

TOWN OF NORWAY SANITARY DISTRICT No. 1

Water Quality Trading Plan

February
2020

WATER QUALITY TRADING PLAN

TOWN OF NORWAY SANITARY DISTRICT No.1

FEBRUARY 2020

Prepared by:

Applied Technologies, Inc.
13400 Bishops Lane, Suite 270
Brookfield, WI 53005
(262) 784-7690
PN6236

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SECTION 1

EXECUTIVE SUMMARY

The Town of Norway Sanitary District No. 1 (District) owns and operates a wastewater treatment plant (WWTP) with an interim total phosphorus (TP) effluent limit of 1.0 mg/L. The Water Quality Based Effluent Limits (WQBELs) for TP will decrease to 0.075 mg/L, expected to begin in 2022.

The District submitted a Final Compliance Alternatives Plan (CAP) to the Wisconsin Department of Natural Resources (WDNR) in July 2019. The Final CAP documented the District's continued efforts to reduce phosphorus loadings in its effluent, evaluated compliance alternatives, and identified the actions that will be implemented to meet the final phosphorus WQBELs.

Operational improvements and minor facility modifications alone would not enable the District to meet the new ultra-low effluent limits. Based on the Final CAP, it was recommended that the District achieve compliance using chemical phosphorus removal to reduce most of the effluent phosphorus load, and water quality trading (WQT) for the remaining required reductions.

A Water Quality Trade agreement was reached on September 27, 2019. Lindsey Drought plans to plant annual small grain cover crops on 114 acres, which will reduce phosphorus loadings to the watershed by 102 pounds per year. The District applied to register this nonpoint-to-point source trade. The District will provide a cost-share payment for Ms. Drought to plant annual small grain cover crops. In exchange, the District will receive the Water Quality Trading credits generated by this best management practice (BMP).

Based on a downstream trade ratio of 2.4, the District will be able to apply approximately 43 pounds per year toward meeting its annual WQBEL requirements. In the submitted Final CAP, it was estimated that the District would need to apply approximately 36 pounds to its permit per year under current conditions. This was based on an average effluent concentration and limit of 0.087 and 0.075 mg/L, respectively. The average of 0.087 mg/L was rounded to the same number of significant figures as the limit of 0.075 mg/L. Therefore, the 43 pounds per year gained through this WQT agreement is expected to be more than sufficient to enable the District to meet its WQBEL requirements, as this provides a margin of safety of 19% ($43 / 36 = 119\%$).

SECTION 2

WATER QUALITY TRADING PLAN

The Town of Norway Sanitary District No. 1 (District) owns and operates a wastewater treatment plant (WWTP) with an interim total phosphorus (TP) effluent limit of 1.0 mg/L. The Water Quality Based Effluent Limits (WQBELs) for TP will decrease to 0.075 mg/L, expected to begin in 2022.

The District has removed phosphorus via chemical addition for many years. In August 2017, the District initiated a full-scale pilot study of polyaluminum chloride (PAC) addition for chemical phosphorus removal (CPR). PAC is commonly used in the water treatment industry and is available from several suppliers within the wastewater treatment industry.

The addition of PAC led to an average effluent phosphorus concentration of 0.087 mg/L. This ultra-low level is not low enough to consistently meet the six-month effluent phosphorus limit of 0.075 mg/L. Consequently, operational improvements and minor facility modifications alone would not enable the District to meet the new ultra-low effluent limits. Therefore, other compliance alternatives are necessary.

WATER QUALITY TRADING

Water quality trading (WQT) allows point source dischargers to purchase pollutant credits from point source or non-point source dischargers and apply them toward meeting regulatory requirements.

Land Conservation Department

As part of the compliance alternatives plan, the Racine County Land Conservation Department (LCD) was contacted to discuss potential collaboration and involvement in projects for either WQT or adaptive management (AM). The LCD did not present any opportunities within the District's HUC-12 watershed.

Number of Water Quality Trading Credits Required

To achieve phosphorus compliance via WQT, the District would need to apply 36 and 58 lb/year of phosphorus credits toward its permit at current and design flows, respectively. At the current

PAC pilot effluent concentration of 0.087 mg/L and flow of 1.01 MGD, the effluent phosphorus load from the District is approximately 267 lb/year. At design year flows of 1.6 MGD, this effluent load would grow to approximately 424 lb/year. By comparison, the ultra-low 0.075 mg/L phosphorus WQBEL will translate to wasteload allocations of approximately 231 and 366 lb/year under current and design flows, respectively.

To achieve compliance via WQT, the District would need to apply credits of approximately 36 and 58 lb/year under current and design years, respectively. As detailed previously, there is one MS4 located within the District's HUC-12 watershed. Therefore, potential point source phosphorus credit generators could be available, but nonpoint sources would be a more likely option to provide the necessary phosphorus credits.

Water Quality Trade Agreement

As shown in the Appendix, a Water Quality Trade agreement was reached on September 27, 2019. Lindsey Drought produces cash crops¹ (corn, soybeans, wheat) in the northeast corner of same HUC-12 as the District. Ms. Drought was interested in planting annual small grain cover crops to support her cash crop production, but she had not planted cover crops previously. Based on SnapPlus modeling, phosphorus loadings to the watershed would be reduced by 102 pounds per year if cover crops would be planted on Ms. Drought's 114 acres.

Therefore, the District applied to register this nonpoint-to-point source trade. An agreement was reached for the District to provide a cost-share payment for Ms. Drought to plant annual small grain cover crops. In exchange, the District will receive the Water Quality Trading credits generated by this best management practice (BMP).

Ms. Drought first planted this BMP in Fall 2019, and she plans to maintain winter cover crops through at least Spring 2025. The BMP will continue to be operated and maintained in accordance with standards from the NRCS. The District or its representatives will conduct site inspections and track the BMP with photographs and annual reports on file. The credits will be available starting on January 1 of each year following establishment of Fall plantings. A Nutrient Management Plan (NMP) is expected to be in effect by Fall 2020, more than a year before the first credits will be

¹ Ms. Drought also grows hay on Fields 1, 2, 6, and 8, but no cover crops will be planted on these fields.

applied to the permit in 2022. This NMP will include SnapPlus information through Crop Year 2024.

Based on a downstream trade ratio of 2.4, the District will be able to apply approximately 43 pounds per year toward meeting its annual WQBEL requirements. These 43 pounds per year can be applied during any month because this is a nonpoint-to-point source trade.

In the submitted Final Compliance Alternatives Plan, it was estimated that the District would need to apply approximately 36 pounds to its permit per year under current conditions. This was based on an average effluent concentration and limit of 0.087 and 0.075 mg/L, respectively. The average of 0.087 mg/L was rounded to the same number of significant figures as the limit of 0.075 mg/L. Therefore, the 43 pounds per year gained through this WQT agreement will be more than sufficient to enable the District to meet its WQBEL requirements, as this provides a margin of safety of 19% ($43 / 36 = 119\%$).

In the future, Ms. Drought has indicated that she will consider implementing additional BMPs such as grassed waterways and conservation tillage to improve the trade ratio from 2.4 to 1.4 lb credit generated/ lb credit received. If these or similar BMPs are pursued, the practices will be registered in the year they are first adopted, and WQT agreements will be revised or developed prior to the District's need to apply any new credits.

APPENDIX

BEST MANAGEMENT PRACTICE REGISTRATION

Management Practice Registration

State of Wisconsin
 Department of Natural Resources
 101 South Webster Street
 Madison, WI 53707

**Water Quality Trading
 Management Practice Registration**
 Form 8700-nnn (R10/12)

Notice: Any personally identifiable information submitted on this form will be used for program purposes only, but is available for inspection and copying under Wisconsin's public records laws. This form should be completed by any permittee that intends to pursue pollutant trading as a method for complying with a permit limitation. Failure to complete this form would not result in penalties.

Permittee Information

Permittee Name Norway TN Sanitary District 1		Permit Number WI- 0031470-07-0	Facility Site Number	
Facility Address 6801 Milwaukee Ave		City Wind Lake	State WI	ZIP Code 53185
Project Contact Name (if applicable)	Address	City	State	Zip Code

Project Name
Annual Cover Crops

Broker/Exchange Information (if applicable)

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

Broker/Exchange Organization Name:	Contact:
Address:	Phone/E-mail:

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
<input type="checkbox"/> Urban NPS <input checked="" type="checkbox"/> Agricultural NPS <input type="checkbox"/> Other	WQT-2019	Annual Cover Crops	102, 1.4	SnapPlus
County: Racine	Closest Receiving Water Name: Wind Lake Canal	HUC 12: 071200060304	Parameter(s) Traded: Phosphorus	

The preparer and owner certify 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 <i>Patricia J. Galon</i>	Date Signed Sept 26, 2019
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For Department Use Only

Date Received:	Trade Docket Number:
Entered in Tracking System <input type="checkbox"/> Yes Date Entered:	Name of Department Reviewer:

WATER QUALITY TRADING AGREEMENT

Water Quality Trade Agreement

Permittee Information

Credit User Name (Permittee) Norway TN Sanitary District 1	Permit Number WI-0031470-07-0
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Credit User Address
6801 Milwaukee Ave Wind Lake, WI 53185

Permittee/Broker/Exchange Name (if applicable) N/A	Trade Agreement Number WQT-2019
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Permittee/Broker/Exchange Address (if applicable)

Street Address N/A	City	State	ZIP Code
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Project Name
Annual Cover Crops

Name of Credit Generator (Landowner/Operator) (Last, First, M.I.)
Drought, Lindsey G.

Street Address 22428 W 7 Mile Rd	City Franksville	State WI	ZIP Code 53126
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Property Information

Name of Landowner(s) (if not Operator) (Last, First, M.I.)
Drought, Lindsey G.

Street Address 22428 W 7 Mile Rd	City Franksville	State WI	ZIP Code 53126
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Legal Description of Property - Contiguous sites under the same ownership: (add additional sheets if necessary)

See attached.

Parcel ID(s):
010-04-20-02-012-000; 010-04-20-02-015-000; 010-04-20-01-014-000.

Site Locator for Construction Projects

County	Township	Range E / W	Section	Quarter/Quarter (e.g., NW ¼ of the NE ¼)
Racine	T4 N	R20E	2	W1/2 SE1/4 EXC V862P81
Racine	T4 N	R20E	2	N1/2 NE1/4 SE 1/4
Racine	T4 N	R20E	1	W1/2 SW1/4 EXC HWY
	N			

Agreement

The property described above is enrolled in a Water Quality Trade Agreement. Funds are provided to the landowner/ operator in return for the installation, operation and maintenance of best management practices (BMPs) designed to enhance water quality. This agreement commits the landowner/operator, their heirs, successors and assigns to fulfill the trade agreement until a satisfaction or release is filed by the grantee.

Addenda which describe the BMPs, costs, installation schedule, and conditions are hereby incorporated into this agreement and are on file with the grantee and may be given to Wisconsin DNR upon request by the Department.

Landowner/Operator

Signed this 27th day of September, 2019.

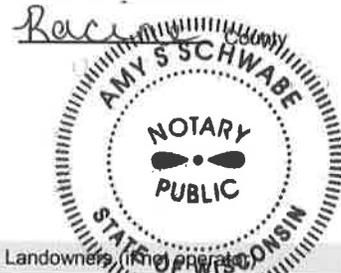
Lindsey Drought
Signature of Landowner/Operator

Signature of Landowner/Operator

Lindsey Drought
Typed Name of Landowner/Operator

Typed Name of Landowner/Operator

STATE OF WISCONSIN



Personally came before me this 27th day of September, 2019.

ss. The above named Lindsey Drought to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Amy S. Schwabe Signature of Notary Public
Amy Schwabe Typed Name of Notary Public

Notary Public Racine County, Wisconsin

My commission (is permanent) (expires 10/08/2021).

Landowners (if not operator)

If the landowner section is not completed, check (X) one or both of the following that apply

Landowner is also operator

Trade agreement contains only high residue management, nutrient management, pesticide management, cropland protection cover (green manure)

Signed this _____ day of _____, 20 ____.

Signature of Landowner (if not operator)

Signature of Landowner (if not operator)

Typed Name of Landowner (if not operator)

Typed Name of Landowner (if not operator)

STATE OF WISCONSIN

_____ County

Personally came before me this _____ day of _____, 20 ____.

ss. The above named _____ to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public
Typed Name of Notary Public

Notary Public _____ County, Wisconsin

My commission (is permanent) (expires _____).

Credit user/broker/exchange

Signed this _____ day of _____, 20 ____.

Signature of credit user/broker/exchange

Typed Name of credit user/broker/exchange

STATE OF WISCONSIN

_____ County

Personally came before me this _____ day of _____, 20 ____.

ss. The above named _____ to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public

Notary Public _____ County, Wisconsin

My commission (is permanent) (expires _____).

Town of Norway Sanitary District

Other Signer- Specify title or relationship: District Manager

Signed this 30th day of September, 20 19.

Patrick J. Nolan
Signature

Signature

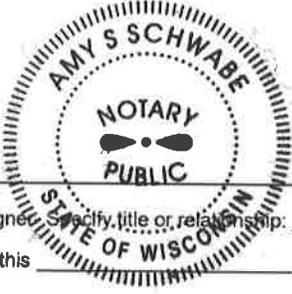
Patrick J. Nolan
Typed Name

Typed Name

STATE OF WISCONSIN
Racine County

Personally came before me this 30th day of September, 20 19.

ss. The above named Patrick J. Nolan to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.



Amy S. Schwabe
Signature of Notary Public

Amy S. Schwabe
Typed Name of Notary Public

Notary Public Racine County, Wisconsin

My commission (is permanent) (expires 10/08/2021).

Other Signer- Specify title or relationship:

Signed this ___ day of ___, 20 ___.

Signature

Signature

Typed Name

Typed Name

STATE OF WISCONSIN
___ County

Personally came before me this ___ day of ___, 20 ___.

ss. The above named ___ to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public

Typed Name of Notary Public

Notary Public ___ County, Wisconsin

My commission (is permanent) (expires ___).

Other Signer- Specify title or relationship:

Signed this ___ day of ___, 20 ___.

Signature

Signature

Typed Name

Typed Name

STATE OF WISCONSIN
___ County

Personally came before me this ___ day of ___, 20 ___.

ss. The above named ___ to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public

Typed Name of Notary Public

Notary Public ___ County, Wisconsin

My commission (is permanent) (expires ___).

Check this box if this page is purposely left blank.

Addendum 1

Section A – General Requirements

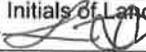
- A 1. This agreement may be amended by mutual agreement of either party, so long as the agreement has not yet expired.
- A 2. If a significant archeological or historical site is found, construction is to cease immediately and the BMP will be relocated, redesigned, or deleted to prevent damage to the archeological or historical site. The BMP may be deleted only if approved in writing by the Department of Natural Resources.

Section B – Landowner/Operator Shall:

- B 1. Design, install, operate and maintain BMPs listed in Addendum 2 of this agreement.
- B 2. Allow access to the installed BMP by the grantee, or an authorized representative of the grantee for site inspection of the BMP for installation, operation and maintenance. Landowner requests contact ahead of visit.

Section C – Grantee Shall:

- C 1. Provide cost sharing to the landowner/operator consistent with Addendum 2.
- C 2. Make cost-share payments to the landowner/operator after payment is requested and evidence of contractor payment by the landowner/operator has been received, and the grantee verifies proper BMP installation.

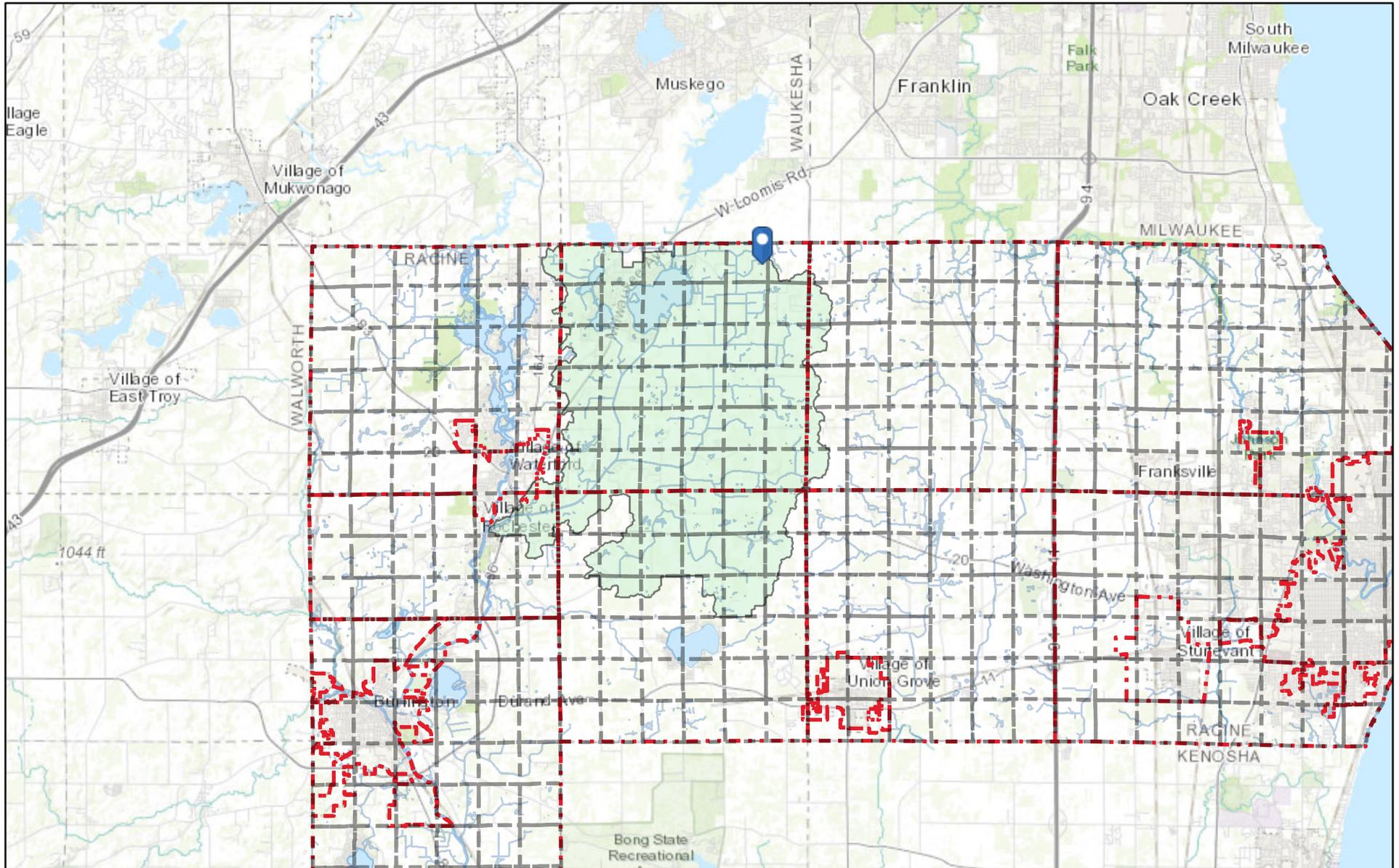
TA Number	Typed Name of Landowner/Operator	Initials of Landowner/Operator	Date
	Lindsey Drought		9-27-2009

WATER QUALITY TRADE SUMMARY TABLES AND MAPS

**Table 1: Phosphorus Loading to Watershed Reductions
Water Quality Trading with Lindsey Drought
Norway Sanitary District**

Field Name	Acres	No Cover Crop	With Cover Crop	Reduction
		(lb P/yr)	(lb P/yr)	(lb P/yr)
3	8	20	12	8
4	8	53	52	1
5	11	48	47	1
7	20	151	147	4
9	3	29	17	12
Grandmas	18	84	63	21
North Pasture	5	16	12	4
Oak Tree	18	125	92	33
West Barn	23	70	52	18
Total	114	596	494	102

ArcGIS Web Map



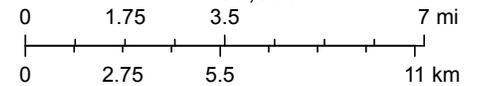
September 30, 2019

 Sections

 Dover Norway Drainage

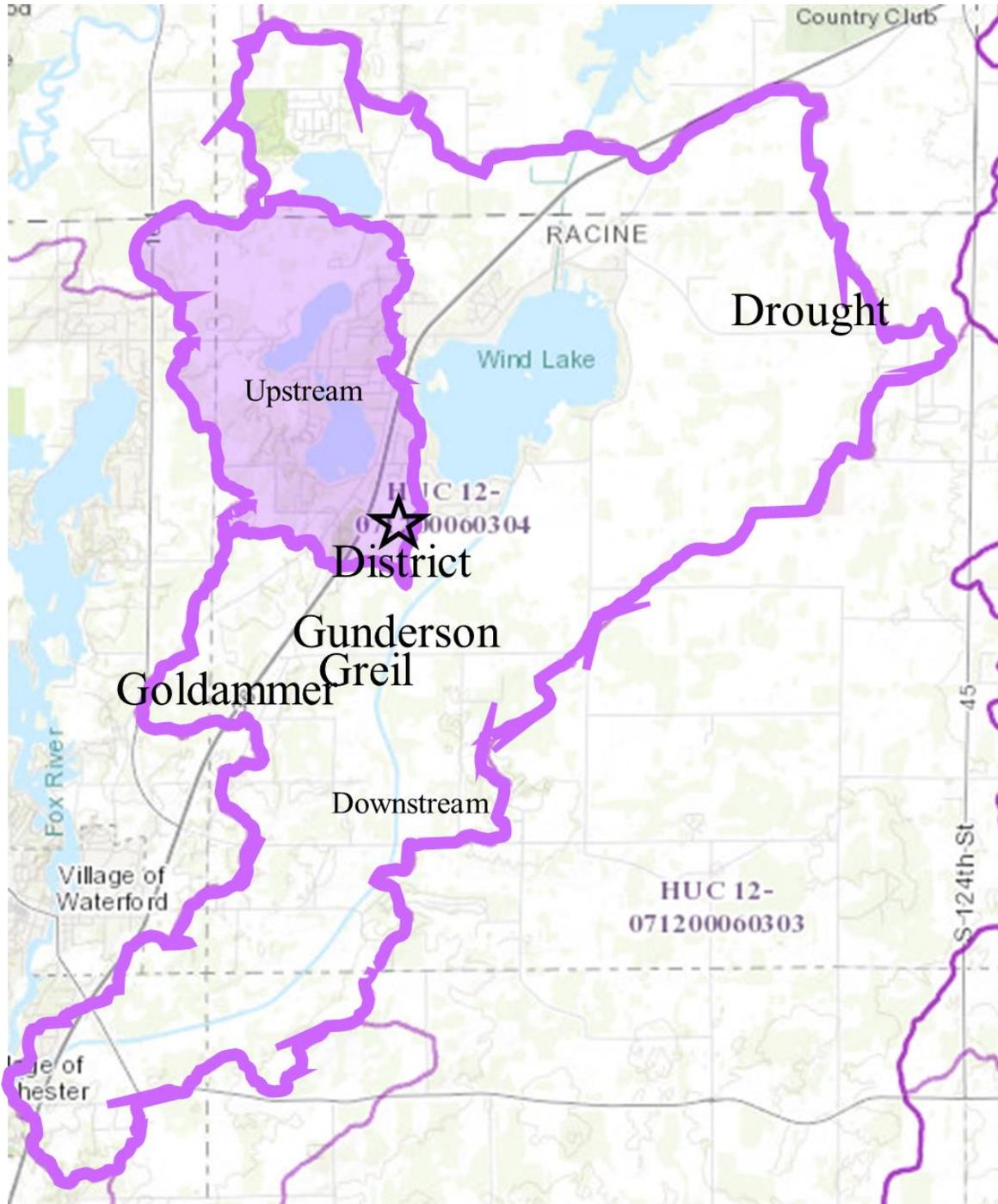
 Municipal Boundaries

1:288,896



NMB, Racine County, Racine County, SEWRPC, Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN,

**Norway Sanitary District's
HUC 12 Watershed: 071200060304**



Drought

Farm: Norway , V18 Generated:9/30/2019, Crop year: 2019, Township Range Section:4N 20E s2



Drought

Farm: Norway , V18 Generated:9/30/2019, Crop year: 2019, Township Range Section:4N 20E s2



-  Counties
-  Township/Range
-  Areas contributing runoff to direct conduits to groundwater
-  Nutrient prohibited areas (buffers vary by feature)
-  Nutrient prohibited areas (drawn manure prohibited areas)
-  Grassed waterway
-  Non-eroding channel
-  Ephemeral erosion channel
-  Ditch
-  Gully
-  Headland stacks
-  Not farmed
-  Grass filter area
-  Vegetated buffer
-  Non-metallic mine
-  Water
-  Sinkhole/other karst feature
-  Other
-  Soil samples
-  County Defined Karst Features
-  Fields
-  Drinking Well
-  Public well
-  Irrigation well
-  Sinkhole
-  Non-metallic mine
-  Fractured bedrock at surface
-  Other direct conduit
-  Tile outlet

**SNAPPLUS MODEL –
NO COVER CROP
(BASELINE CONDITION)**

WQ1: P Trade Report

Reported For	Norway
Printed	2019-09-24
Plan Completion/Update Date	2019-05-24
SnapPlus Version 18.1 built on 2019-01-15	
C:\Users\lakucek\Desktop\Norway_190923\Norway_No Cover Crops_LAK_190923.snapDb	

Prepared for:
Norway
attn:Greil_10acres

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	2021
Drought 03	OZAUKEE	MzdB	8	20
Drought 04	OZAUKEE	MzdB	8	53
Drought 05	VARNA	VaB	11	48
Drought 07	OZAUKEE	MzdB	20	151
Drought 09	OZAUKEE	MzdB	3	29
Drought Grandmas	VARNA	VaB	18	84
Drought North Pasture HUC 12	OZAUKEE	MzdB	5	16
Drought Oak Tree	OZAUKEE	MzdB	18	125

P Trade Report				PTP
Field Name	Soil Series	Soil Symbol	Acres	2021
Drought West Barn	VARNA	VaB	23	70
Total			114	597

FM6: Soil Test Report

Reported For	Norway
Printed	2019-09-24
Plan Completion/Update Date	2019-05-24
SnapPlus Version 18.1 built on 2019-01-15	
C:\Users\lakucek\Desktop\Norway_190923\Norway_No Cover Crops_LAK_190923.snapDb	

Prepared for:
Norway
attn:Greil_10acres

Field Name	Subfarm	Acres	Predominant		Soil Test Date	Soil Test Lab	Lab #	Samples		Smpl ID	pH	BpH	OM %	in ppm			
			Soil Map Symbol	Soil Name				Rec. #	Actual #					P	K	S	CEC
Drought 03		8.1	MzdB	OZAUKEE	2018-11-02			2	3		7.0		1.8	20	67	0	11
Drought 03					2018-11-02					12	7.2	7.4	1.9	22	70	0	12
Drought 03					2018-11-02					13	6.6	6.9	1.7	23	74	0	8
Drought 03					2018-11-02					14	7.2	7.4	1.8	16	58	0	13
Drought 04		8	MzdB	OZAUKEE	2018-11-02			2	2		7.0		3.5	16	67	0	13
Drought 04					2018-11-02					15	6.9	7.4	2.2	15	46	0	13
Drought 04					2018-11-02					16	7.1	7.4	4.8	16	87	0	0
Drought 05		11.4	VaB	VARNA	2018-11-02			2	2		7.5		4.3	27	65	0	36
Drought 05					2018-11-02					5	7.4	7.4	6.0	42	72	0	36
Drought 05					2018-11-02					6	7.5	7.4	2.5	12	58	0	0
Drought 07		20.4	MzdB	OZAUKEE	2018-11-02			4	4		7.3		4	13	64	0	26
Drought 07					2018-11-02					2	7.4	7.4	2.0	14	52	0	14
Drought 07					2018-11-02					3	7.0	7.4	2.0	9	61	0	15
Drought 07					2018-11-02					4	7.1	7.4	9.0	52	93	0	52
Drought 07					2018-11-02					7	7.5	7.4	3.0	15	78	0	23
Drought 09		3.4	MzdB	OZAUKEE	2018-11-02			1	1		7.1		2.8	16	89	0	18
Drought 09					2018-11-02					1	7.1	7.4	2.8	16	89	0	18
Drought Grandmas		17.7	VaB	VARNA	2019-06-10			4	1		7.1		3.9	25	97	0	0
Drought Grandmas					2019-06-10					AVG	7.1	7.4	3.9	25	97	0	0

Field Name	Subfarm	Acres	Predominant		Soil Test Date	Soil Test Lab	Lab #	Samples		Smpl ID	pH	BpH	OM %	in ppm			
			Soil Map Symbol	Soil Name				Rec. #	Actual #					P	K	S	CEC
Drought North Pasture HUC 12		4.9	MzdB	OZAUKEE	2015-10-22			1	2		7.3		4.2	23	112	0	20
Drought North Pasture HUC 12					2015-10-22					6	7.4	7.4	4.5	29	120	0	23
Drought North Pasture HUC 12					2015-10-22					7	7.1	7.4	3.8	17	104	0	17
Drought Oak Tree		17.7	MzdB	OZAUKEE	2019-06-10			4	1		7.1		3.9	25	97	0	21
Drought Oak Tree					2019-06-10					AVG	7.1	7.4	3.9	25	97	0	21
Drought West Barn		22.5	VaB	VARNA	2015-10-22			5	5		7.0		5.5	49	176	0	19
Drought West Barn					2015-10-22					1	7.4	7.4	4.5	70	281	0	17
Drought West Barn					2015-10-22					2	6.6	7.4	4.1	40	151	0	20
Drought West Barn					2015-10-22					3	7.1	7.4	5.9	60	149	0	19
Drought West Barn					2015-10-22					4	6.7	7.4	5.3	26	121	0	20
Drought West Barn					2015-10-22					5	7.4	7.4	7.5	47	180	0	0

NM1: Narrative and Crops Report

Starting Year	2019
Reported For	Norway
Printed	2019-09-24
Plan Completion/Update Date:	2019-05-24
SnapPlus Version 18.1 built on 2019-01-15	
C:\Users\lakucek\Desktop\Norway_190923\Norway_No Cover Crops_LAK_190923.snapDb	

Prepared for:
Norway
attn:Greil_10acres

Farm has 9 fields totalling 114.1 acres

Farm Narrative: None

Annual Farm Notes:

No Annual Farm Notes

Spreader Calibration Methods: No spreader calibration rate documentation has been selected.

Narrative and Crops:

Field Name	Acres	2019	2020	2021
Drought 03	8.1	Soybeans 15-20 inch row Spring Chisel, disked 46-55 bu/acre	Corn grain Spring Chisel, disked 171-190 bu/acre	Soybeans 15-20 inch row Spring Chisel, disked 46-55 bu/acre
Drought 04	8	Corn grain Spring Chisel, disked 171-190 bu/acre	Soybeans 15-20 inch row Spring Chisel, disked 46-55 bu/acre	Winter wheat (grain +straw) Fall Chisel, disked 61-80 bu/acre
Drought 05	11.4	Corn grain Spring Chisel, disked 171-190 bu/acre	Soybeans 15-20 inch row Spring Chisel, disked 46-55 bu/acre	Winter wheat (grain +straw) Fall Chisel, disked 61-80 bu/acre

Field Name	Acres	2019	2020	2021
Drought 07	20.4	Corn grain Spring Chisel, disked 171-190 bu/acre	Soybeans 15-20 inch row Spring Chisel, disked 46-55 bu/acre	Winter wheat (grain +straw) Fall Chisel, disked 61-80 bu/acre
Drought 09	3.4	Soybeans 15-20 inch row Spring Chisel, disked 46-55 bu/acre	Winter wheat (grain +straw) Fall Chisel, disked 61-80 bu/acre	Corn grain Spring Chisel, disked 171-190 bu/acre
Drought Grandmas	17.7	Corn grain Spring Chisel, disked 171-190 bu/acre	Soybeans 15-20 inch row Spring Chisel, disked 46-55 bu/acre	Corn grain Spring Chisel, disked 171-190 bu/acre
Drought North Pasture HUC 12	4.9	Soybeans 15-20 inch row Spring Chisel, disked 46-55 bu/acre	Corn grain Spring Chisel, disked 171-190 bu/acre	Soybeans 15-20 inch row Spring Chisel, disked 46-55 bu/acre
Drought Oak Tree	17.7	Corn grain Spring Chisel, disked 171-190 bu/acre	Soybeans 15-20 inch row Spring Chisel, disked 46-55 bu/acre	Corn grain Spring Chisel, disked 171-190 bu/acre
Drought West Barn	22.5	Soybeans 15-20 inch row Spring Chisel, disked 46-55 bu/acre	Corn grain Spring Chisel, disked 171-190 bu/acre	Soybeans 15-20 inch row Spring Chisel, disked 46-55 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
Corn grain	Acres bu	75 13,538	36 6,498	39 7,040

Norway

SnapPlus Narrative and Crops Report

09/24/2019

Crops Grouped By Category		2019	2020	2021
Soybeans 15-20 inch row	Acres bu	39 1,970	75 3,788	36 1,818
Winter wheat (grain +straw)	Acres bu		3 212	40 2,820

**SNAPPLUS MODEL –
WITH COVER CROP
(PROPOSED CONDITION)**

WQ1: P Trade Report

Reported For	Norway
Printed	2019-09-24
Plan Completion/Update Date	2019-05-24
SnapPlus Version 18.1 built on 2019-01-15	
C:\Users\lakucek\Desktop\Norway_190923\Norway_Cover Crops_LAK_190610.snapDb	

Prepared for:
Norway
attn:Greil_10acres

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	2021
Drought 03	OZAUKEE	MzdB	8	12
Drought 04	OZAUKEE	MzdB	8	52
Drought 05	VARNA	VaB	11	47
Drought 07	OZAUKEE	MzdB	20	147
Drought 09	OZAUKEE	MzdB	3	17
Drought Grandmas	VARNA	VaB	18	63
Drought North Pasture HUC 12	OZAUKEE	MzdB	5	12
Drought Oak Tree	OZAUKEE	MzdB	18	92

P Trade Report				PTP
Field Name	Soil Series	Soil Symbol	Acres	2021
Drought West Barn	VARNA	VaB	23	52
Total			114	493

FM6: Soil Test Report

Reported For	Norway
Printed	2019-09-24
Plan Completion/Update Date	2019-05-24
SnapPlus Version 18.1 built on 2019-01-15	
C:\Users\lakucek\Desktop\Norway_190923\Norway_Cover Crops_LAK_190610.snapDb	

Prepared for:
Norway
attn:Greil_10acres

Field Name	Subfarm	Acres	Predominant		Soil Test Date	Soil Test Lab	Lab Number	Samples		pH	OM%	in ppm			
			Soil Map Symbol	Soil Name				Rec. #	Actual #			P	K	S	CEC
Drought 03		8.1	MzdB	OZAUKEE	2018-11-02			2	3	7.0	1.8	20	67	0	11
Drought 04		8	MzdB	OZAUKEE	2018-11-02			2	2	7.0	3.5	16	67	0	13
Drought 05		11.4	VaB	VARNA	2018-11-02			2	2	7.5	4.3	27	65	0	36
Drought 07		20.4	MzdB	OZAUKEE	2018-11-02			4	4	7.3	4.0	13	64	0	26
Drought 09		3.4	MzdB	OZAUKEE	2018-11-02			1	1	7.1	2.8	16	89	0	18
Drought Grandmas		17.7	VaB	VARNA	2019-06-10			4	1	7.1	3.9	25	97	0	0
Drought North Pasture HUC 12		4.9	MzdB	OZAUKEE	2015-10-22			1	2	7.3	4.2	23	112	0	20
Drought Oak Tree		17.7	MzdB	OZAUKEE	2019-06-10			4	1	7.1	3.9	25	97	0	21
Drought West Barn		22.5	VaB	VARNA	2015-10-22			5	5	7.0	5.5	49	176	0	19

Crop Year Soil Test Needed

Field Name	Soil Test Date	2019	2020	2021	2022	2023
Drought 03	2018-11-02					X
Drought 04	2018-11-02					X
Drought 05	2018-11-02					X
Drought 07	2018-11-02					X

Norway

SnapPlus Soil Test Report

09/24/2019

Field Name	Soil Test Date	2019	2020	2021	2022	2023
Drought 09	2018-11-02					X
Drought Grandmas	2019-06-10					
Drought North Pasture HUC 12	2015-10-22		X			
Drought Oak Tree	2019-06-10					
Drought West Barn	2015-10-22		X			

NM1: Narrative and Crops Report

Starting Year	2019
Reported For	Norway
Printed	2019-09-24
Plan Completion/Update Date:	2019-05-24
SnapPlus Version 18.1 built on 2019-01-15	
C:\Users\lakucek\Desktop\Norway_190923\Norway_Cover Crops_LAK_190610.snapDb	

Prepared for:
Norway
attn:Greil_10acres

Farm has 9 fields totalling 114.1 acres

Farm Narrative: None

Annual Farm Notes:

No Annual Farm Notes

Spreader Calibration Methods: No spreader calibration rate documentation has been selected.

Narrative and Crops:

Field Name	Acres	2019	2020	2021
Drought 03	8.1	Soybeans to small grain cover crop Spring Chisel, no disk, cover crop disked 46-55 bu/acre	Corn grain to small grain cover crop Spring Chisel, no disk, cover crop disked 171-190 bu/acre	Soybeans to small grain cover crop Spring Chisel, no disk, cover crop disked 46-55 bu/acre
Drought 04	8	Corn grain to small grain cover crop Spring Chisel, no disk, cover crop disked 171-190 bu/acre	Soybeans to small grain cover crop Spring Chisel, no disk, cover crop disked 46-55 bu/acre	Winter wheat (grain +straw) to annual cover crop Fall Chisel, no disk , cover crop disked 61-80 bu/acre

Field Name	Acres	2019	2020	2021
Drought 05	11.4	Corn grain to small grain cover crop Spring Chisel, no disk, cover crop disked 171-190 bu/acre	Soybeans to small grain cover crop Spring Chisel, no disk, cover crop disked 46-55 bu/acre	Winter wheat (grain +straw) to annual cover crop Fall Chisel, no disk , cover crop disked 61-80 bu/acre
Drought 07	20.4	Corn grain to small grain cover crop Spring Chisel, no disk, cover crop disked 171-190 bu/acre	Soybeans to small grain cover crop Spring Chisel, no disk, cover crop disked 46-55 bu/acre	Winter wheat (grain +straw) to annual cover crop Fall Chisel, no disk , cover crop disked 61-80 bu/acre
Drought 09	3.4	Soybeans to small grain cover crop Spring Chisel, no disk, cover crop disked 46-55 bu/acre	Winter wheat (grain +straw) to annual cover crop Fall Chisel, no disk , cover crop disked 61-80 bu/acre	Corn grain to small grain cover crop Spring Chisel, no disk, cover crop disked 171-190 bu/acre
Drought Grandmas	17.7	Corn grain to small grain cover crop Spring Chisel, no disk, cover crop disked 171-190 bu/acre	Soybeans to small grain cover crop Spring Chisel, no disk, cover crop disked 46-55 bu/acre	Corn grain to small grain cover crop Spring Chisel, no disk, cover crop disked 171-190 bu/acre
Drought North Pasture HUC 12	4.9	Soybeans to small grain cover crop Spring Chisel, no disk, cover crop disked 46-55 bu/acre	Corn grain to small grain cover crop Spring Chisel, no disk, cover crop disked 171-190 bu/acre	Soybeans to small grain cover crop Spring Chisel, disked, cover crop disked 46-55 bu/acre
Drought Oak Tree	17.7	Corn grain to small grain cover crop Spring Chisel, no disk, cover crop disked 171-190 bu/acre	Soybeans to small grain cover crop Spring Chisel, no disk, cover crop disked 46-55 bu/acre	Corn grain to small grain cover crop Spring Chisel, no disk, cover crop disked 171-190 bu/acre

Field Name	Acres	2019	2020	2021
Drought West Barn	22.5	Soybeans to small grain cover crop Spring Chisel, disked, cover crop disked 46-55 bu/acre	Corn grain to small grain cover crop Spring Chisel, no disk, cover crop disked 171-190 bu/acre	Soybeans to small grain cover crop Spring Chisel, disked, cover crop disked 46-55 bu/acre

Summary by Crop:

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

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Corn grain to small grain cover crop	Acres bu	75 13,538	36 6,498	39 7,040
Soybeans to small grain cover crop	Acres bu	39 1,970	75 3,788	36 1,818
Winter wheat (grain +straw) to annual cover crop	Acres bu		3 212	40 2,820

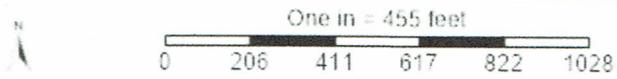
**RAW DATA
FROM LINDSEY DROUGHT**

Field Boundary



MILERO CTH G
Road Map content © OpenStreetMap contributors

Grower: Droughtville Farms
Farm: new farm
Field: Siering Farm
Area: 64.01 ac



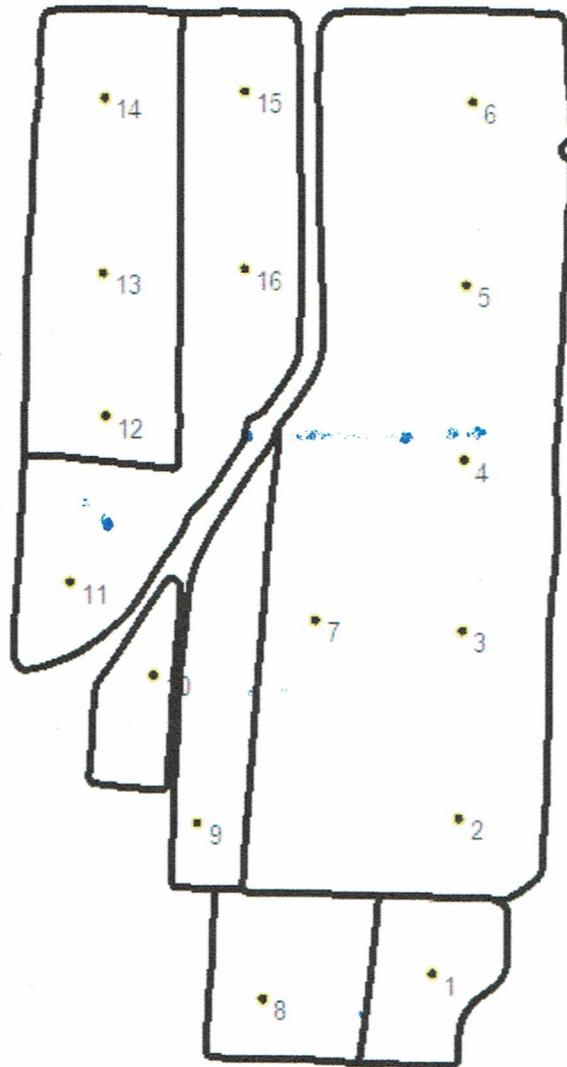
— Siering Farm (64.01 ac)

- ~~1.) pasture~~
- ~~2.) Hay~~
- ~~3.) 2018 Soybean - 2019 soybean - 2020~~
- ~~4.) 2018 - Hay 2019 corn 2020 - soybean~~

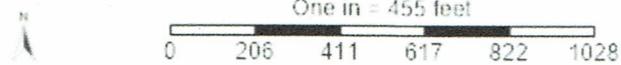
See Attached



Soil Sampling Points



Grower: Droughtville Farms
Farm: new farm
Field: Siering Farm
Area: 64.01 ac



- Field Boundary
- Soil Sampling Points



Soil Test Results

Grower: Droughtville Farms

Farm: new farm

Field: Siering Farm

Area: 64.01 ac

Lat: 42.83338°N

Lon: 088.09723°W

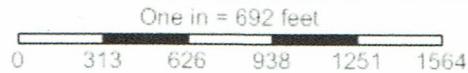
Event Date(s): 11/02/2018

Min:	6.6	6.9	8	46	1.7	8.4	1,118	306
Max:	7.5	7.4	52	93	9.0	52.2	4,626	970
Avg:	7.2	7.4	18	71	3.4	21.2	2,340	643
Sample ID	pH	BpH	P Bray 1	K	OM	CEC	Ca	Mg
1	7.1	7.4	16	89	2.8	18.0	1,959	645
2	7.4	7.4	14	52	2.0	13.7	1,917	509
3	7.0	7.4	9	61	2.0	14.6	1,782	519
4	7.1	7.4	52	93	9.0	52.2	4,626	970
5	7.4	7.4	42	72	6.0	35.9	3,972	950
6	7.5	7.4	12	58	2.5	22.2	2,425	717
7	7.5	7.4	15	78	3.0	22.5	2,548	759
8	7.2	7.4	15	89	4.8	26.9	3,151	849
9	7.3	7.4	8	65	3.3	18.9	2,182	626
10	7.2	7.4	9	77	3.7	23.0	2,442	715
11	6.7	7.4	12	64	2.5	13.8	1,570	492
12	7.2	7.4	22	70	1.9	11.9	1,486	439
13	6.6	6.9	23	74	1.7	8.4	1,118	306
14	7.2	7.4	16	58	1.8	12.7	1,468	433
15	6.9	7.4	15	46	2.2	12.6	1,510	500
16	7.1	7.4	16	87	4.8	32.0	3,280	861

Farm Imagery



Grower: Droughtville Farms
 Farm: Dairy
 Field: West Barn
 Number of Fields: 6
 Area: 106.55 ac



—	West Barn (23.14 ac)
—	Other Fields (83.41 ac)



Farm Imagery



Grower: Droughtville Farms
Farm: Dairy
Field: North
Number of Fields: 6
Area: 106.55 ac



One in = 692 feet
0 313 626 938 1251 1564

- North (7.88 ac)
- Other Fields (98.67 ac)



Field Boundary



Road Map content © OpenStreetMap contributors

Grower: Droughtville Farms
Farm: Dairy
Field: North
Area: 7.88 ac



One in = 151 feet
0 68 136 204 272 340

— North (7.88 ac)



Soil Test Results

Grower: Droughtville Farms

Farm: Dairy

Field: North

Area: 7.88 ac

Lat: 42.83203°N

Lon: 088.08526°W

Event Date(s): 10/22/2015

Min:	7.1	7.4	17	104	3.8	16.8	1,968	606
Max:	7.4	7.4	29	120	4.5	22.7	2,731	829
Avg:	7.2	7.4	23	112	4.2	19.8	2,349	717
Sample ID	pH	BpH	P Bray 1	K	OM	CEC	Ca	Mg
6	7.4	7.4	29	120	4.5	22.7	2,731	829
7	7.1	7.4	17	104	3.8	16.8	1,968	606

Field Boundary



Grower: Droughtville Farms
Farm: Dairy
Field: West Barn
Area: 23.14 ac



One in = 227 feet
0 103 206 308 411 514

— West Barn (23.14 ac)



Soil Test Results

Grower: Droughtville Farms

Farm: Dairy

Field: West Barn

Area: 23.14 ac

Lat: 42.83155°N

Lon: 088.08813°W

Event Date(s): 10/22/2015

Min:	6.6	7.4	26	121	4.1	17.0	1,916	664
Max:	7.4	7.4	70	281	7.5	30.5	3,763	1,123
Avg:	7.0	7.4	48	176	5.5	21.5	2,553	828

Sample ID	pH	BpH	P Bray 1	K	OM	CEC	Ca	Mg
1	7.4	7.4	70	281	4.5	17.0	1,916	664
2	6.6	7.4	40	151	4.1	20.3	2,210	692
3	7.1	7.4	60	149	5.9	19.2	2,370	745
4	6.7	7.4	26	121	5.3	20.3	2,505	918
5	7.4	7.4	47	180	7.5	30.5	3,763	1,123

**BMP TECHNICAL STANDARD
NATURAL RESOURCES
CONSERVATION SERVICE (NRCS)**

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

COVER CROP

(Ac.)

CODE 340

DEFINITION

Grasses, legumes, and forbs planted for seasonal vegetative cover.

PURPOSE

This practice is applied to support one or more of the following purposes:

- Reduce erosion from wind and water.
- Maintain or increase soil health and organic matter content.
- Reduce water quality degradation by utilizing excessive soil nutrients.
- Suppress excessive weed pressures and break pest cycles.
- Improve soil moisture use efficiency.
- Minimize soil compaction.

CONDITIONS WHERE PRACTICE APPLIES

All lands requiring seasonal vegetative cover for natural resource protection or improvement.

CRITERIA

General Criteria Applicable to All Purposes

Plant species, seedbed preparation, seeding rates, seeding dates, seeding depths, fertility requirements, and planting methods will be consistent with applicable local criteria and soil/site conditions.

Select species that are compatible with other components of the cropping system.

Ensure herbicides used with crops are compatible with cover crop selections and purpose(s).

Cover crops may be established between

successive production crops, or companion-planted or relay-planted into production crops. Select species and planting dates that will not compete with the production crop yield or harvest.

Do not burn cover crop residue.

Determine the method and timing of termination to meet the grower's objective and the current NRCS Cover Crop Termination Guidelines.

When a cover crop will be grazed or hayed ensure the planned management will not compromise the selected conservation purpose(s).

Do not harvest cover crops for seed.

If the specific rhizobium bacteria for the selected legume are not present in the soil, treat the seed with the appropriate inoculum at the time of planting.

Additional Criteria to Reduce Erosion from Wind and Water

Time the cover crop establishment in conjunction with other practices to adequately protect the soil during the critical erosion period(s).

Select cover crops that will have the physical characteristics necessary to provide adequate erosion protection.

Use the current erosion prediction technology to determine the amount of surface and/or canopy cover needed from the cover crop to achieve the erosion objective.

Additional Criteria to Maintain or Increase Soil Health and Organic Matter Content

Cover crop species will be selected on the basis of producing higher volumes of organic material and root mass to maintain or increase soil

Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service [State Office](#) or visit the [Field Office Technical Guide](#).

**NRCS, NHCP
September 2014**

organic matter.

The planned crop rotation including the cover crop and associated management activities will score a Soil Conditioning Index (SCI) value > 0 , as determined using the current approved NRCS Soil Conditioning Index (SCI) procedure, with appropriate adjustments for additions to and or subtractions from plant biomass.

The cover crop shall be planted as early as possible and be terminated as late as practical for the producer's cropping system to maximize plant biomass production, considering crop insurance criteria, the time needed to prepare the field for planting the next crop, and soil moisture depletion.

Additional Criteria Reduce Water Quality Degradation by Utilizing Excessive Soil Nutrients

Establish cover crops as soon as practical prior to or after harvest of the production crop. (i.e. before or after harvest)

Select cover crop species for their ability to effectively utilize nutrients.

Terminate the cover crop as late as practical to maximize plant biomass production and nutrient uptake. Practical considerations for termination date may include crop insurance criteria, the amount of time needed to prepare the field for planting the next crop, weather conditions, and cover crop effects on soil moisture and nutrient availability to the following crop.

If the cover crop will be harvested for feed (hay/balage/etc.), choose species that are suitable for the planned livestock, and capable of removing the excess nutrients present.

Additional Criteria to Suppress Excessive Weed Pressures and Break Pest Cycles

Select cover crop species for their life cycles, growth habits, and other biological, chemical and or physical characteristics to provide one or more of the following:

- To suppress weeds, or compete with weeds.
- Break pest life cycles or suppress of plant pests or pathogens.
- Provide food or habitat for natural enemies of pests.
- Release compounds such as glucosinolates that suppress soil borne pathogens or pests.

Select cover crop species that do not harbor pests or diseases of subsequent crops in the rotation.

Additional Criteria to Improve Soil Moisture Use Efficiency

In areas of limited soil moisture, terminate growth of the cover crop sufficiently early to conserve soil moisture for the subsequent crop. Cover crops established for moisture conservation shall be left on the soil surface.

In areas of potential excess soil moisture, allow the cover crop to grow as long as possible to maximize soil moisture removal.

Additional Criteria to Minimize Soil Compaction

Select cover crop species that have the ability to root deeply and the capacity to penetrate or prevent compacted layers.

CONSIDERATIONS

Plant cover crops in a timely matter and when there is adequate moisture to establish a good stand.

When applicable, ensure cover crops are managed and are compatible with the client's crop insurance criteria.

Maintain an actively growing cover crop as late as feasible to maximize plant growth, allowing time to prepare the field for the next crop and to optimize soil moisture.

Select cover crops that are compatible with the production system, well adapted to the region's

climate and soils, and resistant to prevalent pests, weeds, and diseases. Avoid cover crop species that harbor or carry over potentially damaging diseases or insects.

Cover crops may be used to improve site conditions for establishment of perennial species.

When cover crops are used for grazing, select species that will have desired forage traits, be palatable to livestock, and not interfere with the production of the subsequent crop.

Use plant species that enhance forage opportunities for pollinators by using diverse legumes and other forbs.

Cover crops may be selected to provide food or habitat for natural enemies of production crop pests.

Cover crop residues should be left on the soil surface to maximize allelopathic (chemical) and mulching (physical) effects.

Seed a higher density cover crop stand to promote rapid canopy closure and greater weed suppression. Increased seeding rates (1.5 to 2 times normal) can improve weed-competitiveness.

Cover crops may be selected that release biofumigation compounds that inhibit soil-borne plant pests and pathogens.

Species can be selected to serve as trap crops to divert pests from production crops.

Select a mixture of two or more cover crop species from different plant families to achieve one or more of the following: (1) species mix with different maturity dates, (2) attract beneficial insects, (3) attract pollinators, (4) increase soil biological diversity, (5) serve as a trap crop for insect pests, or (6) provide food and cover for wildlife habitat management.

Plant legumes or mixtures of legumes with grasses, crucifers, and/or other forbs to achieve biological nitrogen fixation. Select cover crop species or mixture, and timing and method of termination that will maximize efficiency of nitrogen utilization by the following crop, considering soil type and conditions, season and weather conditions, cropping system, C:N ratio of the cover crop at termination, and anticipated nitrogen needs of the subsequent crop. Use

LGU- recommended nitrogen credits from the legume and reduce nitrogen applications to the subsequent crop accordingly. "If the specific rhizobium bacteria for the selected legume are not present in the soil, treat the seed with the appropriate inoculum at the time of planting.

Time the termination of cover crops to meet nutrient release goals. Termination at early vegetative stages may cause a more rapid release compared to termination at a more mature stage.

Both residue decomposition rates and soil fertility can affect nutrient availability following termination of cover crops

Allelopathic effects to the subsequent crop should be evaluated when selecting the appropriate cover crop.

Legumes add the most plant-available N if terminated when about 30% of the crop is in bloom.

Additional Considerations to Reduce Erosion by Wind or Water

To reduce erosion, best results are achieved when the combined canopy and surface residue cover attains 90 percent or greater during the period of potentially erosive wind or rainfall.

Additional Considerations to Reduce Water Quality Degradation by Utilizing Excessive Soil Nutrients

Use deep-rooted species to maximize nutrient recovery.

When appropriate for the crop production system, mowing certain grass cover crops (e.g., sorghum-sudangrass, pearl millet) prior to heading and allowing the cover crop to regrow can enhance rooting depth and density, thereby increasing their subsoiling and nutrient-recycling efficacy.

Additional Considerations to Increase Soil Health and Organic Matter Content

Increase the diversity of cover crops (e.g., mixtures of several plant species) to promote a wider diversity of soil organisms, and thereby promote increased soil organic matter.

Plant legumes or mixtures of legumes with grasses, crucifers, and/or other forbs to provide nitrogen through biological nitrogen fixation.

Legumes add the most plant-available N if terminated when about 30% of the crop is in bloom.

PLANS AND SPECIFICATIONS

Prepare plans and specifications for each field or treatment unit according to the planning criteria and operation and maintenance requirements of this standard. Specifications shall describe the requirements to apply the practice to achieve the intended purpose for the practice site. Plans for the establishment of cover crops shall, as a minimum, include the following specification components in an approved Cover Crop, 340, Implementation Requirements document:

- Field number and acres
- Species of plant(s) to be established.
- Seeding rates.
- Seeding dates.
- Establishment procedure.
- Rates, timing, and forms of nutrient application (if needed).
- Dates and method to terminate the cover crop.
- Other information pertinent to establishing and managing the cover crop e.g., if haying or grazing is planned specify the planned management for haying or grazing.

OPERATION AND MAINTENANCE

Evaluate the cover crop to determine if the cover crop is meeting the planned purpose(s). If the cover crop is not meeting the purpose(s) adjust

the management, change the species of cover crop, or choose a different technology.

REFERENCES

- A. Clark (ed.). 2007. Managing cover crops profitably. 3rd ed. Sustainable Agriculture Network Handbook Series; bk 9.
- Hargrove, W.L., ed. Cover crops for clean water. SWCS, 1991.
- Magdoff, F. and H. van Es. Cover Crops. 2000. p. 87-96 *In* Building soils for better crops. 2nd ed. Sustainable Agriculture Network Handbook Series; bk 4. National Agriculture Library. Beltsville, MD.
- Reeves, D.W. 1994. Cover crops and erosion. p. 125-172 *In* J.L. Hatfield and B.A. Stewart (eds.) Crops Residue Management. CRC Press, Boca Raton, FL.
- NRCS Cover Crop Termination Guidelines: <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/climatechange/?cid=stelprdb1077238>
- Revised Universal Soil Loss Equation Version 2 (RUSLE2) website: <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/tools/rusle2/>
- Wind Erosion Prediction System (WEPS) website: <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/tools/weps/>
- USDA, Natural Resources Conservation Service, National Agronomy Manual, 4th Edition, Feb. 2011. Website: <http://directives.sc.egov.usda.gov/> Under Manuals and Title 190.

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 Town of Norway Sanitary District No. 1		Permit Number WI- 0031470-07-1		Facility Site Number
Facility Address 6801 Milwaukee Ave			City Wind Lake	State WI
Project Contact Name (if applicable)			Address	City
			State	ZIP Code

Project Name
Annual Cover Crops

Receiving Water Name Wind Lake Canal	Parameter(s) being traded Phosphorus	HUC 12(s) 071200060304
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Credit Generator Information

Credit generator type (select all that apply):

<input type="checkbox"/> Permitted Discharge (non-MS4CAFO)	<input type="checkbox"/> Urban nonpoint source discharge
<input type="checkbox"/> Permitted MS4	<input checked="" type="checkbox"/> Agricultural nonpoint source discharge
<input type="checkbox"/> Permitted CAFO	<input type="checkbox"/> 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
<input type="radio"/> Traditional <input type="radio"/> MS4 <input type="radio"/> CAFO				
<input type="radio"/> Traditional <input type="radio"/> MS4 <input type="radio"/> CAFO				
<input type="radio"/> Traditional <input type="radio"/> MS4 <input type="radio"/> CAFO				
<input type="radio"/> Traditional <input type="radio"/> MS4 <input type="radio"/> CAFO				
<input type="radio"/> Traditional <input type="radio"/> MS4 <input type="radio"/> CAFO				

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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	<input type="radio"/> Yes <input type="radio"/> No	
b. Amount of credit being generated	<input type="radio"/> Yes <input type="radio"/> No	
c. Timeline for credits and agreements	<input type="radio"/> Yes <input type="radio"/> No	
d. Method for quantifying credits	<input type="radio"/> Yes <input type="radio"/> No	
e. Tracking and verification procedures	<input type="radio"/> Yes <input type="radio"/> No	
f. Location of credit generator in proximity to receiving water and credit user	<input type="radio"/> Yes <input type="radio"/> No	
g. Other: _____	<input type="radio"/> Yes <input type="radio"/> 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?
<input type="radio"/> Urban NPS <input checked="" type="radio"/> Agricultural NPS <input type="radio"/> Other	Annual Cover Crops	SnapPlus	WQT-2019	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Only in part
<input type="radio"/> Urban NPS <input type="radio"/> Agricultural NPS <input type="radio"/> Other				<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Only in part
<input type="radio"/> Urban NPS <input type="radio"/> Agricultural NPS <input type="radio"/> Other				<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Only in part
<input type="radio"/> Urban NPS <input type="radio"/> Agricultural NPS <input type="radio"/> Other				<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Only in part
<input type="radio"/> Urban NPS <input type="radio"/> Agricultural NPS <input type="radio"/> Other				<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Only in part
<input type="radio"/> Urban NPS <input type="radio"/> Agricultural NPS <input type="radio"/> Other				<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Only in part
<input type="radio"/> Urban NPS <input type="radio"/> Agricultural NPS <input type="radio"/> Other				<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Only in part
<input type="radio"/> Urban NPS <input type="radio"/> Agricultural NPS <input type="radio"/> Other				<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Only in part

Does plan have a narrative that describes:		Plan Section
a. Description of existing land uses	<input checked="" type="radio"/> Yes <input type="radio"/> No	pp. 3, 25
b. Management practices used to generate credits	<input checked="" type="radio"/> Yes <input type="radio"/> No	pp. 3, 33
c. Amount of credit being generated	<input checked="" type="radio"/> Yes <input type="radio"/> No	pp. 3-4, 15
d. Description of applicable trade ratio per agreement/management practice	<input checked="" type="radio"/> Yes <input type="radio"/> No	p. 4
e. Location where credits will be generated	<input checked="" type="radio"/> Yes <input type="radio"/> No	pp. 3, 17-18
f. Timeline for credits and agreements	<input checked="" type="radio"/> Yes <input type="radio"/> No	pp. 3, 13
g. Method for quantifying credits	<input checked="" type="radio"/> Yes <input type="radio"/> No	pp. 3, 21, 29

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Does plan have a narrative that describes:		Plan Section
h. Tracking procedures	<input checked="" type="radio"/> Yes <input type="radio"/> No	pp. 3, 12
i. Conditions under which the management practices may be inspected	<input checked="" type="radio"/> Yes <input type="radio"/> No	p. 12
j. Reporting requirements should the management practice fail	<input type="radio"/> Yes <input checked="" type="radio"/> No	
k. Operation and maintenance plan for each management practice	<input checked="" type="radio"/> Yes <input type="radio"/> No	pp. 3, 46
l. Location of credit generator in proximity to receiving water and credit user	<input checked="" type="radio"/> Yes <input type="radio"/> No	p. 17
m. Practice registration documents, if available	<input checked="" type="radio"/> Yes <input type="radio"/> No	p. 7
n. History of project site(s)	<input checked="" type="radio"/> Yes <input type="radio"/> No	p. 3
o. Other: _____	<input type="radio"/> Yes <input type="radio"/> 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 <i>Leo A. Kueck</i>	Date Signed <i>14 Jan 2020</i>
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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 <i>Patrick J. Nolan</i>	Date Signed <i>1/14/2020</i>
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