and "Methods to Address Effects of Catastrophic and Anomalous Events."

Long-Term Maintenance and Management of Prairie after 2023

Prescribed Burning: As described in the immediately preceding section, the primary management tool for prairies is prescribed burning. Prescribed burning is ecologically beneficial to native prairie plants and will be used as a management tool, as appropriate, to ensure the continued health of the prairie at the site. Generally speaking, after 2023, one third of the site should be burned every year, creating a 3 year rotation. However, certain weeds and woody invasive species may be controlled with more or less frequent fire. In light of that, the determination of which area will be burned and when that area will be burned will be based on the best judgment of the inspector and his/her prescription for maintenance activities.

Prescribed burning will only occur if fuel levels and weather conditions are appropriate to ensure a prescribed burn can be conducted in a safe and controlled manner and that the site will benefit ecologically from the burn. Because burning will occur when the site is well-established, nutrient runoff

is not expected. However, after a burn is conducted, the site will be monitored for any erosion issues. If erosion issues are identified, they will be addressed pursuant to the below sections titled, "Methods to Address Minor Erosion Control Concerns" and "Methods to Address Effects of Catastrophic and Anomalous Events."

Herbicide Applications: Management of some invasive species can often only be accomplished through the use of herbicides. Herbicide shall be applied to perennial weeds such as Canada thistle or woody plants that invade the areas seeded with prairie seed. The herbicide used shall be the most selective possible given the target species and shall be applied only to the target species to the extent practicable. Herbicide shall not be applied to annual weeds unless they cannot be controlled by burning and if they have a developed a monoculture that precludes native grasses.

Site Inspections

The site will be inspected one time each during the spring, summer, and fall in the second, third, and fourth growing seasons. Thereafter, the site will be inspected once on an annual basis. This annual inspection will occur between mid-August and mid-September of each year. The site inspections will ensure compliance with seed establishment standards and identify any erosion issues. The site will also be inspected following any major events that could cause erosion as soon as the safety of the inspector can be assured, and if any erosion issues are identified, they will be addressed in accordance with the seed establishment standards above and erosion control sections below. During inspections, the inspector will walk the site and take close-up and distant photos of the site. The inspector will also take notes regarding plant diversity, density, overall ecological health, and any erosion issues. Based on those findings, a more detailed prescription for remedial and maintenance activities will be developed that will ensure that consistent, perennial native cover remains on the site. If the inspection identifies areas at the site that are not meeting the applicable seed establishment standards for the growing season, the remedial action identified in each standard will be taken. If the inspection identifies erosion issues, they will be addressed pursuant to the sections in this Plan titled "Methods to Address Minor Erosion Control Concerns" and "Methods to Address Effects of Catastrophic and Anomalous Events."

The inspection reports and associated documentation will be submitted to the Wisconsin Department of Natural Resources with the Bemis Manufacturing Annual Report, which is described in the Water Quality Trading Plan.

Methods to Address Minor Erosion Control Concerns

The site will be inspected for any bare spots, gullies, or other erosion control concerns. Erosion concerns will be addressed as follows:

- If bare spots larger than five square yards are identified during the growing season (May 15 through September 30), they will be immediately reseeded with cover crop and covered with a light straw mulch.
- If bare spots larger than five square yards occur outside the growing season, they will be addressed with temporary erosion matting, mulching, or the application of polyacrylamide, as

necessary. Erosion events that occur outside of the growing season will be seeded with cover crop once the growing season begins.

- In the event of a major erosion event, such as the formation of a gully greater than one foot wide and one foot deep, the area will be regraded first and then reseeded per above.

All bare spots or gullies described above will also be reseeded with native grasses. Reseeding of native grasses in eroded areas must occur prior to July 15 or after November 1. Any eroded areas that are reseeded will be treated as newly established prairie and must meet the requirements for each growing season per the standards in the Establishment Plan and listed above.

Methods to Address Effects of Catastrophic and Anomalous Events

Certain catastrophic events may require the development of a more intense and urgent plan than the events outlined under the "Methods to Address Minor Erosion Control Concerns" above. These primarily include events that would cause flooding. For instance, in 1996 the Joliet, Illinois, area received over seventeen inches of rain in less than 48 hours. The level of flooding and related erosion was greater than had ever been experienced. Should such an event take place, it would be very difficult if not impossible to address while the event was in progress.

It is impossible to predict all the potential catastrophic or anomalous events that could cause significant damage to prairie plantings. If a catastrophic or anomalous event occurs, a site inspection would be done as soon as the safety of the inspector can be assured and an emergency plan will be developed and implemented promptly following inspection unless weather or other conditions indicate it should be implemented later. The emergency plan will be consistent with the standards and practices outlined in the Establishment Plan and this Plan to ensure native perennial cover remains consistently throughout the site.

If a catastrophic flood event occurs during the growing season, an erosion plan that includes practices that closely resemble the standards and practices outlined in the Establishment Plan and in this Plan would be developed and implemented. If such an event occurred in mid-September or later, it would be impossible to establish cover prior to winter. Therefore, an erosion plan that includes standard physical erosion control structures would have to be prepared and implemented. This might include placing silt fence, straw wattles or perhaps even the excavation of a settling basin, if so warranted. In addition, a plan would be developed for the next growing season to grade if necessary and reseed in accordance with the standards and practices outlined in the Establishment Plan and this Plan. That plan would be implemented prior to July 1 of that growing season unless weather or other conditions indicate that it should be implemented later.

Other catastrophic events may be wind-based events, such as a tornado or intense straight-line winds, and these may cause trees to fall into the site from the surrounding fence lines. A site inspection would be done as soon as the safety of the inspector can be assured. Any fallen trees will be promptly removed and to the extent the prairie plantings are damaged, erosion issues will be addressed and the area reseeded per the standards and practices above.

Vandalism is another possible hazard. This would most likely involve off road vehicles illegally accessing the property and creating ruts. Ruts would be promptly filled, erosion issues would be addressed, and the area would be reseeded per the standards and practices above.

As previously stated, it is impossible to predict all the possible hazards. However, prairie plantings, in the form of Conservation Reserve Program plantings, private prairies, and remnant prairie plant communities have been shown to be exceptionally resilient in the face of disturbance.

Plan Preparation

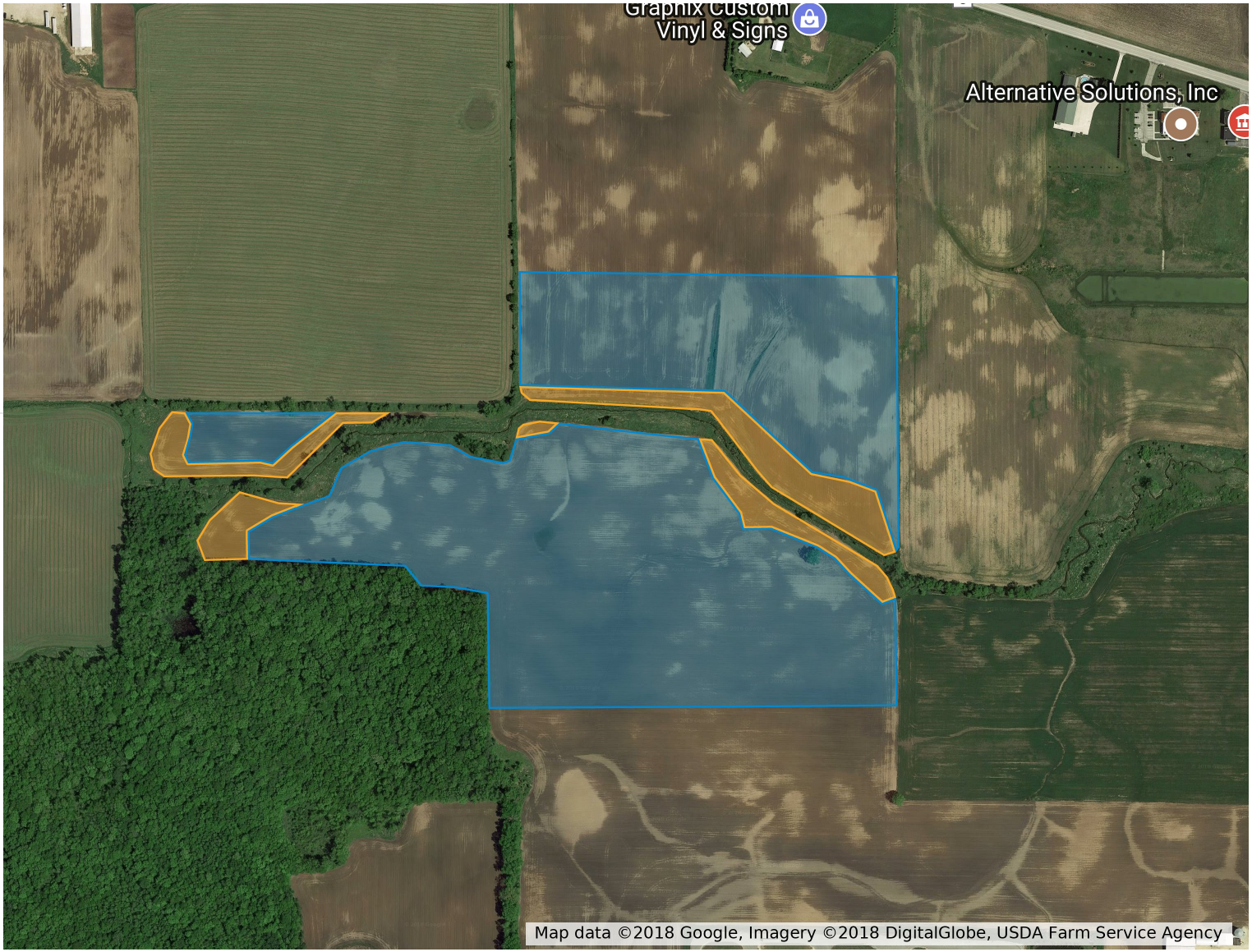
This Plan was prepared by Mr. Carl Korfmacher, Owner, Midwest Prairies, LLC, 11847 Washington Road Edgerton, WI 53534, 800.382.1132, on behalf of The Probst Group and Bemis Manufacturing Company for inclusion in the Water Quality Trading Plan.

Bemis Manufacturing

Seed Mix Zones

- Zone 1a
- Zone 1b
- Zone 1c
- Zone 2a
- Zone 2b
- Zone 2c
- Zone 2d
- Zone 2e

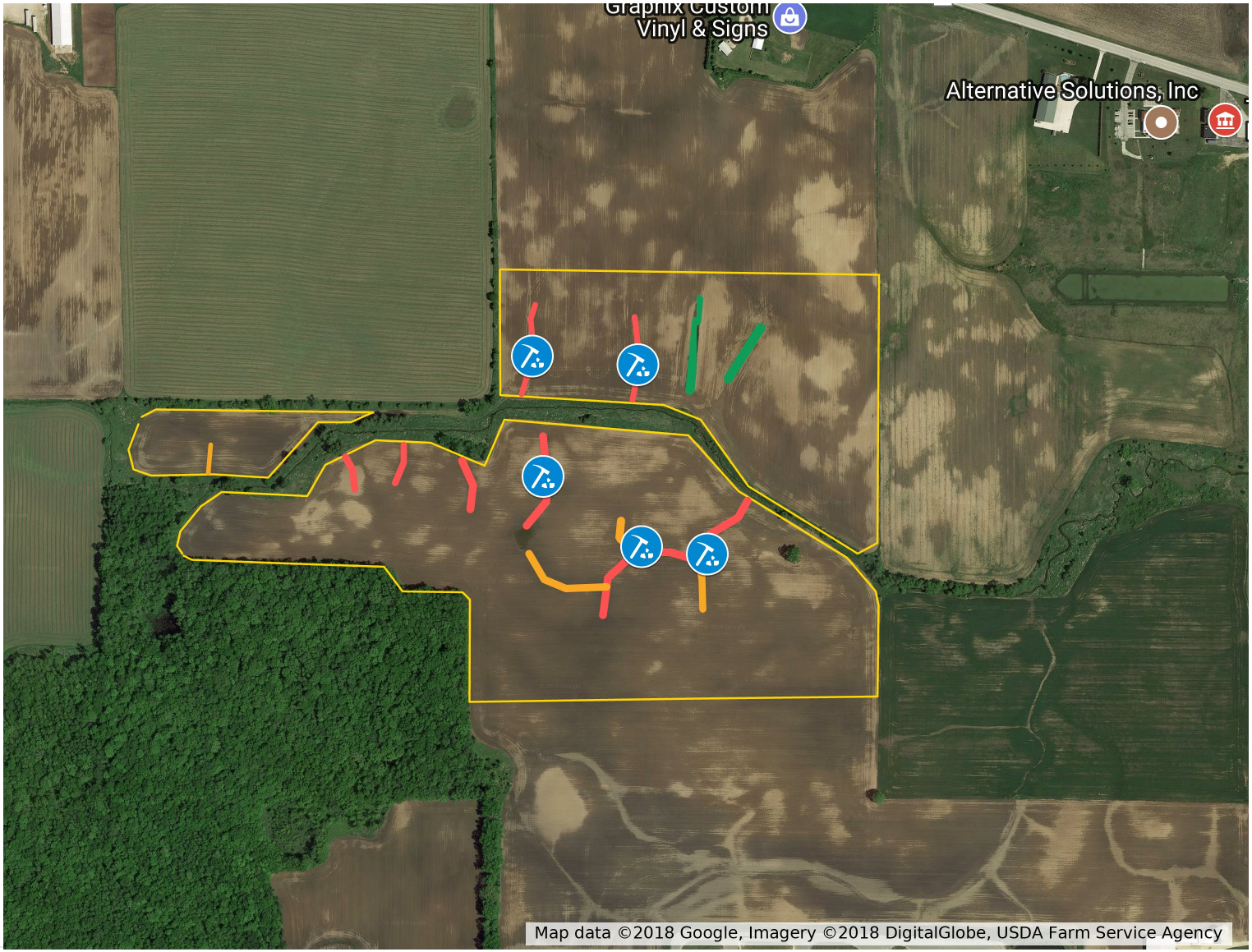
Water Quality Trading Seeding Plan



Bemis Manufacturing

Legend

- Type 1 Erosion Mat
- Type 1 Erosion Mat
- Type 1 Erosion Mat
- Type 1 Erosion Mat
- Type 2 Erosion Mat
- Type 2 Erosion Mat
- Type 2 Erosion Mat
- Type 2 Erosion Mat
- Type 2 Erosion Mat
- Type 2 Erosion Mat
- Type 2 Erosion Mat
- Existing Grass Swale
- Existing Grass Swale
- Field Boundaries
- Field Boundaries
- Field Boundaries
- Straw Bale Check Dam
- Straw Bale Check Dam
- Straw Bale Check Dam
- Straw Bale Check Dam
- Straw Bale Check Dam



Water Quality Trading - Erosion Control Plan

ATTACHMENT H

WQT Management Practice Registration Form 3400-207

State of Wisconsin
Department of Natural Resources
101 South Webster Street
Madison WI 53707-7921
dnr.wi.gov

Water Quality Trading Management Practice Registration

Form 3400-207 (R 1/14)

Notice: Pursuant to s. 283.84, Wis. Stats., this form must be completed by any WPDES permittee that is using water quality trading as a method of complying with a permit limitation. Failure to complete this form would not result in penalties. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law (ss. 19.31 - 19.39, Wis. Stats.).

Applicant Information

Permittee Name	Permit Number WI-	Facility Site Number

Facility Address	City	State	ZIP Code

Project Contact Name (if applicable)	Address	City	State	ZIP Code

Project Name

Broker/Exchange Information (if applicable)

Was a broker/exchange be used to facilitate trade? ◯ Yes ◯ No

Broker/Exchange Organization Name	Contact Name

Address	Phone Number	Email

Trade Registration Information (Use a separate form for each trade agreement)

Type	Trade Agreement Number	Practices Used to Generate Credits	Anticipated Load Reduction	Trade Ratio	Method of Quantification
◯ Urban NPS ◯ Agricultural NPS ◯ Other					

County	Closest Receiving Water Name	Land Parcel ID(s)	Parameter(s) being traded

The preparer certifies all of the following:

- I have completed this document to the best of my knowledge and have not excluded pertinent information.
- I certify that the information in this document is true to the best of my knowledge.

Signature of Preparer	Date Signed

Authorized Representative Signature

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision. Based on my inquiry of those persons directly responsible for gathering and entering the information, the information is, to the best of my knowledge and belief, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of Authorized Representative	Date Signed

Leave Blank – For Department Use Only

Date Received		Trade Docket Number
Entered in Tracking System ☐ Yes	Date Entered	Name of Department Reviewer

ATTACHMENT I

Water Quality Trading Checklist

State of Wisconsin
Department of Natural Resources
101 South Webster Street
Madison WI 53707-7921
dnr.wi.gov

Water Quality Trading Checklist

Notice: Pursuant to s. 283.84, Wis. Stats., this form must be completed by any WPDES permittee that intends to pursue pollutant trading as a method of complying with a permit limitation. Failure to complete this form would not result in penalties. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law (ss. 19.31 - 19.39, Wis. Stats.).

Applicant Information

Permittee Name	Permit Number	Facility Site Number
Bemis Manufacturing Company	WI- 0027456-08-2	Bemis Campus Plant D and E

Facility Address	City	State	ZIP Code
W2940 Old County Road PP	Sheboygan Falls	WI	53085

Project Contact Name (if applicable)	Address	City	State	ZIP Code
Clair Ruenger	17035 West Wisconsin Avenue	Brookfield	WI	53005

Project Name
Bemis Manufacturing Company Water Quality Trade

Receiving Water Name	Parameter(s) being traded	HUC 12(s)
WBIC 5027442	Phosphorus	040301011108

Credit Generator Information

Credit generator type (select all that apply):

- ☐ Permitted Discharge (non-MS4CAFO)
- ☐ Permitted MS4
- ☐ Permitted CAFO
- ☐ Urban nonpoint source discharge
- ☒ Agricultural nonpoint source discharge
- ☐ Other - Specify: _____

Are any of the credit generators in a different HUC 12 than the applicant?
- ○ Yes; HUC 12: _____
- ◉ No

Are any of the credit generators downstream of the applicant?
- ○ Yes
- ◉ No

Will a broker/exchange be used to facilitate trade?
- ○ Yes *(include description and contact information in WQT plan)*
- ◉ No

Point to Point Trades (Traditional Municipal / Industrial, MS4, CAFO)

Are each of the point source credit generators identified in this section in compliance with their WDPES permit requirements?
- ○ Yes
- ○ No

Discharge Type	Permit Number	Name	Contact Information	Trade Agreement Number
○ Traditional ○ MS4 ○ CAFO				
○ Traditional ○ MS4 ○ CAFO				
○ Traditional ○ MS4 ○ CAFO				
○ Traditional ○ MS4 ○ CAFO				
○ Traditional ○ MS4 ○ CAFO				

Point to Point Trades (Traditional Municipal / Industrial, MS4, CAFO) *cont.*

Does plan have a narrative that describes:			Plan Section
a. Summary of discharge and existing treatment including optimization	◯ Yes	◯ No	
b. Amount of credit being generated	◯ Yes	◯ No	
c. Timeline for credits and agreements	◯ Yes	◯ No	
d. Method for quantifying credits	◯ Yes	◯ No	
e. Tracking and verification procedures	◯ Yes	◯ No	
f. Location of credit generator in proximity to receiving water and credit user	◯ Yes	◯ No	
g. Other: _____	◯ Yes	◯ No	

Point to Nonpoint Trades (Non-Permitted Urban, Agricultural, Other)

Discharge Type	Practices Used to Generate Credits	Method of Quantification	Trade Agreement Number	Have the practice(s) been formally registered?
◯ Urban NPS ◉ Agricultural NPS ◯ Other	Conversion of cropped farm land to prairie	SnapPlus (version 17.0.18085.1426)	WQT-20180803	◯ Yes ◯ No ◯ Only in part
◯ Urban NPS ◯ Agricultural NPS ◯ Other				◯ Yes ◯ No ◯ Only in part
◯ Urban NPS ◯ Agricultural NPS ◯ Other				◯ Yes ◯ No ◯ Only in part
◯ Urban NPS ◯ Agricultural NPS ◯ Other				◯ Yes ◯ No ◯ Only in part
◯ Urban NPS ◯ Agricultural NPS ◯ Other				◯ Yes ◯ No ◯ Only in part
◯ Urban NPS ◯ Agricultural NPS ◯ Other				◯ Yes ◯ No ◯ Only in part
◯ Urban NPS ◯ Agricultural NPS ◯ Other				◯ Yes ◯ No ◯ Only in part
◯ Urban NPS ◯ Agricultural NPS ◯ Other				◯ Yes ◯ No ◯ Only in part

Does plan have a narrative that describes:			Plan Section
a. Description of existing land uses	◉ Yes	◯ No	3.1
b. Management practices used to generate credits	◉ Yes	◯ No	2.1
c. Amount of credit being generated	◉ Yes	◯ No	5; Table 5
d. Description of applicable trade ratio per agreement/management practice	◉ Yes	◯ No	4.1 and 4.2
e. Location where credits will be generated	◉ Yes	◯ No	2.2.2
f. Timeline for credits and agreements	◉ Yes	◯ No	7.1
g. Method for quantifying credits	◉ Yes	◯ No	3 and 4

Does plan have a narrative that describes:			Plan Section
h. Tracking procedures	◉ Yes	◯ No	8.2
i. Conditions under which the management practices may be inspected	◉ Yes	◯ No	8.6
j. Reporting requirements should the management practice fail	◉ Yes	◯ No	8.4
k. Operation and maintenance plan for each management practice	◉ Yes	◯ No	Attachment H
l. Location of credit generator in proximity to receiving water and credit user	◉ Yes	◯ No	2.2.2
m. Practice registration documents, if available	◉ Yes	◯ No	Attachment I
n. History of project site(s)	◉ Yes	◯ No	Attachment D
o. Other: _____	◯ Yes	◯ No	-

The preparer certifies all of the following:

- I am familiar with the specifications submitted for this application, and I believe all applicable items in this checklist have been addressed.
- I have completed this document to the best of my knowledge and have not excluded pertinent information.
- I certify that the information in this document is true to the best of my knowledge.

Signature of Preparer	Date Signed
	08.03.18

Authorized Representative Signature

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision. Based on my inquiry of those persons directly responsible for gathering and entering the information, the information is, to the best of my knowledge and belief, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of Authorized Representative	Date Signed