

**Wisconsin Department of Natural Resources
Natural Resources Board Agenda Item**

SUBJECT:

Request adoption of Board Order DG-25-19, proposed rules affecting chapter NR 812 related to well construction and pump installation

FOR: February 2022 Board meeting

PRESENTER'S NAME AND TITLE: Marty Nessman, Private Water Supply Section Chief

SUMMARY:

The objective of the ch. NR 812 revisions is to address an issue raised during public comment and Board discussion at the May 2019 Natural Resources Board meeting regarding proposed Board Order DG-16-16, while maintaining protection of public health and groundwater. During the May 2019 Board meeting, the Board requested that the department further address three specific issues. Two of the issues were addressed through germane modifications to Board Order DG-16-16 and were adopted by the Board at its January 2020 meeting. Board Order DG-25-19 addresses the remaining issue, standards for the use of thermoplastic (PVC) casing pipe in bedrock and unconsolidated formations.

Currently, Wisconsin differs from all of its neighboring states (and almost all states) in the allowed use of thermoplastic well casing. This puts Wisconsin's well drillers and homeowners at a disadvantage when it comes to safe and affordable options for well construction. Specific revisions in the proposed rule include:

1. Allows construction of wells using thermoplastic casing to terminate in non-crystalline bedrock formations.
2. Allows the use of cementous grout as an annular space seal for wells with thermoplastic casing.
3. Allows clamp-on, bolt-on, or bolt-through pitless adapters for all wells (currently these are only allowed for wells serving single families).
4. Clarifies s. NR 812.13(4)(b), Wis. Adm. Code, making the use of a packer or shale trap to provide a sand seal between the bottom of a casing and the top of a screen optional rather than required.
5. Allows mechanically holding down thermoplastic casing during grouting to prevent the casing from floating.
6. Allows the department to investigate wells that it suspects have suffered damage to thermoplastic casing.

The department has completed the external review process for DG-25-19, which includes holding a public hearing and review by the Legislative Council Rules Clearinghouse. Comments received have been considered in the draft final rule. If the final rule language of DG-25-19 is approved, the rule will be submitted to the Governor and, if the Governor approves, to the legislature for review and approval. The 30-month timeframe for submission of a final rule to the legislature for approval expires on June 9, 2022.

The rule is expected to have a moderate (level 2) economic impact on small businesses.

RECOMMENDATION: That the Board adopt Board Order DG-25-19.

LIST OF ATTACHED MATERIALS (check all that are applicable):

- | | |
|---|---|
| <input checked="" type="checkbox"/> Background Memo | <input type="checkbox"/> Attachments to background memo |
| <input checked="" type="checkbox"/> Fiscal estimate and economic impact analysis (EIA) form | <input checked="" type="checkbox"/> Board order/rule |
| <input checked="" type="checkbox"/> Response summary | <input type="checkbox"/> (insert document name) |

Approved by	Signature	Date
Steven B. Elmore, Drinking Water and Groundwater Program Director	<i>Steven B. Elmore</i>	1/14/2022 2:40 PM CST
Gail E. Good, Acting Environmental Management Division Administrator	<i>Gail E. Good</i>	1/15/2022 7:36 AM CST
Preston D. Cole, Secretary	<i>Sarah Barry</i>	1/18/2022 9:31 AM CST

for

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CORRESPONDENCE/MEMORANDUM

DATE: January 12, 2022

TO: All Members of the Natural Resources Board

FROM: Preston D. Cole, Secretary

SUBJECT: Background memo on Board Order DG-25-19, relating to well construction and pump installation

1. Subject of Proposed Rule:

Revisions to ch. NR 812, Wis. Adm. Code, related to well construction and pump installation.

2. Background:

The objective of the revisions to ch. NR 812, Wis. Adm. Code, is to address an issue raised during public comment and Board discussion at the May 2019 Natural Resources Board meeting regarding proposed Board Order DG-16-16, while maintaining protection of public health and groundwater. During the May 2019 Board meeting, the Board requested that the department further address three specific issues. Two of the issues were addressed through germane modifications to Board Order DG-16-16 and were adopted by the Board at its January 2020 meeting. Board Order DG-25-19 addresses the remaining issue: standards for the use of thermoplastic (PVC) casing pipe in bedrock and unconsolidated formations.

A "PVC Study Group" consisting of department staff and well drilling industry representatives picked by both the Wisconsin Water Well association (WWWA) and the department met four times to examine research and neighboring states' regulations and to discuss possible potential regulatory changes for thermoplastic casing for Wisconsin water wells. The department developed and maintained a web page for the study group members and the public to stay abreast of latest developments.

In addition, Drinking and Groundwater staff gave quarterly updates to the Private Water Advisory Council on the progress of the PVC Study group and Board Order DG-25-19.

The public was invited to comment on the Economic Impact Analysis (EIA) from May 10 to June 9, 2021.

The public was invited to comment on the draft rule (Board order DG-25-19) From September 14 to October 14, 2021 and provide comments at a public hearing held via Zoom teleconference on October 7, 2021.

3. Why is the rule being proposed?

During the May 2019 Board meeting, the Board requested that the department further address three specific issues. Two of the issues were addressed through germane modifications to Board Order DG-16-16 and were adopted by the Board at its January 2020 meeting. Board Order DG-25-19 addresses the remaining issue: standards for the use of thermoplastic (PVC) casing pipe in bedrock and unconsolidated formations.

As a result of the NRB-requested scope statement, department staff believe that the changes in Board Order DG-25-19 allow for the expansion of thermoplastic casing use in Wisconsin water wells without additional risk to public health and groundwater resources.

4. Summary of the rule.

Specific revisions in the proposed rule include:

1. Allows construction of wells using thermoplastic casing to terminate in non-crystalline bedrock formations.
2. Allows the use of cementous grout as an annular space seal for wells with thermoplastic casing.
3. Allows clamp-on, bolt-on, or bolt-through pitless adapters for all wells (currently these are only allowed for wells serving single families).
4. Clarifies s. NR 812.13(4)(b), Wis. Adm. Code, making the use of a packer or shale trap to provide a sand seal between the bottom of a casing and the top of a screen optional rather than required.
5. Allows mechanically holding down thermoplastic casing during grouting to prevent the casing from floating.
6. Allows the department to investigate wells that it suspects have suffered damage to thermoplastic casing.

5. How does this proposal affect existing policy?

This proposal would give well drilling professionals more flexibility in the methods and materials they can offer to their customers for new water wells. This can result in cost savings to the well owner, while providing greater flexibility in private water supplies and less stringent regulatory requirements.

6. Has the Board dealt with these issues before?

Yes. Board Order DG-25-19 addresses an issue raised during public comment and Board discussion at the May 2019 Natural Resources Board meeting regarding proposed Board Order DG-16-16. During the May 2019 Board meeting, the Board requested that the department further address three specific issues. Two of the issues were addressed through germane modifications to Board Order DG-16-16 and were adopted by the Board at its January 2020 meeting. Board Order DG-25-19 addresses the remaining issue, standards for the use of thermoplastic (PVC) casing pipe in bedrock and unconsolidated formations.

The Board approved the scope statement and conditionally authorized hearings for DG-25-19 at its February 2020 meeting.

7. Who will be impacted by the proposed rule? How?

New well owners will have more options for a safe source of drinking water, as well as potential cost-savings over a steel-cased well.

Well drilling professionals will have additional options for providing their customers with a safe source of drinking water, as well as cost savings in material. In addition, thermoplastic casing is inherently safer to work with than steel, due to its significantly lighter weight and lack of electrical conductivity, so well drilling sites will be generally safer and jobsite injuries would be reduced.

Some drillers would need to invest in additional equipment to be able to use thermoplastic casing, and some may elect not to do so. Those that elect not to invest in equipment to allow placing thermoplastic casing could find themselves at a competitive disadvantage to those that can use thermoplastic casing.

Finally, cable tool drillers, while *technically* capable of constructing wells using thermoplastic casing, would be less likely to do so, as construction with thermoplastic casing would lengthen the construction time significantly.

8. Soliciting public input on economic impact synopsis

The department solicited comments on the economic impact of the rule from May 10, 2021 through June 9, 2021.

Well drillers contributed to the analysis. Well drillers were represented on a “PVC Study Group” that examined and addressed issues surrounding the use of thermoplastic well casing in Wisconsin. The department contacted all these entities during the economic impact analysis (EIA) comment period via email. Other entities that may have interest in this rule, including Small Business Environmental Council and Wisconsin Manufacturers and Commerce, were contacted during the EIA comment solicitation period. The department notified the League of Wisconsin Municipalities and the Wisconsin Counties Association via email during the comment solicitation period.

One comment was received during the EIA comment solicitation period. No revisions were made to the EIA as a result of comments.

9. Small Business Analysis

This rule provides a major net benefit to small businesses impacted by the rule. The department assumed that a majority, if not all, of the entities impacted by this rule are small businesses. Based on this assumption the total economic impact (compliance and implementation) of this rule is expected to be incurred by small business. The total economic impact is estimated to be a one-time compliance cost of \$62,500 (Level 2 Moderate). A detailed analysis of this compliance cost is provided in Question #14 of the DOA 2049 form.

This rule revision will recognize modern construction methods and provide more well construction options for businesses and the well owner. The revised rule is anticipated to provide increased potential for cost savings to well owners of an estimated \$727,195 per year for wells constructed using thermoplastic, rather than steel, casing. A detailed assessment of this cost savings is provided in Question #15 of the DOA 2049 form.

Drafter: Frank Fetter

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NR 812 Revision Public Comments and DNR Responses Natural Resources Board Order No. DG-25-19

January 7, 2022

This document presents a summary of public comments received on the proposed revisions of chapter NR 812, Wis. Adm. Code, and the Department of Natural Resources' (DNR's) responses.

OVERVIEW

The primary objectives of the proposed chapter NR 812, Wis. Adm. Code, revisions are to expand the allowable use of thermoplastic casing in drinking water wells, while maintaining protection of groundwater and public health.

In addition to the statutorily-required public comment opportunities, DNR sought input from a select number of stakeholders during the rulemaking process, in the form of a "PVC Study Group." The group consisted of three well drillers selected by the Wisconsin Water Well Association (WWWA) and three well drillers selected by the DNR, as well as DNR staff from the Bureau of Drinking and Groundwater. The study group met four times, although only the first and fourth meetings were attended by the entire study group. The DNR kept members updated on study group progress through the use of a DNR web page: <https://dnr.wisconsin.gov/topic/Wells/PVCStudyGroup.html>.

Economic Impact Analysis (EIA) – A 30-day public comment period on the draft EIA occurred from May 10 to June 9, 2021. DNR received written comments from one commenter on the EIA during this period. The comments addressed economic factors in only a general way, while the other comments were on the draft rule language. The EIA-commenter also commented on the rule revisions during the public notice period, and all of the non-EIA comments were repeated during the public notice period and at the public hearing.

Public Hearings and Comment – The public comment period for the draft rule occurred from September 14, 2021 to October 14, 2021. DNR emailed a summary of the proposed ch. NR 812, Wis. Adm. Code, changes to all licensed drillers and pump installers on September 13 and October 5, 2021. During the public comment period, 11 people submitted written comments. The public hearing on the draft rule was held on October 7, 2021. Six people testified at hearing; three of them also submitted written comments during the public comment period.

At the hearing, three options were presented for comment. The first (Option #1) is the draft rule language. The second (Option #2) is proposed by the WWWA, and would allow the expansion of use of thermoplastic casing only under a variance process. The third (Option #3) is no change to the current rule. See attached "Three Options for the Use of Thermoplastic (PVC) Casing in Wisconsin."

Forty percent of commentors expressed overall satisfaction with Option #1, the proposed rule revision; however, they had questions or comments on some specific sections of the draft rule. Many of the comments had multiple points to make on specific sections. Nine comments expressed opposition to Option #1 (six in favor of Option #2; three in favor of Option #3), suggested changes, or asked questions about the proposed changes, while six comments were in support of the draft rule.

ECONOMIC IMPACTS ANALYSIS

EIA-Related Comments:

- *The Department estimates that 25 percent of the wells drilled in the past 3 years that could have used thermoplastic casing actually used it. What is being referenced is the use of PVC into unconsolidated formations. We believe, based on a survey of our Board members, that the estimate of wells that will be drilled using PVC in consolidated formations is over-stated (See #14).*

DNR Response: No change to EIA. The DNR used seven quotes for identical wells constructed with steel vs. thermoplastic casing supplied by the two of the members of the PVC study group who supplied the requested hypothetical quotes. No other external members of the PVC study group responded to the request.

The DNR asked the WWSA for any additional data they could supply to refute the DNR's estimate. Response received from WWSA representative in an email dated June 15, 2021, did not include any verifiable data that could be used to refute or adjust the analysis that the DNR had completed.

- *The Department suggests that PVC wells into consolidated formations will be less expensive because of material cost savings. Our drillers report that the labor costs involved with PVC installations often absorb most or all those savings. If price is not a factor, we believe that end users will, on the recommendation of their drillers, choose steel casing.*

DNR Response: No change to EIA. As stated in the first excerpt above, the DNR asked for the WWSA for data to support this claim and did not receive any verifiable data that could be used to adjust the estimate of compliance cost provided by the DNR. The DNR's estimates are based on the best available data it could gather.

- *The Department estimates that 20 percent of the drillers will retool at a cost of \$3,125.00. Feedback from the industry suggests that this estimated expense is on the end. What is not reflected, however, is the cost to drill into a consolidated formation requires a rotary drill costing \$500,000.00 to \$1,000,000.00. That is, there will be few new entrants into this market. Only those with rotary drills would likely look at the potential drilling into consolidated formations would afford.*

DNR Response: No change to EIA. As stated above, the DNR requested for a verifiable data on this assertion from the WWSA and did not receive any. In addition, the DNR disagrees that thermoplastic casing can only be installed in consolidated formations using a rotary drill rig. Thermoplastic casing can also be installed in consolidated formations using a cable tool rig.

- *Already, market coverage with existing well drillers is strained. It is unlikely, therefore, that drillers will abandon their local markets to the pursue growth projects in and around the state and, if they do, the travel alone will eat up any savings on the materials.*

DNR Response: No change to EIA. This was not part of the EIA analysis because the DNR agrees that this scenario is unlikely.

- *Thus, the growth in the number of available drillers would come from those who have the right equipment, but who may lack the requisite experience to do this work. This, we believe, introduces unnecessary risk related to groundwater contamination and public safety.*

DNR Response: No change to EIA. The DNR addressed this concern with the WWSA when this was originally brought up by the Government Relations Advisor to the Wisconsin Water Well Association after the PVC Study Group meetings had ended. Under s. NR 146.08(8), Wis. Adm. Code, licensed individual water well drillers are required to provide direct supervision on the first 10 water wells drilled by any employee or any individual who has no experience in a water well drilling method which is new to the employee or individual. Additionally, DNR committed to providing extra compliance monitoring for well constructors who are new to the use of thermoplastic casing during this time. In other words, the above referenced scenario would only likely occur as a violation of a well driller's license, and if s. NR 146.08(8), Wis. Adm. Code, is followed, the DNR would be providing enhanced compliance monitoring to ensure the risk would be minimized.

LEGISLATIVE COUNCIL RULES CLEARINGHOUSE (21-070)

Comments received from the Wisconsin Legislative Council Rules Clearinghouse (21-070) were largely formatting and editorial in nature. DNR made all requested changes.

PUBLIC COMMENTS ON DRAFT RULE BY TOPIC AREA

A summary of specific comments and DNR response are listed below by topic and in order of ch. NR 812, Wis. Adm. Code, section. Three types of nonspecific comments were also received: 1) general comments about the rule revision, 2) clarification and/or rhetorical questions which did not fall under specific sections of the draft rule, and 3) comments based on misunderstanding the revisions in the draft rule. Where comments required a clarification or response, they are included below. Comments not specifically seeking a response from DNR were noted and have been retained in the comment record.

1. General/Uncategorized Comments:

Comment: One commenter objected to the hearing and public comment format on the grounds that allowing hearing and comment period participants to comment on three options was procedurally improper and made it difficult to address specific concerns and issues in any of the three options.

DNR Response: No Action Required. After drafting the proposed rule language, the DNR learned that certain stakeholders did not support the proposed rule and would instead advocate for a variance process. The DNR provided three rulemaking options for comment to gauge public opinion on the proposed rule versus a variance option. In its notice of public hearing, the DNR provided the three options in the hearing notice along with the draft rule language. The DNR also provided 30 days for public comment. After assessing public comments, the DNR is proceeding with the initial proposed rule language. The proposed final rule is within in the bounds of the statement of scope.

Comment: Three hearing participants opposed the draft rule on the grounds that expanding the allowable use of thermoplastic casing is moving too quickly for Wisconsin well drillers to gain necessary experience and training in the use of thermoplastic casing, and the resulting risk to groundwater and public health would be unacceptable.

DNR Response: No Change. Under s. NR 146.08 (8), Wis. Adm. Code, licensed water well drillers must provide direct supervision on the first 10 water wells drilled by any employee for any method or material with which the employee has no experience. In addition, the DNR plans to exercise its authority under s. NR 812.03 (1), Wis. Adm. Code, to require any driller new to thermoplastic casing to give notification to the department no later than the work day prior to the day on which the well construction will be commenced for at least the first 10 wells. The

DNR will use this information to provide enhanced compliance monitoring for well drillers who are new to the use of thermoplastic casing.

Comments: Of the six commentors at the public hearing, three were generally in favor of Option #1, and three were generally in favor of Option #2. No one at the hearing was in favor of Option #3. Of the submitted written comments, five were generally in favor of Option #1, four were generally in favor of Option #2, and three were in favor of no change to the current rule (Option #3). Note that three of the written comments were provided by people who also testified at the public hearing. In total, six commentors favored Option #1, six commentors favored Option #2, and three commentors favored Option #3.

DNR Response: No Change. There is not a clear favorite between options #1 and #2. After investigating current research on the use of thermoplastic casing for water wells, the DNR feels that there is sufficient empirical evidence to allow the draft rule to advance without additional risk to groundwater and public health.

Comment: One commentor stated that the potential costs savings of PVC versus steel casing did not warrant a change to the current rule, because the cost of *everything* has gone up, and “there is no reason to cut corners because of a price fluctuation.”

DNR Response: No Change. Cost issues were addressed in the EIA, and despite price increases across the board, thermoplastic casing has historically been and continues to be less expensive than steel. The DNR believes that the proposed rule will allow for thermoplastic casing to be used for bedrock wells without compromising public safety or groundwater quality.

Comments: Six commentors discussed the continued prohibition on drilling through thermoplastic casing. The comments broke cleanly along the lines of those opposed to Option #1 and those in favor of it. Two commentors opposed to Option #1 agreed with keeping the existing prohibition against drill-through, while four commentors in favor of Option #1 argued in favor of allowing the practice, one of which is a driller licensed in Illinois (as well as Wisconsin) where the practice is allowed. This commentor pointed out that the practice can be performed safely with little risk of damage to the casing. Those opposed to drilling through thermoplastic casing also pointed out the potential for damage to the casing from drill cuttings as well as the drill bit and rods.

DNR Response: No Change. Although the DNR staff on the PVC Study Group initially proposed allowing the ability to drill through thermoplastic casing, it was removed from the final board order due to an abundance of caution, and the objections of some of the industry members of the PVC Study Group.

2. NR 812.13 (4) (b) – “A packer or shale trap *may* be used to provide a sand seal between the bottom of a well casing pipe and the top of a screen.”

Comments: Two commentors agreed and one commentor partially agreed with the revision from “shall” to “may.” The commentor who partially agreed with the change implied that the entire section could be removed as “it is impossible to sand pack a screen with those items in place.”

DNR Response: No Change. This change was suggested by one of the members of the PVC Study Group, and met with no objections from PVC Study Group members.

3. NR 812.13 (7) (b) 4. – Maximum annular space

Comments: Two commentors agreed with the proposed rule language, although one commentor agreed “conditionally.” The conditional agreement was couched in the idea that for the rule to be truly performance based, the well driller should be held responsible for knowing and understanding the processes that might limit performance of (and cause possible damage to) thermoplastic casing.

In subsequent discussions with members of the drilling industry, it was agreed that there are times when a larger annular space is warranted, and the rule provides sufficient protection against casing damage from larger annular spaces.

DNR Response: Changed. Maximum annular space requirement has been removed.

4. NR 812.13 (8) (a), NR 812,13 (8) (d) 3. and 4. and NR 812.15 (2) (c) - Grouting

Comments: Two commentors specifically agreed with the allowance of cementous grout on all thermoplastic wells. One commentor mistakenly believed that this allowance was only for thermoplastic wells terminating in bedrock, and stated that it should also be allowed for unconsolidated wells.

DNR Response: No Change. Cementous grout would be allowed for all thermoplastic wells under the revised rule.

5. NR 812.14 (3) (a) – Material

Comment: Four comments were submitted on allowing thermoplastic casing to terminate in bedrock. Three agreed with the proposed rule change, one was opposed on the grounds that thermoplastic casing can’t be firmly seated in bedrock.

In subsequent discussions with members of the drilling industry, it was agreed that allowing thermoplastic casing in crystalline bedrock (granite, rhyolite, quartzite, gabbro, basalt, gneiss, schist, diorite and greenstone) could present too many problems, especially for post-construction.

DNR Response: No Change. Although the draft rule does not allow driving thermoplastic casing to a firm seat in bedrock it specifically allows for mechanical push/hold down of the casing to counteract potential buoyancy during casing setting and grouting (s. NR 812.14 (4) (d)). The DNR believes that this mechanism will allow thermoplastic bedrock wells to be firmly seated, so this sections remains as-is.

6. NR 812.14 (3) (e) – Thermoplastic casing use restricted

Comments: In subsequent discussions with members of the drilling industry, it was agreed that crystalline bedrock (granite, rhyolite, quartzite, gabbro, basalt, gneiss, schist, diorite and greenstone) presents additional challenges for construction of wells using thermoplastic casing, and should be excluded.

DNR Response: Changed. NR 812.14 (3) (e) has been created to allow the use of thermoplastic casing in wells terminating in non-crystalline bedrock only.

7. NR 812.14 (4) (d) – Mechanically Holding Down Thermoplastic Casing

Comments: Each of the four commentors who mentioned driving casing agreed that it should be prohibited for thermoplastic casing, and one commentor called the entire concept a “red herring.” Three

commentors specifically agreed with the concept of “seating” thermoplastic by mechanically holding down the casing during grouting to prevent the casing from floating.

DNR Response: No Change. There was no disagreement with this rule language.

8. NR 812.14 (5) (c) 3. – Maximum Thermoplastic Casing Depth of 5 Feet into Bedrock

Comments: Three commentors (who were otherwise generally in favor of Option #1) disagreed with this rule language. One commentor who “strongly disagreed” pointed out that shallow bedrock could “unnecessarily preclude” a thermoplastic cased well. In addition, the PVC Study Group generally discussed that thermoplastic casing deeper into sandstone would probably be acceptable.

DNR Response: No Change. DNR agreed that for the sake of simplicity and consistency in rule language, as well as consistency with surrounding states (specifically Minnesota), that this can be addressed in future rule revisions if deemed appropriate.

Three “Options” for the Use of Thermoplastic (PVC) Casing in Wisconsin

The department is seeking public comment and feedback on the following three options.

1. Option 1: Draft Rule Language (Board Order DG-25-19): expand the allowable use of PVC Casing.

General Recommendations:

- Materials - No change
- Joints – No Change
- UV Protection – No change
- Drill-Through Casing – No
- Allowed in Bedrock – Yes*
- Depth of Casing into Bedrock - No more than 5’ into “Top of Bedrock”
- Drive Casing – No; allow mechanical push/hold down to address buoyancy and minor sloughing
- Grout – Cement allowed for PVC in bedrock
- Pitless Adapters – Allow non-welded on non-domestic wells
- Packer/Shale Trap Issue - Clarify NR 812.13(4)(b); change “shall” to “may”
- Add Maximum Annular Space Requirements – To address heat of hydration and pressure concerns*
- Update Temporary Casing for HEX – PVC allowed

2. Recommendation of the Wisconsin Water Well Association: allow the use of PVC casing beyond the current rule with a variance only:

“[A] variance can be allowed and an expedited variance procedure could be developed between the industry and the Department, where there are clear understandings and expectations. Under a variance, careful review can be made – before, during and after construction. The use of variances allows a slow introduction of this techniques. The success (or failure) can be measured.”

- WWWA Written Testimony to DG-25-19 Economic Impact Analysis

3. No Change to current rule: use of PVC casing allowed for wells terminating in unconsolidated formations only, and cement grout allowed only for flowing wells.

* In subsequent discussions with the WWWA after the hearing, the draft rule was changed to restrict the use of thermoplastic casing in non-crystalline bedrock only, and to remove the maximum annular space requirement.

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STATE OF WISCONSIN
DEPARTMENT OF ADMINISTRATION
DOA-2049 (R09/2016)

DIVISION OF EXECUTIVE BUDGET AND FINANCE
101 EAST WILSON STREET, 10TH FLOOR
P.O. BOX 7864
MADISON, WI 53707-7864
FAX: (608) 267-0372

ADMINISTRATIVE RULES Fiscal Estimate & Economic Impact Analysis

<p>1. Type of Estimate and Analysis <input type="checkbox"/> Original <input checked="" type="checkbox"/> Updated <input type="checkbox"/> Corrected</p>	<p>2. Date January 10, 2022</p>
<p>3. Administrative Rule Chapter, Title and Number (and Clearinghouse Number if applicable) NR 812 – Well Construction and Pump Installation (CR 21-070)</p>	
<p>4. Subject NR 812 establishes construction, pump installation, inspection, and filling and sealing standards for private and noncommunity water systems and heat exchange systems. Board order DG-25-19</p>	
<p>5. Fund Sources Affected <input type="checkbox"/> GPR <input type="checkbox"/> FED <input type="checkbox"/> PRO <input type="checkbox"/> PRS <input checked="" type="checkbox"/> SEG <input type="checkbox"/> SEG-S</p>	<p>6. Chapter 20, Stats. Appropriations Affected N/A</p>
<p>7. Fiscal Effect of Implementing the Rule <input checked="" type="checkbox"/> No Fiscal Effect <input type="checkbox"/> Increase Existing Revenues <input type="checkbox"/> Increase Costs <input type="checkbox"/> Decrease Costs <input type="checkbox"/> Indeterminate <input type="checkbox"/> Decrease Existing Revenues <input checked="" type="checkbox"/> Could Absorb Within Agency's Budget</p>	
<p>8. The Rule Will Impact the Following (Check All That Apply) <input type="checkbox"/> State's Economy <input checked="" type="checkbox"/> Specific Businesses/Sectors <input type="checkbox"/> Local Government Units <input type="checkbox"/> Public Utility Rate Payers <input checked="" type="checkbox"/> Small Businesses (if checked, complete Attachment A)</p>	
<p>9. Estimate of Implementation and Compliance to Businesses, Local Governmental Units and Individuals, per s. 227.137(3)(b)(1). \$62,500 or Level 2 Moderate (Between \$50,000 - \$5 million) one time cost to well drilling businesses, and an estimated annual compliance benefit (savings) to new well owners of \$727,195 per year.</p>	
<p>10. Would Implementation and Compliance Costs Businesses, Local Governmental Units and Individuals Be \$10 Million or more Over Any 2-year Period, per s. 227.137(3)(b)(2)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	
<p>11. Policy Problem Addressed by the Rule Currently, Wisconsin lags behind all of its neighboring states (and almost ALL states) in the allowed use of thermoplastic well casing. This puts Wisconsin's well drillers and homeowners at a disadvantage when it comes to safe and affordable options for well construction. Specific edits include:</p> <ol style="list-style-type: none"> 1. Allows construction of wells using thermoplastic casing to terminate in non-crystalline bedrock formations. 2. Allows the use of cementous grout as an annular space seal for wells with thermoplastic casing. 3. Allows clamp-on, bolt-on, or bolt-through pitless adapters for all wells (currently these are only allowed for wells serving single families). 4. Adds more complete specifications for thermoplastic casing to the rule. 5. Clarifies s. NR 812.13(4)(b), Wis. Adm. Code, making the use of a packer or shale trap to provide a sand seal between the bottom of a casing and the top of a screen optional rather than required. 6. Allows the department to investigate wells that it suspects have suffered damage to thermoplastic casing. 	
<p>12. Summary of the Businesses, Business Sectors, Associations Representing Business, Local Governmental Units, and Individuals that may be Affected by the Proposed Rule that were Contacted for Comments. Well drillers contributed to the analysis. Well drillers were represented on a "PVC Study Group" that examined and addressed issues surrounding the use of thermoplastic well casing in Wisconsin. The department contacted all these entities during the economic impact analysis (EIA) comment period via email. Other entities that may have interest in this rule, including Small Business Environmental Council and Wisconsin Manufacturers and Commerce, were contacted during the EIA comment solicitation period.</p>	
<p>13. Identify the Local Governmental Units that Participated in the Development of this EIA.</p>	

ADMINISTRATIVE RULES
Fiscal Estimate & Economic Impact Analysis

This rule does not impact local government units directly. However, the department notified the League of Wisconsin Municipalities and the Wisconsin Counties Association via email during the comment solicitation period. No local governmental units submitted comments on the EIA.

14. Summary of Rule's Economic and Fiscal Impact on Specific Businesses, Business Sectors, Public Utility Rate Payers, Local Governmental Units and the State's Economy as a Whole (Include Implementation and Compliance Costs Expected to be Incurred)

(A) Economic Impact on Businesses:

The majority of the economic impacts of this rule are a compliance benefit or saving in cost of well construction that could potentially use thermoplastic casing instead of steel. A detailed discussion of these benefits will be presented in question #15.

The anticipated compliance cost of this rule emanates from drillers that may have to re-tool in order to take advantage of the flexibility provided in this rule. Based on the department's data approximately 25% of total wells drilled in the past 3 years that could have used thermoplastic casing actually used it. Using this ratio we predict that the total number of additional wells that will be drilled with thermoplastic casing as a result of this rule will be approximately 790 wells over 3 years (263 wells per year). These wells were drilled by approximately 80 - 82 entities.

Based on the department's expertise with data reported to the agency and the type of drilling methods we anticipate approximately 20% of these entities will have to re-tool to take advantage of this rule.

The total economic impact (compliance and implementation) of this rule expected to be incurred by these entities is estimated to be \$62,500 (Level 2 Moderate). This cost was computed as follows:

- Cost of mud pump and accessories – an average cost of \$3,125 per equipment and accessories.
- An estimate of 20 entities impacted.
- As a result, a one-time cost of \$62,500 to select drilling businesses for additional equipment to construct wells terminating in bedrock using thermoplastic casing (this cost assumes that entities do not already have the requisite equipment).

(B) Economic Impacts on Local Governments, Utility Rate Payers and Public Entities:

The department does not anticipate that local governments, utility rate payers, or public entities will be economically impacted by the implementation of the proposed rules.

(C) State Economy:

The department does not anticipate negative impacts to the state's economy.

(D) Fiscal Impacts:

There are no fiscal impacts to this rule. This rule will not require additional state staff to implement or affect state revenues.

ADMINISTRATIVE RULES Fiscal Estimate & Economic Impact Analysis

15. Benefits of Implementing the Rule and Alternative(s) to Implementing the Rule
Rule revisions will recognize modern construction methods, and provide more well construction options for businesses and the well owner. The revised rule is anticipated to provide increased potential for cost savings to well owners of an estimated \$727,195 per year for wells constructed using thermoplastic, rather than steel, casing.

The department analyzed its data on 25,327 wells constructed between 2018 and 2020. Of those bedrock wells constructed using methods that can potentially construct wells using thermoplastic casing, the department estimated that if the suggestions in DG-25-19 were allowed, 3,159 additional wells could have been constructed into bedrock using thermoplastic casing. Of the total wells constructed between 2018 and 2020, 25% were constructed using thermoplastic casing. Extrapolating 25% of the *potential* wells (3,159) constructed using thermoplastic casing to the potential for thermoplastic casing in bedrock equals 790 wells over 3 years, or 263 wells per year. Using the cost estimates for equivalent wells constructed with steel vs. thermoplastic casing, and using the average (mean) casing depth for bedrock wells from 2018 to 2020, the department calculated the average cost savings per well terminating in bedrock and using thermoplastic casing is \$2,765. $\$2,765 \times 263 = \$727,195$ cost savings per year.

Greater protection of human health and groundwater is anticipated from increased use of thermoplastic casing in areas with groundwater contaminants, such as arsenic, which reacts unfavorably with steel casing.

Alternatively, not implementing the rule revisions will not produce these benefits. Additionally, it would lead to unnecessary costs to new well owners in the form of lack of an option for a more affordable (but equally safe) well.

16. Long Range Implications of Implementing the Rule

The long range implication will be the same as the short range implication of this rule.

17. Compare With Approaches Being Used by Federal Government

Private well construction and pump installation is not regulated by the federal government. There is no comparable federal government approach to this rule.

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

Illinois, Iowa, Michigan, and Minnesota have all allowed the construction of wells using thermoplastic casing terminating in bedrock for years. Of the neighboring states' regulations, Minnesota's regulations are generally more restrictive, and Illinois' regulations are generally less restrictive. For instance, drilling through the casing is not allowed for thermoplastic casing in Minnesota, but is allowed in Illinois. By reducing the restrictions on the use of thermoplastic casing, this rule revision makes Wisconsin's approach more similar to the simpler, less restrictive approach used in surrounding states.

19. Contact Name

Frank Fetter

20. Contact Phone Number

(608) 264-6139

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)

This rule provides a major net benefit to small businesses impacted by the rule. The department assumed that a majority, if not all, of the entities impacted by this rule are small businesses. Based on this assumption the total economic impact (compliance and implementation) of this rule is expected to be incurred by small business. The total economic impact is estimated to be a one-time compliance cost of \$62,500 (Level 2 Moderate). A detailed analysis of this compliance cost is provided in Question #14 of the DOA 2049 form above.

Rule revision will recognize modern construction methods, and provide more well construction options for businesses and the well owner. The revised rule is anticipated to provide increased potential for cost savings to well owners of an estimated \$727,195 per year for wells constructed using thermoplastic, rather than steel, casing. A detailed assessment of this cost savings is provided in Question #15 of the DOA 2049 form above.

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

Seven cost proposals for drilling and well installation from existing well construction companies that construct wells using both steel and thermoplastic casing were used, as well as 25,327 Well Construction Reports (WCRs) from 2018-2020. The latter represents 95% of all wells constructed in Wisconsin for that period, and 100% of the WCRs that contained useable data for analysis. The well construction data analyzed were total number of wells, casing terminating in bedrock vs. unconsolidated formations, drilling method for wells terminating in bedrock, and number of well drilling businesses by well drilling method. The department also priced mud pumps and related equipment to estimate the cost for a subset of well drilling businesses to “re-tool” to construct compliant wells using thermoplastic casing terminating in bedrock.

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:

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

Reduced the number of processes requiring written department approvals. An example is no longer requiring a written department approval to install thermoplastic casing that terminates in bedrock in a private well.

5. Describe the Rule’s Enforcement Provisions

NR 812 has civil and criminal provisions as well as citation authority for certain specific violations.

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

- Yes
 - No
-

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The statement of scope for this rule, SS 119-19, was approved by the Governor on December 5, 2019, published in Register No. 768A2 on December 9, 2109, and approved by the Natural Resources Board on February 26, 2020. This rule was approved by the Governor on insert date.

**ORDER OF THE STATE OF WISCONSIN NATURAL RESOURCES BOARD
AMENDING, AND CREATING RULES**

The Wisconsin Natural Resources Board adopts an order to **amend** NR 812.12 (5) (b), 812.13 (3) (c), (4) (b) and (8) (a), 812.14 (3) (a), (4) (intro.), (b) (intro.) and (c), 812.15 (2) (c), 812.31 (2) (a) and 812.46 (1) (a) 5.; and to **create** NR 812.07 (79x), 812.10 (13) (d), 812.12 (5) (c), 812.13 (8) (d) 3. and 4., and 812.14 (3) (e), (f) and (g), (4) (d), and (5) (c) 3., relating to well construction and pump installation and affecting small business.

DG-25-19

Analysis Prepared by the Department of Natural Resources

1. Statute Interpreted:

Sections 280.11 and 281.34, Wis. Stats.

2. Statutory Authority:

Section 227.11(2)(a)(intro.), chs. 280 and 281, Wis. Stats.

3. Explanation of Agency Authority:

Section 227.11(2)(a)(intro.), Wis. Stats., provides that a state agency, “may promulgate rules interpreting the provisions of any statute enforced or administered by the agency, if the agency considers it necessary to effectuate the purpose of the statute,” subject to certain restrictions.

Chapter 280, Wis. Stats., establishes the statutory authority and framework for regulation of well drilling, heat exchange drilling and pump installation.

Section 280.11, Wis. Stats., specifically directs the department to prescribe, publish and enforce minimum reasonable standards and rules for methods to be pursued to obtain pure drinking water for human consumption, and to establish safeguards deemed necessary in protecting the public health against the hazards of polluted sources of impure water supplies intended or used for human consumption. This statute gives the department general supervision and control over all methods of obtaining groundwater for human consumption including the construction or reconstruction of wells, authority to prescribe, amend, modify or repeal any applicable rule, and to perform any act deemed necessary for the safeguarding of public health.

Section 280.13(1), Wis. Stats., gives the department the authority to promulgate such rules as are reasonably necessary to carry out and enforce the provisions of ch. 280, Wis. Stats.

Chapter 281, Wis. Stats., gives the department authority to regulate groundwater withdrawals (s. 281.34, Wis. Stats.), establish, administer and maintain a safe drinking water program no less stringent than the requirements of the safe drinking water act (s. 281.17(8)(a), Wis. Stats.) and includes enforcement authorities (s. 281.98, Wis. Stats.).

4. Related Statutes or Rules:

Chapter NR 146, Wis. Adm. Code, implements the licensing and registration requirements of ch. 280, Wis. Stats., for water well drillers, heat exchange drillers, pump installers and rig operators.

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Chapter NR 809, Wis. Adm. Code, establishes minimum standards and procedures for the protection of the public health, safety and welfare in the obtaining of safe drinking water.

5. Plain Language Analysis:

Although thermoplastic casing is an approved material in Wisconsin, its current use is restricted to wells that terminate in unconsolidated formations only. Wisconsin is the only state in the upper Midwest, and one of only three states nationally, that prohibits the use of thermoplastic casing for wells that terminate in bedrock formations. This puts Wisconsin's well drillers and homeowners at a disadvantage when it comes to safe and affordable options for well construction. Specific edits include:

1. Allows construction of wells using thermoplastic casing to terminate in bedrock formations. All neighboring states (and most states in the U.S.) allow this.
2. Allows the use of cementous grout as an annular space seal for wells with thermoplastic casing. All neighboring states allow the use of cementous grout in bedrock wells, although Minnesota restricts the depth of thermoplastic cased wells into limestone and dolomite bedrock to five feet.
3. Allows clamp-on, bolt-on, or bolt-through pitless adapters for all wells (currently these are only allowed for wells serving single families). This was proposed during the last rule revision too late to include in the rule. After consulting with the department's Public Water Program, the perceived risk to ground water and public health was deemed to be minimal.
4. Adds maximum annular space requirements for wells constructed with thermoplastic casing and cementous grout to prevent damage from pressure and heat of hydration. This suggested rule revision is unique to Wisconsin as an added precaution and is not present in neighboring states' regulations.
5. Clarifies s. NR 812.13 (4) (b), Wis. Adm. Code, making the use of a packer or shale trap to provide a sand seal between the bottom of a casing and the top of a screen optional rather than required. This was a clarification of the rule suggested by an industry member of the PVC Casing Study Group.
6. Allows the department to investigate wells that it suspects have suffered damage to thermoplastic casing. This suggested rule revision is an added precaution to allow department staff to investigate wells constructed with thermoplastic casing that they suspect have been damaged during construction.

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

Federal law does not directly regulate the construction of wells or heat exchange drillholes, and does not regulate the installation of pumps. For public drinking water systems, Wisconsin is a primacy state, with the primary responsibility to enforce state drinking water regulations consistent with the federal Safe Drinking Water Act. One federal requirement of Wisconsin's primacy role, 40 CFR § 142.10(b)(5), is that the state assures that the design and construction of new or substantially modified public water system facilities will be capable of compliance with the state primary drinking water regulations. For non-community public drinking water systems, ch. NR 812, Wis. Adm. Code, provides the design and construction standards to meet this federal requirement.

7. If Held, Summary of Comments Received During Preliminary Comment Period and at Public Hearing on the Statement of Scope:

A preliminary public hearing on the statement of scope was not held.

8. Comparison with Similar Rules in Adjacent States:

The department considered well regulations related to thermoplastic casing for all neighboring states, plus Indiana and Ohio. All six states allow the use of thermoplastic casing terminating in bedrock, and the use of cementous grout for thermoplastic casing. Wisconsin does not.

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Illinois, Indiana, Iowa, Michigan and Ohio allow drilling through thermoplastic casing; Minnesota and Wisconsin prohibit drill-through. DG-25-19 would not lift that prohibition in Wisconsin.

Five of the six states (except Indiana) have specific prohibitions against driving or mechanically advancing thermoplastic casing. Indiana has no specific prohibition against it. DG-25-19 would not lift that prohibition in Wisconsin. All six states allow the construction of water wells terminating in bedrock using thermoplastic casing and cementous grout. Currently, ch. NR 812, Wis. Adm. Code, prohibits both of these practices

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

Most of the rule revisions simplify, clarify and streamline rule language to allow for increased use of thermoplastic casing for water wells. Data and methodologies used to support substantive changes include:

- An external advisory group of well drillers was convened to provide input and review proposed changes to construction standards in subch. II of ch. NR 812, Wis. Adm. Code.
- Department staff investigated current research and studies of the efficacy of using thermoplastic casing for water wells; those include:
 - Manual on the Selection and Installation of Thermoplastic Water Well Casing, produced by the National Water Well Association and the Plastic Pipe institute, 1980
 - “The Effects of Well Casing Material on Ground Water Quality,” By the USEPA (EPA/540/4-91/005), October 1991
 - “Thermoplastic Casing Use Potential in Consolidated Formations in Wisconsin and Using Cementous Grouts with PVC Wells in Wisconsin,” PowerPoint presentation by Bruce Walker, Licensed Wisconsin Well Driller, updated, 2020
 - “North America’s Cinderella Pipe Story: A Look at PVC Pipes’ Climb to the Top,” by Bob Walker, JAI, Vol. 8, No. 7
 - “Selection of PVC Well Casing Based on Hydraulic Collapse Considerations,” CertainTeed Technical Bulletin No. 40-37-02D
 - “Important Design Considerations for the Use of PVC to Construct Large-Diameter Water Wells,” Roscoe Moss Company Technical Memorandum 008-1
 - Mechanical Properties of PVC Well Screen and Casing, U.S. Department of the Interior Bureau of Reclamation Denver Office Research and Laboratory Services Division Applied Sciences Branch, July 1989
 - AWWA Standard for Water Wells, American Water Works Association, February 1, 1998.
 - “PVC Well Casing and Screen – Selection and Precautions,” Boode Waterwell Systems
 - “Selecting PVC Casing Using Resistance to Hydraulic Collapse Pressure Data,” CertainTeed Bulletin #2, 1985
 - “The Effects of Sunlight Exposure on PVC Pipe and Conduit,” JM Eagle Technical Bulletin, January 2009

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

The department analyzed information in department well construction records and from interviews with randomly-selected drilling companies to assess the economic impact of this rule. Seven cost proposals for drilling and well installation from existing well construction companies that construct wells using both steel and thermoplastic casing were used.

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11. Effect on Small Business (initial regulatory flexibility analysis):

The majority of businesses impacted by the rule are small businesses. There are currently 237 drillers and approximately 1,240 pump installers doing business in the state. The total economic impact of the proposed rule revision is estimated to be a one-time cost of \$62,500.

There is also an estimated compliance benefit (cost savings) to new well owners of \$727,195 per year.

12. Agency Contact Person:

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13. Place where comments are to be submitted and deadline for submission:

A public hearing was held on October 7, 2021. Comments were accepted through October 14, 2021.

RULE TEXT

SECTION 1. NR 812.07 (79x) is created to read:

NR 812.07 (79x) “Psi” means pressure expressed in pounds of force per square inch of area.

SECTION 2. NR 812.10 (13) (d) is created to read:

NR 812.10 (13) (d) When a problem well has been identified by the department, the department may test or contract to test the well for damage or leaks by pressure testing or by a comparable testing procedure. If pressure tested, the well shall be proven watertight under a pressure of not less than 14 psi, and the pressure shall be maintained for at least 30 minutes.

SECTION 3. NR 812.12 (5) (b) is amended to read:

NR 812.12 (5) (b) A drive shoe or casing shoe is not required for any thermoplastic or temporary outer casing.

SECTION 4. NR 812.12 (5) (c) is created to read:

NR 812.12 (5) (c) For a well constructed with thermoplastic casing, the casing may be held down mechanically within an upper-enlarged borehole during grouting to prevent the casing from floating.

SECTION 5. NR 812.13 (3) (c), (4) (b) and (8) (a) are amended to read:

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NR 812.13 (3) (c) Drilling tools such as drill bits or stabilizers may not be placed in the thermoplastic well casing pipe nor may any drilling or reconstruction occur after placement of the well casing pipe in the well. This restriction does not prohibit the installation or replacement of screens, or the insertion of equipment for the development and cleaning of wells with screens.

(4) (b) A packer or shale trap ~~shall~~may be used to provide a sand seal between the bottom of a well casing pipe and the top of a screen. Packers and shale traps shall meet the requirements of s. NR 812.11 (13).

(8) (a) Grouting material shall meet the requirements of s. NR 812.11 (15) and shall be placed in an annular space in accordance with the requirements specified in s. NR 812.20. A flowing well ~~constructed with steel or thermoplastic casing~~ shall be grouted using the materials specified in s. NR 812.15. ~~Potable~~ A potable high capacity well shall be grouted using the materials specified in s. NR 812.152.

SECTION 6. NR 812.13 (8) (d) 3. and 4. are created to read:

NR 812.13 (8) (d) 3. Neat cement.

4. Sand-cement.

SECTION 7. NR 812.14 (3) (a) is amended to read:

NR 812.14 (3) (a) Material. ~~Only steel~~ Either steel or thermoplastic well casing pipe meeting the requirements of s. NR 812.11 (6) or (7) may be used as permanent casing for bedrock wells. ~~Thermoplastic well casing pipe meeting the requirements of s. NR 812.11 (7) may only be used as a liner for bedrock wells.~~

SECTION 8. NR 812.14 (3) (e), (f) and (g) are created to read:

NR 812.14 (3) (e) *Thermoplastic casing use restricted.* Thermoplastic casing may only be placed in an upper enlarged drillhole and may not terminate in crystalline bedrock or be driven or jetted into place.

(f) *Damaged or deformed thermoplastic casing.* A well using thermoplastic casing terminating in bedrock shall be free of cracks and free of deformation and the inside diameter shall remain within manufacturer's specifications after construction or reconstruction. A failed well constructed with thermoplastic casing shall have the casing removed or drilled out prior to filling and sealing.

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(g) *Drilling tool use restricted.* Drilling tools such as drill bits or stabilizers may not be placed in the thermoplastic well casing pipe nor may any drilling or reconstruction occur after placement of the well casing pipe in the well. This restriction does not prohibit the insertion of equipment for the development and cleaning of wells.

SECTION 9. NR 812.14 (4) (intro.), (b) (intro.) and (c) are amended to read:

NR 812.14 (4) DRIVING OR ADVANCING CASING. A well driller or well constructor may drive or mechanically advance steel casing from the ground surface to the top of bedrock when the depth to the top of bedrock is equal to the minimum casing depths under sub. (3) or deeper. When steel casing is driven or mechanically advanced to the top of bedrock, it shall be completed in accordance with all of the following:

(b) *Annular space sealing.* Clay slurry, sodium bentonite slurry, or granular bentonite shall be maintained around ~~the~~steel casing during advancement using any of the following methods:

(c) *Driving to a firm seat.* ~~The~~ Steel casing shall be driven or advanced to a firm seat into the top of bedrock.

SECTION 10. NR 812.14 (4) (d) and (5) (c) 3. are created to read:

NR 812.14 (4) (d) Mechanically holding down thermoplastic casing. For a well constructed with thermoplastic casing, the casing may not be driven to a firm seat. However, the casing may be held down mechanically within an upper enlarged borehole during grouting to prevent the casing from floating.

(5) (c) 3. For a well constructed using thermoplastic casing, to a depth not more than 5 feet into the top of firm limestone, dolomite, or shale.

SECTION 11. NR 812.15 (2) (c) is amended to read:

NR 812.15 (2) (c) Grouting requirement. The annular space of a flowing well~~well~~ shall be grouted with neat cement using the methods specified in s. NR 812.20. ~~Flowing wells constructed with thermoplastic casing may be grouted with neat cement.~~

SECTION 12. NR 812.31 (2) (a) is amended to read:

NR 812.31 (2) (a) A pitless subsurface pipe connection to a well casing pipe shall be made with a weld-on, clamp-on, bolt-on or bolt-through pitless adapter or with a pitless unit, except that a bolt-through

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adapter may only be installed for a well constructed with polyvinyl chloride well casing pipe that has a permanently attached well screen. ~~A clamp-on, bolt-on or bolt through pitless adapter may only be installed for a well that will serve a single family residence. Weld-on adapters~~ A weld-on adaptor or pitless unit shall be welded or threaded to the well casing pipe according to sub. (3) or (4). All welding shall be performed in accordance with s. NR 812.18. A pitless adapter or pitless unit shall be installed according to any approval conditions and according to the manufacturer's instructions.

SECTION 13. NR 812.46 (1) (a) 5. is amended to read:

NR 812.46 (1) (a) 5. After corrective action following a total coliform bacteria–positive test result as required under s. NR 812.10 (12) (a) or 812.27 (8).

SECTION 14. 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 15. 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
DEPARTMENT OF NATURAL RESOURCES

BY _____

For Preston D. Cole, Secretary

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