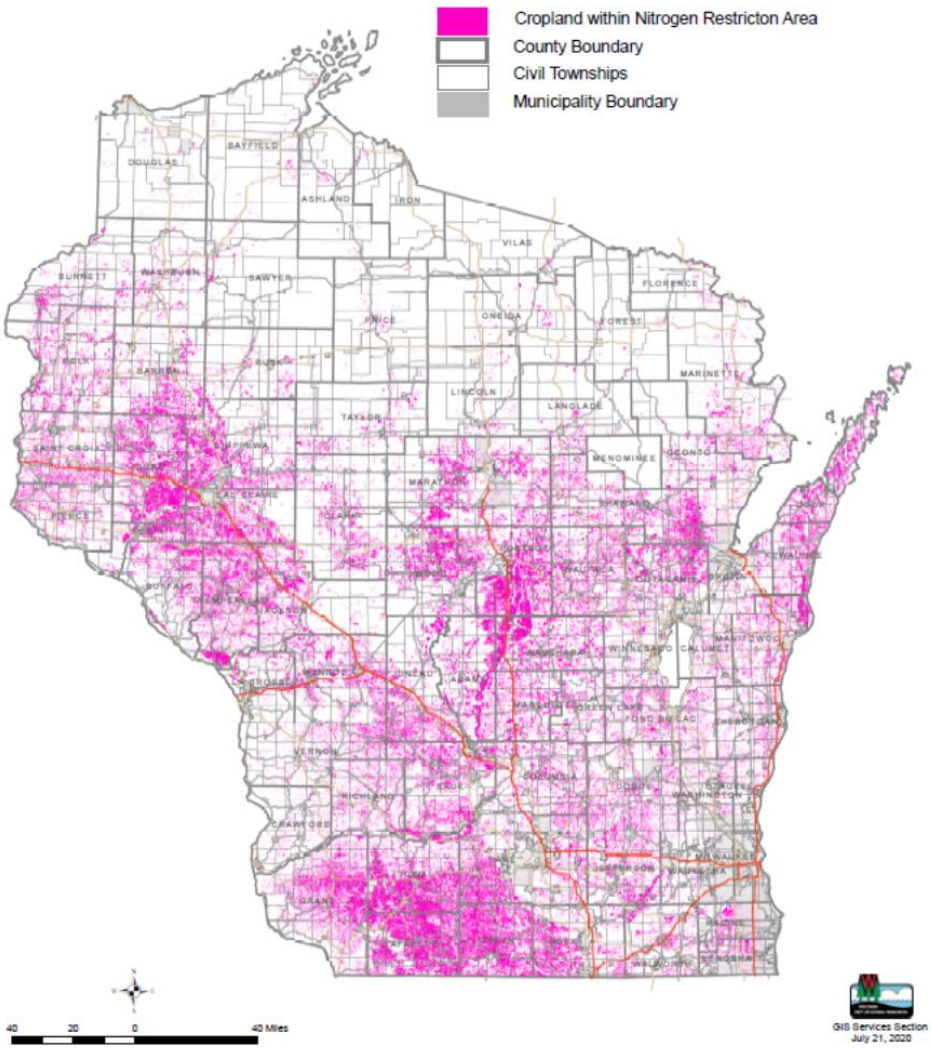
Wisconsin
Department of Natural Resources

NR 151 Technical Advisory Committee
August 19, 2020

Sensitive Areas

NR 151.015 (xx). "Nitrate Sensitive Area" means any one of the following:

(a) An area where the cropland soil meets the definition of N Restricted Soils as provided in NRCS Technical Standard 590, dated December 2015.



Sensitive Areas

- TAC discussed Towns with contaminated groundwater as a sensitive area during July meeting.

NR 151.015 (xx). "Nitrate Sensitive Area" means any one of the following:

(a) An area where the cropland soil meets the definition of N Restricted Soils as provided in NRCS Technical Standard 590, dated December 2015.

(b) Cropland within a Town where groundwater is contaminated with nitrate from agricultural practices. The department shall consider all of the following factors when determining whether groundwater in a Town is contaminated with nitrate from agricultural practices:

1. The percentage of land in agricultural production
2. The number of potential non-agricultural sources of nitrate contamination including septic systems, industrial waste disposal, MORE?
3. The percentage of private and public water supply wells with reported nitrate contaminations exceeding 2 mg/L (PAL)
4. Whether any private and public water supply wells have reported nitrate contamination exceeding 10 mg/L (ES)
5. Groundwater recharge
6. MORE?

Sensitive Areas

- Altered approach to identify Towns with contaminated groundwater to specifically include a list of towns in the rule.
  - Based on TAC feedback.
  - More clear on which towns would be impacted by the rule.
- Team of experts formed with a goal to:
  - Discuss criteria that could be used to identify towns in which drinking water wells are contaminated by nitrate.
  - Focused on water quality factors only.
  - Team met on two separate occasions.

Sensitive Areas

- Criteria derived from team discussions:
  - Minimum 25 samples per town.
  - Tier 1: 10% wells exceed ES AND average nitrate concentration >5.4 mg/L
  - Tier 2: 5% wells exceed ES OR average nitrate concentration > 5.4 mg/L

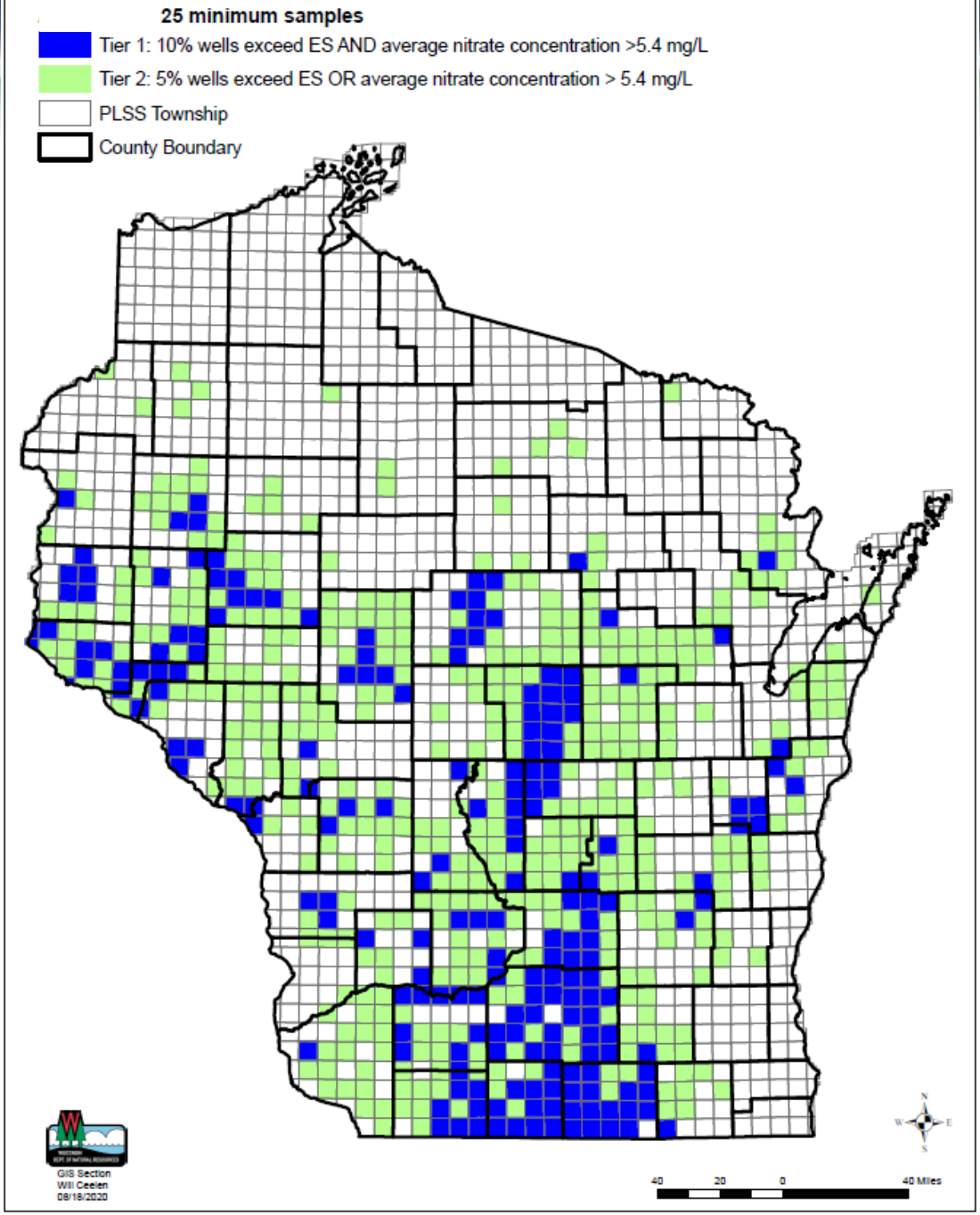
- Notable areas of consensus from team:
  - Have adequate sample size per town to account for potential outliers.
  - Use a tiered approach: Tier 1, towns heavily impacted by nitrate contamination (reactive) and Tier 2, towns with groundwater quality that may lead to Tier 1 level in the future (proactive).
  - Don’t consider groundwater quality trends since private well data will be used to create the maps.
    - Public well data could provide us with water quality trends.

Sensitive Areas

- Criteria derived from team discussions:
  - Minimum 25 samples per town.
  - Tier 1: 10% wells exceed ES AND average nitrate concentration >5.4 mg/L
  - Tier 2: 5% wells exceed ES OR average nitrate concentration > 5.4 mg/L

- Understanding the criteria:
  - Tier 1 uses AND / Tier 2 uses OR
  - Percentage of wells exceeding ES and nitrate concentration; different ways to analyze water quality data.
  - 5.4 mg/L, used by Minnesota and is the trigger for requiring public water systems to move to quarterly sampling.
    - Wisconsin's trigger is 5.0 mg/L.

Nitrate data for private wells providing the average of nitrate(mg/L) per Town-Range



Breakout Groups

Maximum Leaching Limit

Goals:

- Set a nitrogen leaching limit that reflects groundwater quality standards. An index or model will be developed at a later date to assist farmers in achieving limit.
- For ease of implementation, follow a similar structure to those existing models currently being used in nutrient management planning.
  - Phosphorus Index
  - Soil Loss

Maximum Leaching Limit

- 2.3 pounds nitrogen per acre per inch of groundwater recharge

	Nitrate-Nitrogen Concentration (mg/L)									
	1	2	3	4	5	10	15	20	30	40
Water in inches	lbs of Nitrogen per acre									
1	0.2	0.5	0.7	0.9	1.1	2.3	3.4	4.5	6.8	9.0
2	0.5	0.9	1.4	1.8	2.3	4.5	6.8	9.0	13.6	18.1
3	0.7	1.4	2.0	2.7	3.4	6.8	10.2	13.6	20.4	27.1
4	0.9	1.8	2.7	3.6	4.5	9.0	13.6	18.1	27.1	36.2
5	1.1	2.3	3.4	4.5	5.7	11.3	17.0	22.6	33.9	45.2
6	1.4	2.7	4.1	5.4	6.8	13.6	20.4	27.1	40.7	54.3
7	1.6	3.2	4.7	6.3	7.9	15.8	23.7	31.7	47.5	63.3
8	1.8	3.6	5.4	7.2	9.0	18.1	27.1	36.2	54.3	72.4
9	2.0	4.1	6.1	8.1	10.2	20.4	30.5	40.7	61.1	81.4
10	2.3	4.5	6.8	9.0	11.3	22.6	33.9	45.2	67.8	90.5

Maximum Leaching Limit

- *i. An average annual leached nitrogen over all acreage equal to or less than 2.3 pounds per acre per inch of groundwater recharge provided nutrient application rates on any field shall not exceed application rates allowed under ATCP 50.04(3).*
  - Sets an annual limit over all acreage; allows flexibility for high nitrogen demanding crops as long as excess nitrogen losses above 2.3 pounds per acre per inch of groundwater recharge is offset elsewhere in the farm's nutrient management plan.
  - Application rates must also follow UW nitrogen recommendations.
    - » Annual 2.3 pounds nitrogen per acre per inch of groundwater recharge averaged across all land in NMP OR UW recommendations, whichever is less.

Maximum Leaching Limit

- *ii. For each individual field, an averaged leached nitrogen equal to or less than 2.3 pounds per acre per inch of groundwater recharge averaged over the accounting period provided that in no year shall nutrient application rates on any field exceed application rates allowed under ATCP 50.04(3).*
  - Sets a rotational limit for each individual field; this ensures no single field or small geographic area has excess nitrogen loss over a rotation.
  - Application rates still be follow UW nitrogen recommendations.
    - » Average rotational 2.3 pounds nitrogen per acre per inch of groundwater recharge for an individual field over it's rotation OR UW recommendations, whichever is less.

Maximum Leaching Limit

b. All croplands, pastures, and winter grazing areas identified in the producer's nutrient management plan shall have a calculated nitrogen leaching amount that meets both of the following:

- i. An average annual leached nitrogen over all acreage equal to or less than 2.3 pounds per acre per inch of groundwater recharge provided nutrient application rates on any field shall not exceed application rates allowed under ATCP 50.04(3).
- ii. For each individual field, an averaged leached nitrogen equal to or less than 2.3 pounds per acre per inch of groundwater recharge averaged over the accounting period provided that in no year shall nutrient application rates on any field exceed application rates allowed under ATCP 50.04(3).

Breakout Groups