

NR 812 Revision Public Comments and DNR Responses Natural Resources Board Order No. DG-16-16

April 10, 2019

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

OVERVIEW

The primary objectives of the proposed Chapter NR 812 revisions are to correct and clarify language, simplify and streamline processes, update construction standards, and ensure consistency with federal and state law, while maintaining protection of groundwater and public health.

In addition to the statutorily-required public comment opportunities, DNR sought input from a variety of stakeholders during the rulemaking process, including:

- Private Water Advisory Council industry representatives provided input on scope and rule revision concepts during 2016 and 2017.
- An External Working Group made up of licensed well drillers provided input on well construction concepts and reviewed draft rule language for revisions to Subchapter II.
- DNR consulted with multiple individuals from other DNR programs and other state agencies to coordinate rule language with other related laws.
- DNR consulted with multiple individual licensed well professionals and laboratories for input on specific topics.

Economic Impact Analysis (EIA) – A 30-day public comment period on the Draft EIA occurred from October 2-November 1, 2018, and the DNR hosted a webinar to explain the EIA on October 10. DNR received written comments from 7 commenters on the EIA during this period. 2 commenters addressed economic factors, while the other comments were on the draft rule language. Each EIA-commenter also commented on the rule revisions during the public notice period, and all of the non-EIA comments were repeated by the same commenters during the public notice period and/or at the public hearing.

Public Hearings and Comment - The public comment period for the Draft Rule occurred from December 17, 2018 - January 28, 2019. DNR mailed a 4-page summary of the proposed ch. NR 812 Changes to all licensed drillers and pump installers on December 18, 2018. During the public comment period, 35 people submitted more than 270 written comments. The public hearing on the Draft Rule was held January 15, 2019. Four people testified at hearing; three of them also submitted written comments during the public comment period.

Many commenters expressed overall satisfaction with 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. 238 comments expressed opposition, suggested changes, or asked questions about the proposed changes, while more than 31 comments were in support.

ECONOMIC IMPACTS ANALYSIS

A. Mud and Cuttings for Sealing Annular Space.

One commenter submitted a general objection about proposed changes to the mud and cutting provisions, stating: "...the estimate may be accurate, but we believe that this additional cost is an unnecessary burden on the industry and its customers as we do not believe it will result in any improvement in the quality of water nor the protection of the aquifer."

One commenter ran two scenarios with one 80 ft. of casing and the other with 160 ft. of casing, and calculated additional cost would be \$900 to \$1,400 respectively. The commenter stated that this does not consider the driller's lost time due to drill rig inefficiency. A drill rig costs \$850,000 and needs to be very efficient in order to make economic sense to purchase it. A common hourly rate for a drill rig is \$400.00/hr. There will be 2 to 4 hours of downtime during grouting. This will add an additional \$800 to \$1,600/well. Actual additional cost per well will be \$1,700 to \$3,000/well.

DNR Response: No Change to EIA. DNR recognizes that there will be a cost increase for an estimated 3% of wells per year and believes that this will result in increased protection for drinking water and the groundwater aquifer. Estimates prepared in this report reflect the average cost of a typical driller in Wisconsin. Cost-per-well estimates were based on the actual cost estimates of a number of drillers randomly sampled from each geological region across Wisconsin. DNR projected the additional cost based on the average cost per linear foot of these cost estimates. Some drillers' cost estimates may be higher than DNR's projected estimates. DNR's task is to present an estimate of compliance impact that best describes the average cost of those being impacted. Also, feedback received on the economic impacts of this rule from some well drilling operators suggest that DNR's estimated cost per well of \$822 is acceptable. Adding the two data points of an additional cost of \$900 to \$1400 to grout presented by the commenter, the actual cost per well in the data set would increase from \$822 to \$846. Therefore, although the commenter's estimates are higher than the cost estimate of a typical well driller in Wisconsin, they do not significantly raise the overall average cost per well presented in this analysis.

B. Minimum Casing Depth in Limestone/Dolomite

Comments: Two commenters disputed DNR's estimate. One suggested the increased time applying for, reviewing, approving/denying and (if necessary) appealing variances will have a much higher economic impact. The other commenter estimated that the average cost of a well could go up by as much as \$10,000 per well, while delivering poorer water quality, especially in certain regions of the state.

DNR Response: Change made to EIA. Rule language was changed in response to comments, so the average cost per well will increase for approximately 1% of all wells constructed annually. Cost estimates were re-calculated based on this language change. DNR's updated estimate is that the cost increase will range from \$889.59 to \$1,022.86 per well. A small increase in variance requests is possible for those wells where it is not feasible to meet this requirement; DNR anticipates that the economic impact of this will be negligible.

C. Flowing Wells

Comments: “It is the position of the Wisconsin Water Well Association that the proposed rules for flowing well conditions, as noted in the draft at NR 812.15, will add a significant cost to the industry and to the consumer. While we realize that responsible practices must be employed while constructing wells in these areas, the requirements as proposed are overwhelmingly excessive in most cases. The proposed change may easily quadruple the cost of construction of a well in this area and increase the time involved in the construction of these wells.” Another commenter ran three scenarios, one with 40 ft. of casing, and two with 220 ft. of casing. The additional cost would be \$3,780, \$4,015, and \$9,625, respectively, which would approximately double the cost of each well. The cost increases were based on increased costs for bentonite or neat cement grout, and for the largest increase, an increase in size from 6” to 10” casing, as well as additional time needed for pressure grouting of the upper enlarged borehole.

DNR Response: No Change to EIA. The proposed revision does not substantially change the existing requirements. DNR anticipates that the economic impact of the revisions will be negligible.

LEGISLATIVE COUNCIL RULES CLEARINGHOUSE (15-095)

Comments received from the Wisconsin Legislative Council Rules Clearinghouse (15-095) were largely formatting and editorial in nature. DNR made all requested changes except as follows:

- Comment 2.m.”shall not” should be changed to “may not.” Language was changed in a way that correction was no longer needed.
- Comment 5.l., which recommended changing “of ch. NR 812 Appendix” to “in the Appendix.” This language was retained at the request of the Legislative Reference Bureau, as it allows for a hyperlink in the online code and for ease of document navigation.
- Comment 5.n., which pointed out a lack of consistency in hyphenating words with the prefix “non.” The term “non-community water system” will be left with the hyphen for consistency with ch. NR 809, with which the term is cross-referenced. In all other cases, the prefix “non” will not be hyphenated.

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 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: Two commenters (making 6 comments) objected to the rule revision on several grounds, including asking for scientific support for the changes, as well as stating the revisions are unnecessary, there was too little time to adequately review the Draft Rule, and the Draft Rule is too large.

DNR Response: Scientific data used and purpose for the revisions are summarized in the Plain Language Analysis. A 5-week public comment period was provided, and a four-page summary of the proposed changes was mailed to all license holders, to facilitate review and comment.

2. NR 812.07 - Definitions

Comment: 18 comments were submitted on specific definitions. Three objected to deleting certain definitions that are helpful for general industry knowledge. Two objected to deleting definitions of drilling methods and equipment because the repealed items are still used on the Well Construction Report (WCR) form, and four objected based on a belief that the data fields are being removed from the WCR form. Eight commenters requested changes in existing or revised definitions. One commenter noted that the revised definition of “solid waste processing facility” results in an increase in the separation distance for “recycling facility” and one commenter pointed out a syntax error in s. NR 812.07 (32) relating to driving a point.

DNR Response: Change made to definition for “drilled wells” in s. NR 812.07 (32) as suggested by Legislative Council Rules Clearinghouse. Change made to “solid waste processing facility” and definition added for “materials recovery facility” to address separation distance comment. No other changes: the proposed rule repeals definitions for terms that are not used in the rule or for implementation of the rule, and to make the rule more concise. Construction methods are well known and repealing unneeded definitions will make the rule more flexible to allow future drilling methods as long as they meet performance standards. Updates to the WCR will be made to reflect changes in the rule, and types of drilling equipment and geology will continue to be on the form.

3. NR 812.08 and Table A – Separation Distances

DNR received 13 comments on this section of the Draft Rule.

Comment 1: one commenter opposed the revision to s. NR 812.08 (1) (b): “At the highest point on the property consistent with the general layout and surroundings so that the well, reservoir or spring may be protected from surface water flow and flooding.”

DNR Response: Changed. DNR agrees that the highest point on the property is not always applicable for well location. Existing language is changed to emphasize that the well, reservoir or spring must be protected from surface water flow and flooding, and should be on the highest point if reasonable.

Comment 2: five commenters opposed the language in s. NR 812.08 (2) (a): “No well may be located in the area of a rainwater downspout outlet or other clear water discharge.” Most felt it was too vague, and asked for a specific separation distance.

DNR Response: Changed. The language will be changed to specify that no well may be located directly in line with a rainwater downspout outlet or other clear water discharge, to ensure that the well or reservoir is protected from surface water flow and flooding.

Comment 3: One commenter asked for a change in the language addressing “Fertilizer or Pesticide (Dry) Storage Structure (storing more than 100 pounds in bags or bulk).” The commenter suggested 1000 pounds would be more appropriate, which would reduce the

number of residential properties that could potentially currently meet this requirement. Another commenter pointed out that since recycling facilities are proposed to fall under the definition of “solid waste processing facility”, the current setback of 100’ would increase to 250’. One commenter asked, “Would like pipe diameter and pressure vs non-pressure addressed in table.”

DNR Response: No change except for definition of “solid waste processing facility”. The language addressing “Fertilizer or Pesticide (Dry) Storage Structure” is unchanged from the current code and applies to a building in which the primary purpose is the storage of bulk pesticides/fertilizer. DNR has not received any complaints that this is hard to comply with, or is being too strictly enforced. With respect to recycling facilities, it was not intended to increase the separation distance. This will be addressed by amending the definition, adding a definition for “materials recovery facility” and including “materials recovery facility” in Table A with a 100’ separation distance. The proposed sanitary sewer separation distance removes the responsibility for the driller to determine the material, size and type of sanitary sewer.

4. NR 812.08 (2) (b): Structure Built Over a Drilled Well

Comment: One commenter objected to the requirement “When a structure is built over a drilled or jetted well, the structure shall have an easily removable access hatch, roof, or provide other practicable access to allow for pulling and servicing the pump or drop pipe. The well casing pipe shall extend at least 12 inches above the ground-grade or above the ground-grade floor of the building and shall be sealed watertight at the point where it extends through the floor.” The commenter stated “I’m concerned that this element will cause problems in small pump houses with wooden floors.”

DNR Response: No change: this is unchanged from existing code and is intended to ensure access and sanitary conditions.

5. NR 812.08 (2) (d): Top of Well Casing Pipe Terminating in a Walkout Basement

Comment: “Cross reference this in NR 812.07 (114)”

DNR Response: No Change. This is the standard under which a well can be located in a walkout basement. A cross reference is not necessary as this is the appropriate location for the repealed language from s. NR 812.07(114).

6. NR 812.09 – Department Approvals

Comments: DNR received 7 comments on this section. Three comments opposed s. NR 812.09 (4) (a) 5, the prohibition of converting high capacity test wells to production without prior Department approval. The commenters did not see why a test well couldn’t be converted to production; it seemed to them to be a waste of time, money and resources. One commenter asked about s. NR 812.09 (4) (a) 6 : Allowing a High Capacity Well with Low Capacity Pumping Ability to be Constructed under Low Capacity Well Standards, and whether soil samples were required. One commenter asked why several approval requirements are being repealed.

DNR Response: No change. The intent of the prohibition is to close a loop-hole whereby test wells have been converted to operational high capacity wells without any DNR evaluation, thereby requiring after-the-fact approval and preventing DNR from doing adequate review or including conditions on well construction. The provision

allowing a high capacity well to meet low capacity well construction standards is moved from s. NR 812.43 to s. NR 812.09 (4) for clarity. In responding to the questions about repealed approvals: s. NR 812.09 (4) (g), (h) and (r) are prohibited in subch. II so these activities would require a variance under s. NR 812.09 (4) (d); s. NR 812.09 (4) (k) is allowed without written approval in subch. II if standards are met; and s. NR 812.09 (4) (L), (n), (o) and (t) are moved to a new Product Approval section, s. NR 812.091.

7. NR 812.10 (1) (a): Drilling on Leased Property

Comment: “NR812.10 - why is it OK to drill on property that is leased - this is a loophole; anyone could lease property for period of drilling to get around the licensing requirement.”

DNR Response: No change. This is a license exemption in section 280.15(4), Wis. Stats. Changing statutory language is outside the scope of this rulemaking.

8. NR 812.10 (1) (d): Individual Constructing a Non-Potable Well

Comment: “If this individual is a contractor – they should be licensed.”

DNR Response: No change. This is a license exemption in section 280.15 (4), Wis. Stats. Changing statutory language is outside the scope of this rulemaking.

9. NR 812.10 (5) and (6): Approvals, Consultation with Department prior to Drilling

Comment: “Current NR 812.12 (15) has been repealed. Where did this language go? NR 812.10 (5) & (6) seem to be closest to this, but unclear.”

DNR Response: No change to s. NR 812.12 (15). Language from current s. NR 812.12 (15) is moved and consolidated into s. NR 812.10 (6), so proposed s. NR 812.12 (15) is no longer related to sites with continuing obligations. Change to s. NR 812.10 (6) - proposed language has been revised to reflect driller requirement to consult on sites with continuing obligations.

10. NR 812.10 (11) (b): Electronic Filing of Well Construction Reports (WCRs)

Comment: Five comments opposed this proposed change. Commenters felt that it would be a burden to those drillers who have little to no technological abilities (or computer equipment), would be difficult to impossible in areas with no high-speed internet access, and it would force some well drillers to cease drilling private wells.

DNR Response: No change. DNR’s experience with the Well Abandonment Report System (WARS) showed that the regulated community adapted quite well to the electronic filing requirement, and can adapt to this new requirement by 2023. An Online WCR system is available and is currently used to submit 41% of all WCRs each year, providing drillers with the benefits of error-checking, reduced paper and mailing costs, and shorter turnaround time to obtain DNR approval for reports. Online reporting is advantageous to the industry in providing better quality data. Drillers with limited technology abilities can use administrative staff or family members to submit reports electronically. DNR anticipates improved technology, such as state infrastructure and broadband access, over the next 4 years will reduce barriers. DNR is committed to work

with the industry trade association to support additional options for drillers to meet this requirement by 2023.

11. NR 812.10 (11) (d): Re-send Incomplete Well Construction Report

Comment: “Should be 30 days – not 15 days as in draft.”

DNR Response: No change. The 15-day provision is unchanged from existing s. NR 812.22 (7) (d) and continues to be important to ensure timely correction and resubmittal of incomplete well construction reports. The requirement is being moved to a different section for improved organization.

12. NR 812.10 (12): Bacteria Positive Wells

Comment: “Corrective action and 10 days. I question this. Should be 30 days, and are these business days?”

DNR Response: No change. The reduced response time from 30 days to 10 days for a contractor to respond to a bacteria-positive well is necessary to protect the public health of the well users who have unsafe drinking water. The number of days for any code provision is calendar days unless code language specifically states otherwise.

13. NR 812.10 (13) (a): Well Driller Return to Correct Problems

Comment: ‘A note is needed here: “A fee may be charged to correct problem with the geologic formation encountered.”’

DNR Response: No change. Whether a contractor charges a fee is outside of DNR's authority, so it is not appropriate as code language.

14. NR 812.11: All Equipment Installed in a Well Shall Be New

Comment: Three commenters opposed this language. Commenters felt that this would not be cost effective, and is an arbitrary rule.

DNR Response: No change: this language is the same as in current code s. NR 812.11 (2), and was simply moved to this section. These requirements apply to well construction only, and not to the installation of pumps, the requirements of which can be found in subch. III.

15. NR 812.11 (1): Bit Wear

Comment: Three commenters oppose the requirement that the diameter of the drill bit shall be within ¼” of the diameter of the drillhole to be constructed. Commenters stated that there are some instances where a smaller bit diameter would make more sense and should be allowed.

DNR Response: No change. This is the language in existing code s. NR 812.11(1)(a), except that a redundant sentence prohibiting using an under-sized bit was deleted. Bit diameter is important to ensure the borehole diameter remains wide enough to allow a sufficient annular space for installation and grouting of a liner, if necessary.

16. Thermoplastic Casing

Comment: Five commenters opposed several issues involving the use of thermoplastic casing:

- Issues included the requirement that thermoplastic casing terminating above ground contain inhibitors to protect against sunlight (s. NR 812.11 (7)(a)4.)
DNR Response: Changed. The intention of the last code revision was to allow PVC to terminate above ground, but did not add language regarding UV protection. DNR will modify the language to provide more options to allow PVC to terminate above ground. The language will provide for PVC casing with UV protection, enclosure in a steel pipe, painted with a light-colored paint, or contained in a pump house.
- Lack of clarity regarding development of thermoplastic cased well (s. NR 812.13 (3)(c))
DNR Response: Changed. DNR will add language to clarify that screened wells with PVC casing may have equipment inserted for development.
- Eliminating use of neat cement for grouting thermoplastic cased wells (s. NR 812.13 (8)(d))
DNR Response: No Change. The current code has a prohibition on the use of neat cement grout for thermoplastic wells installed using percussion methods, but does not prohibit neat cement when the well is constructed using rotary methods. The revised language is needed to make the grouting materials consistent regardless of the method of construction and maintain a performance based construction standard. The prohibition is to prevent damage to thermoplastic casing from high pressure and high temperatures generated by neat cement, which would be a concern regardless of the method of construction. Neat cement will still be allowed for thermoplastic liners in s. NR 812.21 and will be allowed for flowing wells constructed with thermoplastic casing in s. NR 812.15.
- Prohibiting thermoplastic casing in bedrock wells (s. NR 812.14 (3)(a))
DNR Response: No Change. This was discussed in the external workgroup and no consensus was reached among drillers to make a change to the current prohibition on the use of PVC casing in consolidated formations. DNR is committed to work with the industry trade association to evaluate options for expanded use of PVC casing in Wisconsin and address in future rulemaking.

17. NR 812.11 (10): Drive Shoes and Casing Shoes

Comment: “There is no definition for casing shoe, although it has requirements including carbide studs. I request further discussion regarding the rationale for the proposed changes. It seems to be complicating requirements rather than simplifying them. As required in s. NR 812.10 (9) Problem Wells, it is ultimately the responsibility of the well driller to ensure that there is not a problem with the construction. If there is, he is required to return to the site and attempt to rectify the issues as listed. This implies that the driller, as a professional, has the ultimate responsibility in ensuring that the bottom of the casing is not damaged in well construction operations.”

DNR Response: No change. This section is necessary to clarify requirements for drive shoes and casing shoes.

18. NR 812.11 (11): Screens

Comment: Two commenters opposed requiring continuous slot screens. Commenters stated that very few slot screens exist, and that none that are manufactured in Wisconsin are approved for use, and that the use of screens is optional, so language stating “shall” is incorrect.

DNR Response: No change. Continuous slot screens provide more intake area per unit area of screen. These allow for a more efficient well and reduces likelihood of pumping sand. There are already several non-continuous slot screens approved for use. The language is clear that the continuous slot screen **shall** be used; it is not optional.

19. NR 812.11 (15); Grouting and Sealing Materials

Comment: Two commenters expressed concerns about allowable methods to ensure grout consistency in this segment. The comments centered around grout pumps that many drillers use for pumping grout; most, if not all, do not have screens, and that the drillers use other methods for ensuring the grout is consistent, and has no lumps.

DNR Response: Changed. DNR has modified the language to address the concerns of the commenters. Section NR 812.15 (b): Neat cement shall have a uniform consistency without lumps. Section NR 812.20 (2) (b)2.: Grout material shall have a uniform consistency without lumps and any commercially prepared grout shall be screened by the well driller or well constructor prior to pumping.

20. NR 812.11 (15) (e): Concrete

Comment: “This section describes the mixture of cement, water, sand and gravel. “one 94-pound bag of Portland cement; an equal measure of sand and an equal measure of gravel, by weight or by volume; and not more than 6 gallons of water.” Does this mean that the amount of sand and the amount of gravel will either be 94 pounds each or be the dry volume equivalent of 94 pounds of cement for both the sand and for the gravel? If so, is this actually the same amount? Either way I find it very unclear as written.”

DNR Response: No change. This is the same definition of concrete as in existing rule [s. NR 812.26 (7) (b) 2)], and was moved and re-worded to make the requirement clearer. 94 pounds only applies to cement. The mixture refers to an equal measure of sand and gravel only; it is not intended to equal the amount of cement.

21. NR 812.12 (1) (b): Adequate and Contaminant Free Water

Comment: “Reference to note – would like the entire note from the existing code to remain...”

DNR Response: No change. "Where the natural geologic and groundwater conditions allow" makes the note in the existing code redundant.

22. NR 812.12 (11) (b): Cuttings Samples Submitted to Wisconsin Geological and Natural History Survey

Comment: “Draft has 90 days inserted - this should be recommended”

DNR Response: No change. A reasonable deadline is necessary to ensure timely submittal of required drill cuttings. A recommended deadline is not enforceable.

Reduced instances where drill cuttings are required should make the 90-day deadline achievable.

23. NR 812.12 (17): Well Disinfection and Flushing

Comment: “Table D needs to be updated to reflect commonly-found modern concentrations of sodium hypochlorite that can exceed 8.25%”

DNR Response: Changed. Table D is revised to include a column for ‘extra strength’ household bleach per 100 gallons of water (8% available chlorine).

24. NR 812.13 (4) (b): Packer or Shale Trap

Comment: “I strongly oppose the new requirement that a packer or shell trap be used to provide a sand seal between the bottom of a well casing pipe in the top of the screen. This element is entirely unnecessary and adds an undue burden, especially in circumstances where the casing must be removed for any reason during the construction process.”

DNR Response: No change. "Shale traps" were added to existing rule language to make the rule more flexible.

25. NR 812.13 (6): Driving or Advancing Steel Casing

Comment: One individual had the following comments: “Several elements of this appear problematic. Where is the mechanism that allows steel casing to be placed into an upper large drillhole? The requirement to have temporary outer casing with the mud weight of at least 11 pounds per gallon precludes the use of high solids bentonite as a grout. I urgently recommend consultation with the industry, myself included, before trying to enact this recommendation”

DNR Response: Changed in part. Steel casing in upper enlarged drillhole is allowed. If not using an upper enlarged drillhole, there is no need to place any grout material. Section NR 812.13 (6) (b) 3. allows drilling mud and cuttings as an annular seal for this situation, therefore high solids bentonite is not necessary. DNR added language that an upper enlarged drillhole will need to be grouted to meet the requirements of sub. (8).

26. NR 812.13 (8) (b), NR 812.11 (15) (f), NR 812.14 (7), et. al., Mud and Cuttings

Comment: 16 commenters opposed the restrictions on using mud and cuttings as an annular space seal for wells. The main comments are that the current rule is working just fine, and there is no evidence (or commenters have had no experience with) problems arising from mud and cuttings sealing. Other comments are that this is an effective method of sealing wells constructed in areas of rough overburden, that replacing mud and cuttings with “fresh mud” (sodium bentonite) does not improve the well, and that driving the casing with mud and cuttings in the annulus actually helps to settle it, similar to a concrete vibrator.

DNR Response: Changed in part. The proposed language will be clarified to still allow drilling mud and cuttings for upper enlarged drillholes that are 20 feet or less in depth in both unconsolidated and consolidated formations, to maintain the ability for drillers to use mud and cuttings in situations where full-length grouting is not required.

The purpose of eliminating the use of drilling mud and cuttings or clay slurry in all other situations is to protect both aquifers and drinking water from the increased potential for an ineffective seal. DNR review of water quality data shows that wells sealed with mud and cuttings show a higher prevalence of problems, specifically a 6% higher incidence of bacteria positive results (source: Groundwater Retrieval Network).

The National Groundwater Association Well Water Construction Standard ANSI/NGWA-01-14 does not list drilling mud and cuttings or drilling mud slurry as a grouting material and the proposed changes to the grouting material requirements of the code are in line with this standard. Review of regulations for nearby states show that all of the states that border Wisconsin, as well as Indiana and Ohio require high solids bentonite grout, not mud slurry or a bentonite drilling product. In addition, not all states allow cuttings to be added to bentonite grouts to supply additional solids.

Historically, wells sealed with mud and cuttings have largely been located in remote, rural areas, with lower risk of groundwater contamination. However, changes in land use (e.g., factory farming, urbanization and suburbanization) and changes in climate - characterized by more intense rainfall, increased flooding and higher water tables - have increased the risk to wells sealed with mud and cuttings. DNR expects that the percentage of bacteria-positive results in wells sealed with mud and cuttings will increase if the practice is continued to be allowed.

27. NR 812.14 (2) (c), repealed NR 812.09 (4) (e) and NR 812.42 (1) (b) 6: Casing Depth

Comment: 17 commenters opposed changing the rule to require a minimum of 60 feet of casing in wells drilled in limestone or dolomite bedrock. Reasons given were that the first few feet of limestone usually produces adequately clean water, and thus, casing deeper than 20 feet is rarely needed. In addition, it was pointed out that casing to deeper aquifers very often produces water of poorer quality. Negative impacts due to longer construction time for small drilling companies (especially cable tool operators) was also noted. Comments also asked if this decision was backed up by scientific evidence, and also posited that this issue is why the DNR designates special casing areas. Comments also stated that decisions about casing depth in Limestone or Dolomite should be left to the individual driller.

DNR Response: Changed. The language was changed to allow 40 feet of casing in limestone or dolomite when the depth to the top of the limestone or dolomite is equal to or greater than 20 feet below the ground surface, and to require 60 feet of casing when the depth to the top of the limestone or dolomite is less than 20 feet below the ground surface.

28. NR 812.14 (3) (b): Casing Centering

Comment: "I recommend additional consultation with the industry regarding centering guides."

DNR Response: No change. The changes proposed were agreed upon by a majority of the external well driller workgroup.

29. NR 812.15: Flowing Wells

Comment: DNR received ten comments opposing some or all of the changes to this segment. In general, most commenters felt the revisions were impractical, too confusing, too expensive,

time consuming and did not follow industry standards. Commenters also stated that fewer drill companies have the requisite equipment, so fewer companies would be able to construct wells in flowing areas. Some commenters questioned why thermoplastic casing is prohibited for drinking water wells in flowing areas but allowed for heat exchange well construction. Some felt that the number of flowing wells in Wisconsin is too small to warrant such a major revision. Commenters also opposed requiring replacing wells in which water cannot be contained in the well, rather than correcting the problem, and stated that a well driller cannot always accurately predict if a well will flow.

DNR response: Changed. The requirements for the construction of a flowing well are designed to protect flowing aquifers as a resource, and prevent damage to property or equipment from uncontrolled flow. Well drillers have been required to construct flowing wells in accordance with the additional requirements of s. NR 812.15 (3) since 1991. The proposed changes were intended to clarify existing flowing well requirements in s. NR 812.15. Based on comments received, the proposed language was not clear with respect to when double casing is required and whether PVC casing would still be allowed as a casing material for flowing wells. DNR has revised the proposed rule language to address this.

30. NR 812.15 (2): Flowing Wells - Construction Requirements in Unconsolidated Formations

One commenter stated: “Both methods (proposed) NR 812.15 (2) (c) require “Heavy drilling mud” with a weight of at least 11 pounds per gallon or a bentonite slurry with a mud weight of at least 11 pounds per gallon. These are the only methods allowable under this proposed code. The problem is that advances in the drilling industry have resulted in LIGHTER mud weights. Mud machines, such as the Mudslayer and Mudpuppy are being widely used and the investment that the drilling industry has placed in modernizing drilling techniques would be not only wasted but would require some other means to achieve what you are asking.”

DNR Response: No change. Additives are commonly used to increase mud weight to 11 pounds per gallon, and are allowed. Wisconsin has approved several additives designed to increase mud weight to meet these requirements.

31. NR 812.151 and sub. (7): Heat Exchange Drillhole Location and Construction Requirements and Surface Protection

Comment 1 (Location and Construction Requirements): “The industry recommended a seventy-two-hour period of time prior to grouting, at the time that the heat exchange elements were being added to ch. NR 812. At some point this became changed to twenty-four hours, without guidance from the industry, which has since caused undue challenges within the industry. I was told that’s since it has not been very long since the heat exchange components were added, there was no interest in making that correction.”

DNR Response: No change. 24 hours is the standard to ensure the drillhole is grouted promptly for groundwater and public health protection. If 24 hours is not feasible for a specific situation, a variance can be requested.

Comment 2 (Surface Protection): “Define completion.”

DNR Response: Changed. DNR has added language to clarify when a heat exchange drillhole is considered to be complete.

32. NR 812.20 (2) (b) 4: Settling of Grout

Comment: “Settling of grout more than 6’ below ground shall be made up by adding grout until it comes to the surface.”

DNR Response: No change. New language matches existing requirements at the time of drilling. Section NR 812.27(11) would still be valid.

33. NR 812.22 (1) (c) 2: Definition of Hydrofracturing

Comment: “I again suggest that you also change your definition of hydro fracking to define (Water Well Hydro-fracking). I suggested that a number of times over the years. That would be appropriate as the water well industry across the USA agrees with that definition instead of the current definition which is suited to oil and gas "Hydraulic Fracturing".”

DNR Response: No change. DNR agrees that work done on water wells should not be confused with work done by the oil and gas industry. The proposed rule addresses this by removing the s. NR 812.07 definition of "hydraulic fracturing" and defining “hydrofracturing” or “hydroflushing” as an allowed physical conditioning procedure in s. NR 812.22(1)(c)2., with a report required on a different form to distinguish the work from new well construction. DNR disagrees that the work should not be reported at all - it is necessary for DNR to understand impacts on local geology and aquifer.

34. NR 812.23 (6): Frost Protection for Drive Point Wells

Comment: “Frost protection - what is the limit to that? Should be clarified.”

DNR Response: No Change. This provision is unchanged from current code and explains how frost protection should be installed if it is used. Frost depth can vary, and use of frost protection is at the discretion of the well owner and contractor.

35. NR 812.26 (4) (a) 5: Unused High Capacity Well Abandonment

Comment: Three comments opposed the requirement that High Capacity irrigation wells which are unused for more than 3 consecutive years be abandoned. Comments focused around potential wet climatic periods and stating that unused high capacity wells pose no risk.

DNR Response: No change. This change removes an existing exception which can result in unused high capacity wells being left open indefinitely, creating risk of aquifer contamination. If a high capacity well owner keeps a well operational and uses it only once in every 3-year period, the well will not be subject to required abandonment.

36. NR 812.26 (6) (b) and (d) 1: Filling and Sealing of Wells Using Granular Bentonite

Comment: Two commenters opposed allowing the use of granular bentonite for certain grouting applications due to its tendency to “bridge” or “float” and not provide an adequate seal nor reach the bottom of the annular space.

DNR Response: No change. For (6)(b), this comment is referring to s. NR 812.13 (6) (b) and s. NR 812.14 (4) (b), not the use of granular bentonite for drillhole abandonment. As in current code, the proposed rule language does not mandate granular bentonite. A driller may choose to drill a starter drillhole and fill it with drilling mud instead of using granular bentonite while driving casing from the surface. The new requirement to create a funnel shaped depression around the casing before filling it with dry granular bentonite is intended to improve the ability of the bentonite to follow the casing as it's driven. For (6) (d) 1, this language is identical to the rule covering monitoring wells.

37. NR 812.27 (12): Well Casing Pipe Depth Measurement

Comment: "Licensee submits the form to the well owner, it is the responsibility of the owner of the well to submit to the Dept. This has been agreed upon in the past. Per say we are not the "police" agent. We "the Licensee" are there to inform the owner only."

DNR Response: No change. This language was just moved to this section from s. NR 812.41(4) of current code.

38. NR 812.34 (1) (a): Sample Faucet Location

Comment: Need a note here stating: Sample Taps can be installed in system ≥ 12 " above floor as long as it before (downstream) of main control valve."

DNR Response: No Change. This note is not needed.

39. NR 812.37 (2) (e): Treatment (General Standards)

Comment: Questions why new language replaces current language.

DNR Response: No change. Section NR 812.37 (2) (e) is amended to simplify the treatment requirements for private wells

40. NR 812.38 (2) (a) 1: Injection of Fertilizer/Pesticides Into Nonpotable Well/Water System

Comment: "Injecting fertilizer & pesticides into a non-potable well or water system. Irrigation wells have injection systems installed in the water system that connects to the irrigator."

DNR Response: Changed. DNR will modify the current language to clarify this.

41. NR 812.42 (1) (a): Well Location

Comment: "I don't understand this completely if the well was installed prior to contamination source."

DNR Response: No change. This section describes which separation distance should be used based on which item (well and/or contamination source) is constructed last.

42. NR 812.42 (1) (c): “Shall produce Water Free from Coliform Bacteria

Comment 1:

“Water Quality – the word “shall” should not be used, that means it must produce safe water – not always possible in some areas. That is why years past in code re-writes the word “should” was used, because of this possibility.”

DNR Response: No Change. "Shall" in the correct term for this section. "Should" essentially makes producing coliform bacteria-free wells optional.

Comment 2:

“As stated previously, I suggest wording ‘The well produces water that is free from coliform bacteria and meets the requirements of the primary drinking water standards contained in ch. NR 809.’ I am not sure if this section of the Code specifically intends to require water free from coliform bacteria or not. If this reference to coliform bacteria should be global, then I suggest the same wording be used globally, such as the example I just provided (in which case that wording ought to apply to the comments I made regarding p. 25 and p. 83.”

DNR Response: No Change. This provision is intended to establish a broad requirement that all wells meet the standards in NR 812.06.

43. NR 812.42 (5): Dug Well Water Quality

Comment: “Again, I see no reason for another different way of stating the same and suggest wording ‘An existing dug well may be continued in service only if it produces water that is free from coliform bacteria and meets the requirements of the primary drinking water standards contained in ch. NR 809.’”

DNR Response: Changed. This provision is intended to reflect the same water quality requirement as s. NR 812.42 (1) (c), and will be edited for consistency.

44. NR 812.42 (6) (b): Installations on Non-Community Water Supplies

Comment: “Condominium units can be more than 3 families on 1 well – This needs to be re-visited. This is an unnecessary cost to the owner when there are welded joints below factory type pitless. This train of thought goes back to the grade A-Milk days when a factory pitless was to be installed and that was changed so a standard pitless could be welded on.”

DNR Response: No Change. These revisions are for language simplification, and do not change requirements from current code.

45. NR 812.42 (9) (a) 4. c. and (b) 4: Produces Water Free From Contaminant Levels...

Comment: “These two citations make no mention of being coliform bacteria free. I don’t know if that is an oversight or intentional. As before, I suggest wording ‘The well produces water that is free from coliform bacteria and meets the requirements of the primary drinking water standards contained in ch. NR 809.’”

DNR Response: Changed. This provision is intended to reflect the same water quality requirement as s. NR 812.42 (1) (c), and will be edited for consistency.

46. NR 812.42 (11) (a) and (c) 2: Pits and Alcoves and Casing Height

Comment: “Licensee filling the form out is okay, but it should be up to the owner to mail form to the Dept. after they (the owner) are informed. If owner wants licensee to mail it, than they will state so. Remember we are not the police agent, we are to inform owner of well data. As I have previously stated earlier in my comments.

DNR Response: No change. These sections are consistent with s. NR 812.10 (15).

47. NR 812.42 (12) (a) (intro) 3

Comment: “Ref. to welding pipe nipple inside and the outside contact surfaces of the pipe nipple. The “pipe nipple” should be “code weld coupling”- (it’s quite difficult to reach down inside of a 12” or 24” nipple to weld inside). (I believe this was meant to be a coupling)”

DNR Response: No change. This term ("nipple") is not changed from current code.

48. NR 812.43 (1) (b): Comparable Protection

Comment: “Proposed NR 812.43 (1) (b) removes the clause “but not limited to” in reference to permitted forms of “comparable protection.” As a result, no measures other than those listed could be considered in the department’s assessment as to whether “comparable protection” would be provided. This unreasonably limits the department’s authority to find that comparable protection is afforded by other measures in unique circumstances.”

DNR Response: No change. Wisconsin Legislative Council's "Administrative Rules Procedures Manual" directs agencies to avoid the longer phrase "including, but not limited to" because it has the same meaning as "including."

49. NR 812.44 (1) (d): Water Sampling Responsibilities

Comment: “And that scientific data should not be from water samples taken by summer hires by governmental bodies... I have many horror stories of homeowners frightened to their wits ends because of an unsafe "courtesy" sample from the county.”

DNR Response: No Change. DNR agrees that proper sampling techniques are important for accurate results. Current code allows contractors to delegate sampling to an agent, and multiple comment on this draft rule asked to continue having this option.

50. Drinking Water Standards

Comment: 13 comments were received related to drinking water standards. Nine of the comments pointed out or suggested changing confusing, inconsistent or incorrect language. Commenters also opposed the requirement that pump installers notify owners of contaminated wells within 48 hours citing a high number of notifications that would be required due to high nitrates and the difficulty of reaching absentee owners. Commenters also opposed the requirement that pump installers return within 10 days to diagnose and correct problems with bacteria positive wells, preferring the current rule allowing 30 to 90 days.

DNR Response. DNR agrees that language should be modified and used consistently to differentiate between water quality for new well construction and drinking water for existing systems. DNR has broad authority to regulate drinking water quality standards under s. NR 812.06, and does not agree to limiting authority to ch. NR 809 as a commenter suggested. No change is planned for Section NR 812.37 (3); "Safe" and "unsafe" are subjective terms, whereas coliform bacteria is the specific contaminant that is being addressed in this section. The proposed rule intentionally uses precise terms to indicate whether a well is coliform bacteria-positive or -negative. No change is planned for s. NR 812.42 (1) (c); "shall" is the correct term here. "Should" would change the rule, essentially stating that the production of coliform bacteria wells is optional.

No change is planned for Section NR 812.27 (7): requiring action in response to nitrate test results is outside the scope of this rulemaking. In addition, 48 hours is especially important for bacteria, nitrate and arsenic which are acute contaminants. This should be ample time for a contractor to notify a well owner of well contamination, such as by telephone, email or US Mail. Finally, no change is planned for s. NR 812.27 (8); this is consistent with identical requirements for well drillers and constructors in s. NR 812.10 (13) (a).

51. NR 812.46: Water sampling, Analysis and Reporting

Comment: Several commenters expressed concern about the removal of language allowing Well Drillers and Pump Installers to designate "Agents" to perform certain sampling tasks.

DNR Response: Samplers may still designate an agent - see s. NR 812.46 (3) (a).

52. Sampling timing

Comment: One commenter stated, "these time restraints need to be looked at," implying that the sample submission and return deadline for bacteria contaminated wells is unworkable, especially in areas with a high proportion of vacation properties. Another commenter wanted clarification of 'water samples bacteria positive proposed required responses.' Other commenters recommended the 10-day return deadline should be 30 days, and the 48-hour sample submission deadline is "a bit aggressive." One commenter asked that the 48-hour sample submission deadline be a recommendation, not a requirement. Seven commenters pointed out difficulties with the 48-hour deadline to get samples to the laboratory. It was pointed out that under the Safe Drinking Water Act (SDWA) that the US Environmental Protection Agency (EPA) requires 30 hours. Further, it was suggested that the samples arrive at the lab within 45 hours to meet the 48-hour analysis deadline. A suggestion was made that the language require the lab to *begin* the analysis, rather than complete it within 48 hours. In addition, questions about requiring sampling techniques and sample bottles specified by laboratory, and the required holding time for nitrate analysis were raised.

DNR Response: No change. The current and proposed rule require samples to be delivered to the lab within 48 hours; no new time restraints would be imposed on the driller or pump installer. Sections NR 812.10 (10) and NR 812.27 (7) specify when a contractor is required to follow up if a water sample is coliform bacteria-positive. These timelines are necessary to ensure timely notification to a well owner and should not be too onerous for the contractor. Since private wells do not fall under the SDWA, there is no federal statute that addresses private wells, and thus, no statute or rule regarding

sample collection and analysis. This rule continues to have sampling requirements which are designed to be similar to public water systems, and are merely being clarified.

53. Arsenic Testing

Comment: “I am a believer in the fact that arsenic testing should be mandatory statewide. I can state numerous cases where arsenic testing was not required, and when tested anyway, the arsenic was off the chart. I feel this is an important issue. If you had high arsenic in your water wouldn't you like to know?” “Also what I call these nuisance coliform positive samples need to be treated differently than the real problem samples.”

DNR Response: No change. Arsenic sampling is required statewide after pump work, and during a property transfer well inspection. The proposed changes would eliminate repeat arsenic samples for repeat pump work within 6-months, but does not eliminate the sample requirement or limit the areas of the state where arsenic sampling is required. For public health protection, all positive coliform bacteria samples must be addressed consistently.

54. Proper Training of Municipal Staff

Comment: “If sampling is the scientific means used to justify a code change, then these samples need to be taken by a licensed professional. Down here in SE Wisconsin, several municipalities use “summer help” to collect samples. Recommend sampling be done by licensed, experienced professionals.”

DNR Response: No change. DNR agrees that proper sampling techniques are important for accurate results. Current code allows contractors to delegate sampling to an agent, and multiple commenters on this draft rule requested to continue having this option.

55. NR 812.46 (1) (a) 2: Total Coliform Bacteria Testing

Comment: “This reads that a Total Coliform Bacteria Sample be taken for “Pump installing for an existing well that does not include entry into the well.” This is very vague as this could be anything from a simple Pressure Gauge or Pressure Switch Replacement to a Motor Control Panel Replacement or a Pressure Tank Replacement. A Motor Control Panel Replacement, for example, has absolutely no contact with the water system as the well is *not being entered* not does the pressure tank need to be drained. I don't see the need for the additional costs, or how it in any way helps the owner. This could be done as an option to a well owner rather than a requirement.”

DNR Response: Changed. Language was changed to require a sample for bacteria testing only when replacing a well or pressure tank on an existing water system that does not involve entry into the well.

56. NR 812.46 (2) (a) 1 - Sampling Location

Comment: Five comments were received on this subject. Two commenters seemed to be unclear where the “specific location in system” is. Another commenter asked for greater flexibility to sample at an alternative location deemed “representative of the system.” One commenter was more specific, suggesting the location language should read, “at or before first

"T" and 12" above anything." Finally, one commenter stated his belief that this requirement won't work due to this high number of absentee owners, and the inability to get access to the sample location.

DNR Response: No change. Industry representatives have recommended a specific sampling location to ensure well owners receive accurate information about the source of their drinking water. The required sample location and language granting flexibility is provided in s. NR 812.46 (2) (a) 1.

57. NR 812.46 (2) (b) 2 and NR 812.46 (8) (b): Sample Collection and Analysis

Comment: Five commenters focused on thiosulfate and chlorine detection. The question was asked, *who* is responsible for determining the presence of chlorine, and what *type* of chlorine; total residual chlorine, or free chlorine? It was suggested that the sample form contain fields indicating (yes/no) thiosulfate and chlorine presence. It was also pointed out that the rule language stating the lab will reject samples with chlorine levels above 0.1mg/L is unworkable for many labs. A suggestion was also made to require language that samples submitted for total coliform bacteria cannot be acid preserved. Finally, a suggestion was made to add the following language to (2) (b) 2: "unless the well is continuously chlorinated."

DNR Response: Changed. Several clarifications will be made to the rule language to address these comments and ensure sample collectors and laboratories understand their responsibilities.

58. NR 812.46 (2) (b) 4 – Samples not required to be Cooled

Comment: Four commenters said that most labs *require* the samples be cooled during transport.

DNR Response: Changed. Chapter NR 812 does not require samples to be cooled, but laboratories may require it. This is moved to a note to avoid confusion.

59. NR 812.46 (2) (b) (5): Samples Not Required to be Preserved With Acid

Comment: "Not requiring acid preservation for total nitrate and nitrite at the time of collection for ch. NR 812 samples makes it difficult to assess laboratories that perform both public and private drinking water samples as two systems are required and must be managed. It would be better to require acid preservation at the time of sample collection; the same as for public drinking water samples."

DNR Response: No change. Private well sampling and analysis are not subject to Safe Drinking Water Act requirements that apply to public wells. Laboratories that perform analyses on both public and private drinking water samples will continue to need to manage the data separately.

60. NR 812.46 (2) (c) 1, 2, 3 and 4: Where to Submit Samples

Comment: Two commenters referenced submitting samples to a laboratory certified in accordance with s. NR 812.46 (2) (c), and suggested that DNR strike "submitted to and." Samples only need to be analyzed by a certified lab, not submitted to a certified lab.

DNR Response: Changed. DNR has removed the phrase “submitted to and”.

61. NR 812.46 (2) (c) 4: Where to Submit Samples

Comment: “The language in this section implies that all contaminants, except for total coliform, Ecoli, and nitrate, need to meet EPA holding times and preservation requirements. If that is true, why do the parameters that are collected infrequently required to meet holding times and preservation requirements - but those that are collected most frequently do not?”

DNR Response: No change. This provision identifies the applicable methods for less frequently collected parameters. Since they are infrequent, it’s appropriate to use EPA hold times and preservation requirements rather than attempting to create different ones.

62. NR 812.46 (4): Water Sample Test Forms

Comment: “Are water sample test forms not required for property transfers?”

DNR Response: No change. DNR water sample test forms are not required for property transfer well inspection sampling.

63. NR 812.46 (7): Other Required Samples

Comment: “requires samples to be analyzed for additional parameters (more than coliform bacteria, nitrate and arsenic) to comply with the collection, handling, and submittal requirements of ch. NR 149. I find it interesting that only certain samples must meet those proper but more stringent requirements, and that most data gathered will be of a lesser quality, as a result of failing to meet proper requirements.”

DNR Response: No change.

64. NR 812.46 (8): Laboratory Responsibilities

Comments: 13 commenters submitted comments on this.

- Two commenters pointed out that it should not be the laboratory’s responsibility to supply DNR-designated forms (s. NR 812.46 (8) (a)).
DNR Response: Changed. The intention was to identify which sampling has DNR-required forms, and we agree that the laboratory is not legally responsible for providing forms. Requirement will be removed.
- One commenter pointed out the language in s. NR 812.46 (8) (b) and said that laboratory has no knowledge of whether a sample was frozen prior to the laboratory receiving it.
DNR Response: Changed. The language will be changed to require laboratories to reject samples that are received frozen.
- Two commenters had issues with the acid preservation standard, as well as the previously commented on 48-hour deadline for submittal of the sample (s. NR 812.46 (8) (c)).
DNR Response: Changed. DNR agrees that wording is not consistent with approved methods, and that samples received more than 48 hours after collection should be rejected. Language will be changed to reflect this.

- One commenter suggested adding, “If total nitrate plus nitrite is reported, the laboratory must also be certified for total nitrate plus nitrite in drinking water (s. NR 812.46 (8) (c)).”
DNR Response: No change. This is addressed in s. NR 812.46(8)(f).
- Two commenters agreed that the first sentence of s. NR 812.46 (8) (d): Arsenic Analyses does not apply to arsenic and should be removed. In addition, both commenters had specific issues with the “preservation” language and suggested the second sentence be re-written to identify preservation and hold time requirements.
DNR Response: Changed. DNR agrees that wording is inconsistent with approved methods. Samples received more than 48 hours after collection should be rejected.
- **NR 812.46 (8) (f) 1: Reporting Test Results** “requires that the laboratory that initially received a sample to report that data electronically. The private water portal doesn’t allow for such a thing to happen, as there is no place to report a subcontracted laboratory ID.”
DNR Response: No change. This revision is being made to allow the analyzing laboratory to report their results directly. The data portal will be updated to allow it.
- Two commenters took issue with the requirement that labs keep records for a minimum of six years in s. NR 812.46 (8) (g). Comments stated the labs should not have to keep records, or that they shouldn’t have to keep records longer than 5 years in order to match Public Drinking Water record retention requirements.
DNR Response: No change. 6 years is the statute of limitations for DNR to enforce violations of ch. NR 812 including sampling violations. Past written agreements between DNR and laboratories required 6-year records retention. Since the written agreement is being eliminated to streamline, this requirement is added to the code.
- Four commenters had issues with s. NR 812.46 (8) (h): SDWA Disclaimer. Two commenters said it is redundant and unnecessary, as samples collected under this rule would never be submitted for any SDWA purposes, and the two other commenters asked for language specifying that labs reject samples less than 100 mL and/or in non-sterile bottles.
DNR Response: Changed. DNR agrees – the provision will be deleted.

65. NR 812.46 (9) (a) and (b): Multiple Uses of Test Results Not Allowed

Comment: “Ref. to a new well being drilled for property transfer, should only require 1 set of samples & Arsenic is being omitted because of well not being in service for 90 days.”

DNR Response: No change. Sampling requirements for a new well are different than for a property transfer, and are addressed in separate parts of the code.

66. NR 812 Figures

Comments: “I believe all figures are helpful and can be put at the back of the code book for reference. For pictures tell all and are sometimes helpful to copy and send to owners when needed.” Figure #5 – Should have another diagram – a side discharge below top of well head, yet 12” above grade. Figure #13 – The top of plugged rise pipe sometimes will be brought through well seal so it is supported there and not rest on the tee inside of non-pressurized conduit creating a stress point.” Figure 4 - “Code requires that hand pump heads shall be designed and fabricated so there are no unprotected openings, other than the spout, to the interior of the pump. The drawing ... has the pump rod with an unprotected exit from the top of the housing. I know this drawing has been in the codebook forever, but it is wrong in that regard. Manufacturers do make a protected top for the hand pumps.”

DNR Response: Changed – Figure 4 Hand Pump will be removed. No other changes. Proposed rule repeals many existing figures which provide general information and illustrations but are not needed to explain regulatory requirements in the rule. Some repealed figures will be used in DNR publications, and will be updated as needed.