



Notice Soliciting Comments Regarding an Economic Impact Analysis

Subject: Runoff Management and Non-Point Source Performance Standards and Concentrated Animal Feeding Operation (CAFO) rule revisions to incorporate by reference those Performance Standards

Notice Date: July 7, 2017

Comment Period: July 7-August 7, 2017

The Department of Natural Resources is in the process of preparing an economic impact analysis (EIA) for proposed rules relating to runoff management and non-point source performance standards, and affecting small business. A preliminary draft of the EIA and a draft of the rule order are available for download as a clickable link by going to the following site: <http://dnr.wi.gov> and searching for the keywords "Administrative Rules".

If you are not able to access or download the information, please send an email to the following address: DNRNR151Revisions@dnr.wisconsin.gov

Pursuant to s. 227.137, Wis. Stats., the department is required to solicit comments on the economic impact of proposed rule and, if requested, to coordinate with local governments in the preparation of the EIA. Notice is hereby given that the Department of Natural Resources will accept written comments on the EIA until August 7, 2017. Comments may be submitted electronically to: DNRNR151Revisions@dnr.wisconsin.gov or may be mailed to: Mike Gilbertson, Water Resources Management Specialist, Wisconsin Dept. of Natural Resources, P.O. Box 7921 WT/3, Madison, WI 53707.

Any local governmental unit that is affected by the rule may also request to coordinate with the department on preparation of the EIA. If a local governmental unit wishes to coordinate with the department on preparation of the EIA, the governmental unit must notify the department of its request to coordinate at the time comments on the EIA are submitted. The department will then contact all local governmental units requesting an opportunity to coordinate and incorporate their comments into the EIA to the extent feasible.

Pursuant to Executive Order # 50 (2011) and s. 227.137, Wis. Stats., the department must include the information listed below in an EIA. To review all of the information that must be included in an EIA, you may refer to the Executive Order and statutory provisions. When submitting comments, please provide specific information in these areas and include any supporting economic data, studies or reports. Please do NOT submit comments on revisions to the rule language at this time. The department is soliciting information on the following from you and others:

Would you, your business, your association, or your local unit of government be affected in a material economic way by the implementation of these targeted non-point performance standards?

Additionally, the department is seeking comments on the following from people who indicate they will be affected economically:

1. Any implementation or compliance costs that are reasonably expected to be incurred.
2. Actual quantifiable benefits of the proposed rule.

3. Whether the proposed rule would adversely affect in a material way the economy, a sector of the economy, productivity, jobs, or the overall economic competitiveness of the state.
4. Economic impacts of specific alternatives to the proposed rule.
5. Whether the proposed rule will have an economic impact (savings or increased costs) on public utilities or their ratepayers.

If you are a small business as defined in s. 227.114(1), Wis. Stats., please identify yourself as a small business in your comments. Small business means a business entity, including its affiliates, which is independently owned and operated and not dominant in its field, and which employs 25 or fewer full-time employees or which has gross annual sales of less than \$5,000,000.

Please refer to s. 227.19(3)(e)3. and 4. for further information when you are preparing your comments as a small business. Following the public comment period for the EIA, a revised "Fiscal Analysis and Economic Impact Analysis" will be prepared containing relevant information that the department receives. Once the EIA process is completed, the department will submit the rule package and economic impact analysis to the Wisconsin Legislative Council under s. 227.15, Wis. Stats., and hearings on the proposed rule will be held by the department after proper notice in accordance with ss. 227.17 and 227.18, Wis. Stats. If the EIA indicates that the proposed rule is reasonably expected to have a total impact of \$20,000,000 in implementation and compliance costs, the department shall submit the rule to the Department of Administration in accordance with s. 227.137(6), Wis. Stats.

NOTE: Chapter 227 of the statutes may be found at the following web site: <https://docs.legis.wisconsin.gov/statutes/statutes/227.pdf>.

Further information on the process for enacting rules is contained in Executive Order #50 signed by Governor Walker on November 2, 2011 (available at http://docs.legis.wisconsin.gov/code/executive_orders/2011_scott_walker/2011-50).

ADMINISTRATIVE RULES Fiscal Estimate & Economic Impact Analysis

Manitowoc, Milwaukee, Outagamie, Ozaukee, Racine, Walworth, Washington, and Waukesha.

Within the Silurian bedrock area, the rule sets forth spreading rates and practices that vary according to the depth to bedrock. Not all of these practices are required to be applied together throughout the sensitive area. Instead, the practices to follow are dependent on soil depth ranges over Silurian bedrock, including 0-2 feet, 2-3 feet, 3-5 feet, and 5-20 feet. The total number of farmers affected and the total number of acres of cropland where changes in practices may be required are unknown. In addition, because the rule provides options for compliance, total costs are difficult to assess. CAFOs that operate in the Silurian bedrock area will be required to comply with the standards in the rule through their WPDES permit. Non-permitted farms that operate in the Silurian bedrock area will be required to comply in certain circumstances. Where construction of appropriate best management practices is needed for compliance and those practices are eligible for cost-sharing, non-permitted farms will be required to comply only where cost share is offered. 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. The Department has prepared a preliminary draft economic analysis for review and comment; the preliminary analysis is attached. The economic impact is estimated to be moderate (less than \$20 million).

13. Benefits of Implementing the Rule and Alternative(s) to Implementing the Rule

Implementation of the proposed rule will help protect groundwater from pathogen contamination to protect public health. Benefits to protection of groundwater and public health are significant but have not been quantified. The average cost to replace a contaminated well is \$12,000 per well. The rule includes alternatives because it provides farmers with options on how to comply. One alternative to implementing the rule is to do nothing; this alternative does not ensure that water quality standards will be met in the areas identified in the rule. Another alternative is to expand the rule provisions to apply to more sensitive areas statewide; the Department chose to propose rule revisions targeted to those areas of the state identified as most vulnerable for contamination.

14. Long Range Implications of Implementing the Rule

The protection of public health and avoidance of groundwater contamination is a long term benefit. For farmers, changes in practice may be required. For non-permitted operators, those changes will be required only if accompanied by cost share dollars for those practices that are eligible for cost share.

15. Compare With Approaches Being Used by Federal Government

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

16. Compare With Approaches Being Used by Neighboring States (Illinois, Iowa, Michigan and Minnesota)

This rule is consistent with neighboring states in creating manure spreading setback requirements for direct conduits to groundwater. The proposed rule is tailored to the conditions present in Wisconsin's Silurian bedrock.

17. Contact Name	18. Contact Phone Number
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This document can be made available in alternate formats to individuals with disabilities upon request.

ADMINISTRATIVE RULES Fiscal Estimate & Economic Impact Analysis

ATTACHMENT A

1. Summary of Rule's Economic and Fiscal Impact on Small Businesses (Separately for each Small Business Sector, Include Implementation and Compliance Costs Expected to be Incurred)

See section 12 above. The impacts to small businesses are expected to be the same as impacts to other businesses.

2. Summary of the data sources used to measure the Rule's impact on Small Businesses

See section 12 above and the attached preliminary draft economic analysis.

3. Did the agency consider the following methods to reduce the impact of the Rule on Small Businesses?

- Less Stringent Compliance or Reporting Requirements
- Less Stringent Schedules or Deadlines for Compliance or Reporting
- Consolidation or Simplification of Reporting Requirements
- Establishment of performance standards in lieu of Design or Operational Standards
- Exemption of Small Businesses from some or all requirements
- Other, describe:

The rule allows options and flexibility for ways to comply with the new requirements.

4. Describe the methods incorporated into the Rule that will reduce its impact on Small Businesses

The requirements vary based on soil depth. The more restrictive requirements only apply to the most vulnerable areas, and become less restrictive as soil depth increases. Within each soil depth there is flexibility in compliance.

5. Describe the Rule's Enforcement Provisions

Permitted CAFO farms will be required to comply with this rule through their WPDES permit. Non permitted farms may be required to comply in limited circumstances when cost sharing is required and available through state grant programs, or when cost sharing is not required. Local units of government may implement this rule through an ordinance.

6. Did the Agency prepare a Cost Benefit Analysis (if Yes, attach to form)

- Yes No
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Preliminary Economic Impact Analysis
WT 15-16

This rule package proposes agricultural performance standards that will apply in Silurian bedrock areas. The performance standards are designed to minimize the risk for pathogen delivery to groundwater in these areas. Silurian bedrock is located in the eastern portion of the state, including areas of Brown, Calumet, Dodge, Door, Fond du Lac, Kenosha, Kewaunee, Manitowoc, Milwaukee, Outagamie, Ozaukee, Racine, Walworth, Washington and Waukesha counties.

Within the Silurian bedrock area, the rule sets forth spreading rates and practices that vary according to the depth to bedrock. Not all of these practices are required to be applied together throughout the Silurian bedrock area. Instead, the practices to follow are dependent on soil depth ranges over Silurian bedrock, including 0-2 feet, 2-3 feet, 3-5 feet and 5-20 feet. The rule provides options for compliance, depending on soil depth. The department's preliminary draft economic analysis considers the costs for various changes in practice that may result from the proposed rule requirements.

Restrictions on Manure Application

In areas with less than 2 feet of soil depth above Silurian bedrock or saturation, the rule prohibits the mechanical application of manure. Most of the croplands with less than two feet of soil over Silurian bedrock are located in Door and Kewaunee counties. Permitted CAFOs are already required to follow this prohibition, so CAFO farms will incur no additional cost. For non-permitted farms, increased costs may include the price of commercial fertilizer needed for fields where mechanical application of manure is not allowed. Other costs may include renting additional farmland on which to spread manure if a farmer cannot shift manure application to other fields. The department estimates the cost for farmers who convert to commercial fertilizer would be approximately \$150ⁱ per acre; the average price per acre for renting additional crop land in Wisconsin is \$134 per acre. These compliance options - use of commercial fertilizer and renting additional crop land - may also be used for areas with more than 2 feet of soil depth to bedrock.

Cover Crop or Pre-Tillage Requirements

For areas of the state with 2-3 feet, 3-5 feet, and 5-20 feet of soil depth above Silurian bedrock, the rule contains requirements for how producers apply liquid and/or solid manure to minimize the risk of leaching pathogens through the soil column into groundwater. Pre-tillage and incorporation or injection requirements apply unless cropland is in long term no-till or has perennial or established crops. Establishing a cover crop is a cost shareable best management practice through the state runoff management grant program, so farmers would pay 30% of the cost of a cover crop and the state would pay the cost share rate of 70%. Based on the average cost of establishing a typical cover crop such as Cereal Ryeⁱⁱ (\$20.60 per acre), the department estimates the cost of a cover crop would be approximately \$6.18 per acre for a farmer and approximately \$14.42 per acre for the state.

Cropland that does not implement perennial or cover crops will have to be tilled prior to liquid manure application to break up macropores and reduce the risk of manure leaching through the

soil column. No mechanical application of liquid manure is allowed unless pre-tillage is completed and manure is injected or incorporated within 24 hours. In areas with 2-3 feet and in areas with 3-5 feet of soil depth, no mechanical application of solid manure is allowed unless the manure is incorporated within 72 hours. The department estimates the cost of tillage (pre-tillage or incorporation) would be approximately \$15ⁱⁱⁱ per acre.

If a farmer chooses incorporation or injection, the rule prohibits the incorporation or injection of manure at specified depths, depending on the amount of soil above the Silurian bedrock. The department estimates the average cost to inject manure is \$80^{iv} per acre, while the average cost to incorporate manure with tillage equipment is \$15 per acre. Given these options, the department anticipates that farmers will choose incorporation over injection.

Reduced Application Rates

The rule provides specified manure application rates as a compliance option for all soil depths greater than 2 feet. Liquid manure application rates are based on the type of soil. Reduced application in some areas may increase the manure hauling cost to other croplands. The department estimates the increased hauling may cost approximately \$3 per acre of cropland if a farmer chooses to comply by reducing application.

Timing of Manure Application

If a farmer chooses the timing of manure application for compliance (manure must be applied within 10 days of planting or to a growing crop), additional manure storage capacity may be required. Any cost associated with holding manure for a longer time before land application would be building more manure storage, which is a cost shareable best management practice through the state runoff management grant program (cost share rate for manure storage 70%). The department estimates the cost of additional storage would be approximately \$500^v per cow.

Pathogen Treatment Facilities

Other options to comply with the requirements include reducing pathogens in manure before application using pathogen treatment facilities (manure digesters and manure composting). For liquid manure the average capital cost to construct a complete digester system that reduces pathogens to 500,000 CFU/ml or less is estimated to be \$1,500 per cow^{vi}. Given this cost, the department anticipates that producers will choose other less costly compliance options such as reduced application rates or timing of manure application.

Setback Requirements

Setbacks and restrictions apply throughout the Silurian bedrock area where manure applications are prohibited. These setbacks include the following features: community system, private system, direct conduit to groundwater, channels, closed depression and slopes draining to Silurian bedrock greater than 6% with a defined channel. Compliance actions in those areas could include increased use of commercial fertilizer and possibly the leasing of additional croplands for manure application. The department estimates the cost for farmers who convert to commercial fertilizer would be approximately \$150 per acre; the average price per acre for renting additional crop land in Wisconsin is \$134 per acre.

Summary

Based on the department's preliminary analysis, the department estimates the cost of the requirements of this rule to be a moderate economic impact (less than \$20 million). The costs would be shared through the state cost share grant programs and between cropland owners within the Silurian bedrock area.

ⁱ United State Department of Agriculture, Economic Research Service. "Commodity Costs and Returns: Corn, 2010-2015". Accessed June 6, 2017. <https://www.ers.usda.gov/data-products/commodity-costs-and-returns/>

ⁱⁱ Schnitkey, G., J. Coppess, and N. Paulson. "Costs and Benefits of Cover Crops: An Example with Cereal Rye." *farmdoc daily* (6):126, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, July 6, 2016. <http://farmdocdaily.illinois.edu/2016/07/costs-and-benefits-of-cover-crops-example.html>

ⁱⁱⁱ University of Wisconsin, Eau Claire. "Wisconsin Agricultural Land Prices" <http://counties.uwex.edu/eauc Claire/files/2014/04/Wisconsin-Ag-Land-Prices-2008-2013.pdf>

^{iv} University of Idaho Extension, 'Cost of Liquid Manure Application Systems,' Bulletin 888, 2014.

^v University of Wisconsin Center for Dairy Profitability, 'Transitioning in Steps: Costs of Modernization,' February, 2005.

^{vi} Cooperative Extension System, "Economics of Anaerobic Digesters for Processing Animal Manure," October 27, 2015. <http://articles.extension.org/pages/19461/economics-of-anaerobic-digesters-for-processing-animal-manure>

DRAFT PREPARED FOR:
Solicitation Notice for Comments Regarding an Economic Impact Analysis (EIA)

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.

**ORDER OF THE STATE OF WISCONSIN NATURAL RESOURCES BOARD
CREATING RULES**

The Wisconsin Natural Resources Board proposes to **create** NR 151.015 (2), (7m), (8c), (8g), (8l), (8p), (8t), (8x), (15n), (15w), (17), (18r), 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, Wis. Stats.

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

3. Explanation of Agency Authority: Pursuant to s. 281.15, Wis. 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), Wis. 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), Wis. 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, Wis. 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), Wis. Stats., directs the agency to review and revise its rules, if necessary, to achieve the objectives of s. 160(19)(2) and (3), Wis. Stats., regarding compliance with preventive action limits and enforcement standards.

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

Section 283.31, Wis. 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), Wis. 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), Wis. 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), Wis. Stats.

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

Section 281.65(1), (4)(e) and (8), Wis. 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: Adjacent states have manure spreading setback requirements where those states have identified specific sites sensitive to groundwater contamination that are present in those states. The proposed Silurian bedrock characteristics identified in the proposed rule definition as a targeted performance standard area are based on the particular characteristics present in Wisconsin’s Silurian bedrock.

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.

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.

SECTION 2. NR 151.015(7m) is created to read:

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

SECTION 3. NR 151.015(8c) is created to read:

NR 151.015(8c) "Incorporation" has the meaning given in s. NR 243.03(28).

SECTION 4. NR 151.015(8g) is created to read:

NR 151.015(8g) "Infield bedrock verification" means determining bedrock depth using available data including, but not limited to 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 indicating fracture traces in the field.

SECTION 5. NR 151.015(8l) is created to read:

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

SECTION 6. NR 151.015(8p) is created to read:

NR 151.015(8p) “Liquid manure” means manure that contains less than 12 percent solid material by volume.

SECTION 7. NR 151.015(8t) is created to read:

NR 151.015(8t) “Long term no till” means no till farming that has been implemented a minimum of 3 consecutive years.

SECTION 8. NR 151.015(8x) is created to read:

NR 151.015(8x) “Mechanical application” means surface application, injection or incorporation of manure on cropland or pastures using manure hauling vehicles or equipment. This does not include an area of land where animals graze or otherwise seek feed in a manner that maintains the vegetative cover over all the area and where the vegetative cover is the primary food source for the animals.

SECTION 9. NR 151.015(15n) is created to read:

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

SECTION 10. 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.

SECTION 11. 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 or is part of the Maquoketa Formation overlain by soils 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, Walworth, Washington and Waukesha. Areas where Silurian bedrock occurs in Wisconsin can be identified by the most current NRCS, WGNHS, or county maps and infield bedrock verification methods.

SECTION 12. NR 151.015(18r) is created to read:

NR 151.015(18r) “Solid manure” means manure that contains 12 percent or greater solid material by volume.

SECTION 13. 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) shall comply with this section.

(2) Manure application shall not cause the fecal contamination of water in a well.

(3) No mechanical application of manure on areas of cropland or pastures that have 24 inches or less of separation between the ground surface and saturation.

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

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

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

(c) The plan shall 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 shall use county soils or other methods as a planning tool to identify Silurian bedrock within or adjacent to cropland and pastures.

(5) Prior to mechanical application of manure on croplands or pastures, use infield bedrock verification to locate Silurian bedrock having soil depths less than 5 feet.

(6) For cropland or pastures, when soil is less than five feet thick over Silurian bedrock, evaluate and rank fields for risk of pathogen delivery to groundwater before mechanically applying manure. Areas determined to have a high risk for pathogen delivery to groundwater shall be avoided or shall 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, the following shall apply:

(a) No mechanical application of solid manure unless:

1. Incorporated within 72 hours to no more than 4 inches below ground; and

2. At least one of the following is implemented:

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

b. Manure is applied within 10 days of the planting date or applied on perennial or other established crop.

c. 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:

1. Pre-tillage is completed, unless exempt under sub. (c); and

2. Liquid manure is injected or incorporated within 24 hours to no more than 4 inches below ground; and

3. At least one of the following is implemented:

a. Total liquid manure application is limited to Table 1 or to the UW A2809 annual application rate, whichever is less, to prevent hydraulic overloading of the soil.

Table 1. Silurian Bedrock Maximum Liquid Manure Application Rates			
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

b. Liquid manure is applied within 10 days of the planting date or applied on perennial or other 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 or incorporation is not required if cropland or pastures meet long term no till or have perennial or established crops.

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

(a) No mechanical application of solid manure unless:

1. Incorporated within 72 hours to no more than 6 inches below ground; and
2. At least one of the following is implemented:

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

b. Manure is applied within 10 days of the planting date or applied on perennial or other 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:

1. Pre-tillage is completed unless exempt under sub. (c); and
 2. Liquid manure is injected or incorporated within 24 hours to no more than 6 inches below ground; and
 3. At least one of the following is implemented:
 - a. Total liquid manure application is limited to sub. (10)(b)3. Table 1 rates or to the UW A2809 annual application rate, whichever is less, to prevent hydraulic overloading of the soil.
 - b. Liquid manure is applied within 10 days of the planting date or applied on perennial or other 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 or incorporation is not required if cropland or pastures meet long term no till or has perennial or established crops.

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

- (a) No mechanical application of liquid manure unless:
 1. Pre-tillage is completed unless exempt under sub. (b); and
 2. Liquid manure is injected or incorporated within 24 hours to no more than 8 inches below ground; and
 3. At least one of the following is implemented:
 - a. Total weekly liquid manure application is limited to sub. (10)(b)3. Table 1 rates, or to the UW A2809 annual application rate, whichever is less, to prevent hydraulic overloading of the soil.
 - b. Liquid manure is applied within 10 days of the planting date or applied on perennial or other 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 or incorporation is not required if cropland or pastures meet long term no till, or has perennial or established crops.

(13) Mechanical manure applications are prohibited within:

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

(b) 250 feet of a private water system and 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.

(d) 100 feet of defined channels that lead to sub. (a), (b), or (c).

(14) Mechanical manure applications are prohibited within 100 feet of an area in a closed depression unless the manure is injected or incorporated within 24 hours or prior to a rain event, whichever comes first. This does not apply to areas following long term no till practices or with perennial or established crops.

(15) No surface application of manure on slopes of 6 percent or greater in cropland and pasture areas that have defined channels that drain to a closed depression, unless the material is incorporated within 24 hours. This does not apply to areas following long term no till practices or with perennial or established crops.

(16) Practices shall 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 14. 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) shall comply with s. NR 151.075.

SECTION 15. 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 16. BOARD ADOPTION. This rule was approved and adopted by the State of Wisconsin Natural Resources Board on [DATE].

Dated at Madison, Wisconsin _____.

STATE OF Wisconsin DNR
DEPARTMENT OF NATURAL RESOURCES

BY _____
Cathy Stepp, Secretary

(SEAL)