

The statement of scope for this rule, SS 064-16, was approved by the Governor on July 13, 2016, was published in Register No. 727 A3 on July 18, 2016, and was approved by the Natural Resources Board on August 3, 2016. This rule was approved by the Governor on February 14, 2018.

ORDER OF THE STATE OF WISCONSIN NATURAL RESOURCES BOARD CREATING RULES

The Wisconsin Natural Resources Board proposes to **amend** NR 151.09(1); to **create** NR 151.015 (2), (2m), (7m), (8d), (8h), (8p), (8t), (11m), (13j), (15n), (15w), (17), (18g), (18r), (22m), NR 151.075, and NR 243.143 relating to runoff management and non-point source performance standards and Concentrated Animal Feeding Operation (CAFO) rule revisions to incorporate by reference those performance standards, and affecting small business.

WT-15-16

Analysis Prepared by the Department of Natural Resources

1. Statutes Interpreted: ss. 281.15, 281.16 and 283.31, Stats.

2. Statutory Authority: ss. 281.16 (3) (a), 283.11, 283.31, 160.19 and 227.11 (2) (a), Stats.

3. Explanation of Agency Authority: Pursuant to s. 281.15, Stats., the department shall set water quality standards to be applicable to the waters of the state. Those water quality standards appear in chs. NR 102 through NR 105, Wis. Adm. Code, for surface water quality standards and ch. NR 140, Wis. Adm. Code, for groundwater quality standards.

Pursuant to s. 281.16(3)(a), Stats., the department, in consultation with the department of agriculture, trade and consumer protection (DATCP), is directed to promulgate by rule performance standards and prohibitions for agricultural facilities and agricultural practices that are designed to comply with state surface water quality standards and groundwater quality standards. Chapter NR 151, Wis. Adm. Code, establishes, among other things, performance standards and prohibitions for agricultural facilities and practices designed to achieve water quality standards.

Pursuant to ss. 283.11 and 283.31(3), Stats., the department is authorized to promulgate rules to administer the WPDES permit program and to include conditions in WPDES permits that are necessary to achieve compliance with surface water and groundwater quality standards.

Pursuant to s. 160.19, Stats., authorizes the department to promulgate rules for facilities, activities and practices affecting groundwater which are designed to minimize the level of substances in groundwater and to maintain compliance with preventive action limits for groundwater standards to the extent technically and economically feasible. Section 160.19(4), Stats., directs the agency to review and revise its rules, if necessary, to achieve the objectives of s. 160(19)(2) and (3), Stats., regarding compliance with preventive action limits and enforcement standards.

Pursuant to s. 227.11(2)(a), Stats., the department has general authority to promulgate rules to administer the specific statutory authority granted in chs. 281 and 283, Stats.

4. Related Statutes or Rules: Section NR 151.004, Wis. Adm. Code, authorizes the department to promulgate targeted performance standards if statewide performance standards and prohibitions are

insufficient to achieve surface water and groundwater quality standards in the defined targeted areas and targeted performance standards would attain surface water and groundwater quality standards in those areas.

Section NR 151.002(33), Wis. Adm. Code, defines a “performance standard” as a narrative or measurable number specifying the minimum acceptable outcome for a facility or practice.

Section NR 151.002(44), Wis. Adm. Code, defines “targeted performance standard” as a performance standard that will apply in a specific area, where additional practices beyond those contained in ch. NR 151 are necessary to meet water quality standards.

The department has found that in Silurian bedrock areas of Wisconsin, water quality standards or groundwater standards will not be attained using statewide performance standards and prohibitions but the implementation of targeted performance standards would attain water quality standards or groundwater standards. The proposed rules contain targeted performance standards.

Pursuant to s. 281.16(3), Stats., DATCP shall develop or specify the best management practices, conservation practices or technical standards used to demonstrate compliance with a performance standard developed under s. NR 151.004, Wis. Adm. Code. Section NR 151.002(45), defines “technical standard” as a document that specifies design, predicted performance and operation and maintenance specifications for a material, device or method. The department has consulted with DATCP in the development of the proposed rules and DATCP is expected to promulgate its related implementation rules in ch. ATCP 50, Wis. Adm. Code, Soil and Water Resource Management Program.

Chapter NR 243, Wis. Adm. Code, regulates Concentrated Animal Feeding Operations (CAFOs), which are farms required to obtain a Wisconsin Pollutant Discharge Elimination System (WPDES) permit under s. 283.31(3), Stats.

Section 283.31, Stats., provides authority to include terms and conditions in a WPDES permit to comply with water standards, ground water standards and federal requirements.

Section 283.13(5), Stats., provides authority to include more stringent limitations in WPDES permits when necessary to meet water quality standards or other federal or state requirements.

Section 92.15(2), Stats., provides that a local unit of government may enact regulations of livestock operations that are consistent with and do not exceed the performance standards, prohibitions, conservation practices and technical standards under s. 281.16(3), Stats.

Section 281.16(3)(e), Stats., provides that an existing facility is not required to comply with the agricultural performance standards or prohibitions unless cost sharing is made available.

Section 281.16(3)(e), Stats., states that the department shall promulgate criteria for determining whether cost sharing is available under s. 281.65, Stats.

Section 281.65(1), (4)(e) and (8), Stats., provides authority for the department to promulgate rules regarding eligible costs related to compliance with agricultural nonpoint source performance standards, specifications and best management practices.

Chs. NR 153 and 154, Wis. Adm. Code, identify grant programs, best management practices and cost share conditions to implement the performance standards in ch. NR 151, Wis. Adm. Code.

5. Plain Language Analysis: The department has found that, in areas of the state where Silurian bedrock

is present, groundwater and surface water standards will not be attained by implementing the statewide agricultural performance standards and prohibitions in ch. NR 151, Wis. Adm. Code. This is because Silurian bedrock has the capacity to allow rapid transport of contaminants without attenuating those contaminants. Silurian bedrock is located in the eastern portions of the state, including areas in Brown, Calumet, Dodge, Door, Fond du Lac, Kenosha, Kewaunee, Manitowoc, Milwaukee, Outagamie, Ozaukee, Racine, Walworth, Washington and Waukesha counties.

This rule identifies “Silurian bedrock” as the targeted area where certain rock formations are overlain by soils of 20 feet or less and establishes performance standards that will apply. The performance standards in the proposed rule are designed to minimize the risk for pathogen delivery to groundwater. Within the Silurian bedrock area, the rule sets forth manure spreading rates and practices that vary according to the soil depth and texture. The most restrictive practices apply to those limited areas of the highest risk for pathogen delivery. Less restrictive requirements apply in areas with 5 to 20 feet to bedrock.

Before mechanically applying manure in the Silurian bedrock area, the proposed rule requires a farmer to verify the depth of soils to bedrock where County soil maps provide an initial indication of less than 5 feet of depth to bedrock. The farmer’s field verification will establish the boundary of areas where the depth is less than 5 feet and what that depth actually is. This will determine which practices the farmer will need to employ to apply manure on those fields. The methodology to verify depth to bedrock (such as number of borings per acre, time of year taken, etc.) or tools available for this effort is a technical standard, and so will be developed by DATCP rather than DNR. Representatives from DATCP have worked closely with the department in the development of this rule and DATCP is expected to promulgate in ch. ATCP 50 the best management practices, conservation practices or technical standards used to demonstrate compliance with this rule.

CAFOs in the Silurian bedrock areas will be required to comply with the standards in the rule through their WPDES permit, regardless of any local ordinance and absent cost sharing. Large CAFOs are not eligible for cost sharing under chs. NR 153 and 154, but are required to comply with the livestock performance standards in NR 151. A cross reference to the targeted performance standard language will be added to ch. NR 243, Wis. Adm. Code.

Non-permitted farms in Silurian bedrock areas will be required to comply with the standards in the rule in certain limited situations. Where construction of appropriate best management practices is needed for compliance and those practices are eligible for cost share under chs. NR 153 and NR 154, Wis. Adm. Code, non-permitted farms will be required to comply only where cost share is offered. Certain practices are not eligible for cost share under chs. NR 153 and 154, Wis. Adm. Code. Non-permitted farms may be required to adopt certain changes absent cost share if a local unit of government adopts a local ordinance requiring farms to adopt changes consistent with the rule.

6. Summary of, and Comparison with, Existing or Proposed Federal Statutes and Regulations:

The federal government does not directly regulate discharges to groundwater in Silurian bedrock areas.

7. Comparison with Similar Rules in Adjacent States: A review of other states requirements for manure applications on shallow soils over bedrock found limited similarities with the proposed rule. There were similarities in technical standards and existing rules statewide from NRCS 590, NR 151 and NR 243 that apply to timing of manure applications and setback distances to some direct conduits (wells, sinkholes). Some of these requirements appear to protect groundwater from nitrogen leaching, not manure pathogen contamination.

- Minnesota has no specific requirements for manure applications on shallow soils over fractured bedrock. Minnesota recommends at least 2 ft. of soil between manure and fractured bedrock and avoid fall applications of manure (N loss).
- Iowa requires 200 ft. setbacks from sinkholes and wells when manure is not incorporated and 0 ft.

setback when manure is incorporated. There are no specific requirements for spreading manure over shallow bedrock soils in Iowa.

- Michigan's Generally Accepted Agricultural Management Practices (GAAMP) provide general recommendations to keep manure within the root zone of plants. GAAMPs have no specific manure setback recommendations from direct conduits (wells, sinkholes) and no recommendations for spreading manure in shallow bedrock soils.

8. Summary of Factual Data and Analytical Methodologies Used and How Any Related Findings Support the Regulatory Approach Chosen:

The department convened a Technical Advisory Committee to discuss current NR 151 performance standards and groundwater conditions in sensitive areas, including Silurian bedrock areas of the state. The department identified Silurian bedrock as highest priority as a targeted performance standard area.

9. Analysis and Supporting Documents Used to Determine the Effect on Small Business or in Preparation of an Economic Impact Report:

The department has prepared a preliminary draft Economic Impact Analysis that includes cost estimates based on available cost data.

10. Effect on Small Business (initial regulatory flexibility analysis): The department's draft Economic Impact Analysis includes information on the effect on small business. In discussions with the Technical Advisory Committee, the department considered how the impact on small business could be reduced. The proposed rules allow flexibility for farmers and options for achieving compliance with the targeted performance standards.

11. Agency Contact Person: Mike Gilbertson, Water Resources Management Specialist, Wisconsin Department of Natural Resources, P.O. Box 7921, WT/3, Madison, Wisconsin 53707, mike.gilbertson@wisconsin.gov.

12. Deadline for Written Comments: Written comments were submitted to the agency contact person, listed above, by October 4, 2017.

SECTION 1. NR 151.015(2) is created to read:

NR 151.015(2) "Closed depression" means a topographical basin where water ponds to a seasonal high water mark, has no external drainage, and drainage may occur either through direct conduits to groundwater or low areas where water ponds and infiltrates into the groundwater. Closed depressions may be identified using topographic maps and visual interpretation, ArcGIS tools, or other methods. A seasonal high water mark may include, but is not limited to, areas that collect and retain water for extended time periods (days or weeks) that result in areas of reduced or no crop growth.

NR 151.015(2m) is created to read:

NR 151.015(2m) "Concentrated flow channel" means 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. Concentrated flow channel may also include non-vegetated channels caused by ephemeral erosion, intermittent streams, drainage ditches and drainage ends identified on the NRCS soil survey and may be identified as contiguous up-gradient deflections of contour lines on the USGS 1:24,000 scale topographic map.

NR 151.015(7m) is created to read:

NR 151.015(7m) “Established crop” means a growing annual crop, perennial crop or cover crop that provides vegetative cover of the soil.

NR 151.015(8d) is created to read:

NR 151.015(8d) “Incorporation” has the meaning given in s. NR 243.03(28).

NR 151.015(8h) is created to read:

NR 151.015(8h) “Infield bedrock verification” means determining bedrock depth using available data which may include well construction reports, location of drill cores or other subsurface investigations, location of quarries and natural bedrock outcrops, geophysical investigations, and uneven crop growth patterns that are linked to fracture traces in the field.

NR 151.015(8p) is created to read:

NR 151.015(8p) “Injection” has the meaning given in s. NR 243.03(29).

NR 151.015(8t) is created to read:

NR 151.015(8t) “Liquid manure” has the meaning given in s. NR 243.03(32) when applied to facilities subject to ch. NR 243, Wis. Adm. Code and the meaning given in UW A2809 for all other agricultural facilities where manure is generated.

NR 151.015(11m) is created to read:

NR 151.015(11m) “Long term no-till” means no-till farming that has been implemented a minimum of 3 consecutive years.

NR 151.015(13j) is created to read:

NR 151.015(13j) “Mechanical application” means surface application, injection or incorporation of manure on cropland or pastures using manure hauling vehicles or equipment.

NR 151.015(15n) is created to read:

NR 151.015(15n) “Pathogens” has the meaning given in s. NR 204.03(38).

NR 151.015(15w) is created to read:

NR 151.015(15w) “Pre-tillage” means using mechanical equipment to reduce soil preferential flow paths, worm holes, root holes and cracks by turning and mixing the soil prior to and at least 2 inches below the depth of manure application.

NR 151.015(17) is created to read:

NR 151.015(17) “Silurian bedrock” means the area in Wisconsin where the bedrock consists of Silurian dolomite with a depth to bedrock of 20 feet or less. This area comprises portions of the following counties: Brown, Calumet, Dodge, Door, Fond du Lac, Kenosha, Kewaunee, Manitowoc, Milwaukee, Outagamie, Ozaukee, Racine, Sheboygan, Walworth, Washington and Waukesha. Areas where Silurian bedrock occurs in Wisconsin can be identified by the most current NRCS, Wisconsin Geological Natural History Survey, department of agriculture, trade and consumer protection, department of natural resources, county maps and/or infield bedrock verification methods.

NR 151.015(18g) is created to read:

NR 151.015(18g) “Soil texture” means the surface texture of the Silurian bedrock soil map unit.

NR 151.015(18r) is created to read:

NR 151.015(18r) “Solid manure” has the meaning given in s. NR 243.03(58) when applied to facilities subject to ch. NR 243, Wis. Adm. Code and the meaning given in UW A2809 for all other agricultural facilities where manure is generated.

NR 151.015(22m) is created to read:

NR 151.015(22m) “UW A2809” means the 2012 version of the University of Wisconsin – Extension Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin (A2809).

SECTION 2. NR 151.075 is created to read:

NR 151.075 Silurian bedrock performance standards. (1) All crop producers and livestock producers that mechanically apply manure directly or through contract or other agreement to cropland or

pasture areas that meet the definition of Silurian bedrock under s. NR 151.015(17) must comply with this section.

(2) Mechanical manure application may not cause the fecal contamination of water in a well.

(3) Manure may not be mechanically applied on areas of cropland or pastures that have 24 inches or less of separation between the ground surface and apparent water table.

(4) Manure must be applied in conformance with a nutrient management plan that meets the requirements under all the following:

(a) The plan must be consistent with s. NR 151.07.

(b) The plan must be consistent with NRCS Technical Standard 590, dated December 2015.

(c) The plan must be designed and implemented consistent with this section to manage manure so as to reduce the risk of pathogen delivery to groundwater and prevent exceedances of groundwater water quality standards.

(d) The plan must use NRCS soil survey maps/information or other methods as a planning tool to identify Silurian bedrock within or adjacent to cropland and pastures.

(5) Manure may not be mechanically applied on croplands or pastures until infield bedrock verification or Silurian bedrock map information is used to identify areas where the Silurian bedrock soil depth is less than 5 feet. If infield bedrock verification uses drill cores or other subsurface investigations, they must be backfilled with soil within 72 hours of being created.

Note: Silurian bedrock map information developed by the department of agriculture, trade and consumer protection and/or department of natural resources, may be used alone or in combination to meet the requirements of this section.

Note: Silurian bedrock map information, available from the University of Wisconsin department of soil science, can be found at <https://snapplus.wisc.edu/maps/> .

(6) Manure may not be mechanically applied on croplands or pastures where the Silurian bedrock soil depth is less than 5 feet until such fields are evaluated and ranked for risk of pathogen

delivery to groundwater. Areas determined to have a high risk for pathogen delivery to groundwater must be avoided or must be lowest priority for manure application.

(7) Mechanical application of manure and headland stacking of manure is prohibited on soils with 5 feet or less to Silurian bedrock when soils are frozen or snow covered.

(8) Mechanical application of manure is prohibited within Silurian bedrock having soil depths less than 5 feet when rainfall greater than one inch is forecast within 24 hours of planned application.

(9) Mechanical application of manure is prohibited for soils with less than 2 feet to Silurian bedrock.

(10) For soils with 2 to 3 feet to Silurian bedrock, all the following apply:

(a) No mechanical application of solid manure unless all the following are met:

1. Solid manure is incorporated within 72 hours to no more than 4 inches below ground.
2. At least one of the following is implemented:
 - a. Solid manure is applied at a rate no greater than 15 tons/acre/year, or the rate that supplies the crop nitrogen recommendation from UW A2809, whichever is less.
 - b. Solid manure is applied in compliance with UW A2809 and within 10 days of the planting date or applied on a perennial or established crop.
 - c. Solid manure is composted or treated to reduce pathogen levels via practices to a fecal coliform bacteria density of less than 500,000 colony-forming units or most probable number per gram total solids on a dry weight basis.

(b) No mechanical application of liquid manure unless all the following are met:

1. Pre-tillage is completed, unless exempt under sub. (c) or (d);
2. Liquid manure is injected or incorporated within 24 hours to no more than 4 inches below ground, unless exempt under sub. (c).
3. At least one of the following is implemented:
 - a. Total liquid manure application is applied in compliance with UW A2809, or limited to Table 1, whichever is less, to prevent hydraulic overloading of the soil.

Soil Texture	2 to 3 Feet Depth (gal/ac/yr)	3 to 5 Feet Depth (gal/ac/wk)	5 to 20 Feet Depth (gal/ac/wk)
Sand	6,750	6,750	13,500
Sandy Loam	13,500	13,500	27,000*
Loam	13,500	13,500	27,000*
Silt Loam	13,500	13,500	27,000*
Clay Loam	13,500	13,500	20,000*
Clay	6,750	6,750	13,500

*It is anticipated that this rate would exceed the UW A2809 annual (crop year) application rate.

b. Liquid manure is applied in compliance with UW A2809 and within 10 days of the planting date or applied on a perennial or established crop.

c. Liquid manure is treated to substantially reduce pathogen levels via practices to a fecal coliform bacteria density of less than 500,000 most probable number or colony-forming units per 100 milliliter sample.

(c) Pre-tillage, incorporation or injection is not required if cropland or pastures meet long term no-till or have a perennial or established crop. Each surface application of liquid manure must not exceed 6,750 gallons per acre.

(d) Pre-tillage is not required if demonstrated to the department that a field cannot meet s. NR 151.02 over an eight-year crop rotation using a combination of the following practices: tillage, crops, contouring, filter strips, or cover crops.

(11) For soils with 3 to 5 feet to Silurian bedrock, all the following apply:

(a) No mechanical application of solid manure unless all the following are met:

1. Incorporated within 72 hours to no more than 6 inches below ground.

2. At least one of the following is implemented:

a. Manure is applied in accordance with UW A2809 annual application rate, or at a rate of 15 tons/acre/year, whichever is less.

b. Manure is applied in compliance with UW A2809 and within 10 days of the planting date or applied on a perennial or established crop.

c. Manure is composted or treated to reduce pathogen levels via practices to a fecal coliform bacteria density of 500,000 colony-forming units, or most probable number per gram total solids on a dry weight basis.

(b) No mechanical application of liquid manure unless all the following are met:

1. Pre-tillage is completed unless exempt under sub. (c) or (d).

2. Liquid manure is injected or incorporated within 24 hours to no more than 6 inches below ground, unless exempt under sub. (c).

3. At least one of the following is implemented:

a. Total liquid manure application is applied in compliance with UW A2809, or limited to sub. (10)(b)3. Table 1 rates, whichever is less, to prevent hydraulic overloading of the soil.

b. Liquid manure is applied in compliance with UW A2809 and within 10 days of the planting date or applied on a perennial or established crop.

c. Liquid manure is treated to substantially reduce pathogen levels via practices to a fecal coliform bacteria density of less than 500,000 most probable number or colony-forming units per 100 milliliter sample.

(c) Pre-tillage, incorporation or injection is not required if cropland or pastures meet long term no-till or have a perennial or established crop. Each surface application of liquid manure must not exceed 6,750 gallons per acre.

(d) Pre-tillage is not required if demonstrated to the department that a field cannot meet s. NR 151.02 over an eight-year crop rotation using a combination of the following practices: tillage, crops, contouring, filter strips, or cover crops.

(12) For soils with 5 to 20 feet to Silurian bedrock, all the following apply:

(a) No mechanical application of liquid manure unless all the following are met:

1. Pre-tillage is completed unless exempt under sub. (b) or (c).

2. Liquid manure is injected or incorporated within 24 hours to no more than 6 inches below ground, unless exempt under sub. (b).

3. At least one of the following is implemented:

a. Total liquid manure application is applied in compliance with UW A2809, or limited to sub. (10)(b)3. Table 1 rates, whichever is less, to prevent hydraulic overloading of the soil.

b. Liquid manure is applied in compliance with UW A2809 and within 10 days of the planting date or applied on a perennial or established crop.

c. Liquid manure is treated to substantially reduce pathogen levels via practices to a fecal coliform bacteria density of less than 500,000 most probable number or colony-forming units per 100 milliliter sample.

(b) Pre-tillage, incorporation or injection is not required if cropland or pastures meet long term no-till or have a perennial or established crop. Each surface application of liquid manure must not exceed 10,000 gallons per acre.

(c) Pre-tillage is not required if demonstrated to the department that a field cannot meet s. NR 151.02 over an eight-year crop rotation using a combination of the following practices: tillage, crops, contouring, filter strips, or cover crops.

Note: Silurian bedrock map information for soils with 5 to 20 feet to Silurian bedrock, developed by the department of agriculture, trade and consumer protection and/or department of natural resources, may be used alone or in combination to meet the requirements of this section.

(13) Mechanical manure applications are prohibited within any of the following.

(a) 1000 feet of a community water system as defined in s. NR 811.02.

(b) 250 feet of a private water system or a non-community water system as defined in s. NR 812.07.

(c) An area within 300 feet upslope or 100 feet downslope of a direct conduit to groundwater as defined in s. NR151.002(11m).

(d) 100 feet of a concentrated flow channel that leads to a water system included in sub. (a) or (b) or direct conduit to groundwater in sub. (c).

(14) Mechanical manure applications are prohibited on or within 100 feet of Silurian bedrock in a closed depression unless the manure is injected or incorporated within 24 hours or prior to precipitation capable of producing runoff, whichever comes first. The prohibition of mechanical application of manure does not apply to areas following long term no-till practices or with a perennial or established crop.

(15) No surface application of manure on slopes of 6 percent or greater in cropland and pasture areas that have concentrated flow channels that drain to a closed depression in Silurian bedrock, unless the material is incorporated within 24 hours or prior to precipitation capable of producing runoff, whichever comes first. The prohibition of surface application of manure does not apply to areas following long term no-till practices or with a perennial or established crop.

(16) Practices must retain land applied manure on the soil where they are applied with minimal movement to maintain setback distances specified in subs. (13) and (14).

SECTION 3. NR 151.09 is amended to read:

NR 151.09. Implementation and enforcement procedures for cropland performance standards. (1) Purpose. The purpose of this section is to identify the procedures the department will follow in implementing and enforcing the cropland performance standards pursuant to ss. 281.16 (3) and 281.98, Stats. This section will also identify circumstances under which an owner or operator of cropland is required to comply with the cropland performance standards. In this section, “cropland performance standards” means performance standards in ss. NR 151.005, 151.02, 151.03, 151.04, ~~and~~ 151.07, and 151.075.

SECTION 4. NR 243.143 is created to read:

NR 243.143. Silurian bedrock performance standards. Owners or operators that mechanically apply manure directly or through contract or other agreement to cropland or pasture areas that meet the definition of Silurian bedrock under s. NR 151.015(17) must comply with s. NR 151.075.

SECTION 5. EFFECTIVE DATE. This rule takes effect on the first day of the month following publication in the Wisconsin Administrative Register as provided in s. 227.22 (2) (intro.), Stats.

SECTION 6. BOARD ADOPTION. This rule was approved and adopted by the State of Wisconsin Natural Resources Board on January 24, 2018.