

Meeting notes: NR 146 & NR 812 Rule Revision Advisory Committee

Date/Location: 04-30-2024 / Schmeeckle Reserve Visitor's Center

**1. Members Attending:**

- a) Virtual by Zoom:
  - i. Jeff Beiriger – Government License Advisor for Wisconsin Water Well Association also advisor to Wisconsin Well & Pump Suppliers
  - ii. Stacy Steinke – DNR Private Water Field Supervisor
- b) In-person
  - i. Bruce Walker PIP/WDP/HEDI – Wisconsin Well & Water Systems, Kouba Drilling & Wisconsin Geothermal Association / Adams County WC
  - ii. Rick Peterson PIP – Clean Water Testing / Outagamie County NE, President Wisconsin Water Well Association
  - iii. Terry Marshall PIP/WDP/HEDI – Marshall Well Drilling / Adams County WC
  - iv. Michael Berkholtz PIP/WDP – Water Well Inc / Dane County SC
  - v. Tim Harnois PIP/WDP – T&T Well Drilling / Oconto County NE
  - vi. Steve Binz PIP/WDP – Binz Brothers Well Drilling / Iron County NO
  - vii. Butch Eucker PIP – Richmond Well & Pump / Walworth County SE
  - viii. Ezra Pett – Headwater Wholesale / Waukesha County SE
  - ix. Bernie Friedenfels Master Plumber/PIP – Door County NE
  - x. Jake Sedivy – DNR Private Water Field Specialist
  - xi. Marty Nessman – DNR Private Water Private Water Supply Section Chief
  - xii. Bob Gundrum – DNR Private Water Licensing Coordinator

**2. Approval requirements – Proposed alternatives**

- a) Non-pressure storage tanks [NR 812.09 \(4\) \(v\)](#)
  - i. Require approval for only reservoirs or tanks installed below ground surface, and...
  - ii. require approval for reservoirs or tanks installed before the first entry point at a non-community public system
  - iii. Clarify code requirements for installation of new and existing NPSVs.
    - 1. Provide standards for how to install and what is required for installation given intended use. (MN)
    - 2. Requirements would cover installation up to the entry point to the building. Anything beyond the entry point to the building would be considered plumbing and subject to plumbing code requirements. (MN)
    - 3. Question regarding sample tap procedure off the building (BW)
    - 4. The requirement would likely state that there has to be a sample tap installed after the entrance to the building at the point of entry. (MN)
    - 5. What about a bar or “wet bar” tank buried in the ground outside? (TH)
    - 6. A pitless receiver tank? That would not be affected by this and will be covered later in the meeting. (MN)
- b) Pitless adapters and wellhead equipment [NR 812.091](#)

- i. It would be preferred to not have a DNR approval requirement for use of pitless adapters in Wisconsin. The reason being that no Wisconsin neighboring state has this requirement.
      - ii. There are requirements in NR812.31 regarding what the pitless adapter must do, how has to be designed and how it has to fit.
      - iii. The preference would be to have the code state the pitless adapter needs to be properly sized, the correct type, and must have a water tight connection. (MN)
      - iv. Approvals are set to expire after five years which is something that has not be enforced. (MN)
      - v. The proposed revision would allow for the use of pitless adapters from a wider range of manufacturers, as long as the pitless adapter meets the requirements. (MN)
      - vi. Certain things would still not be allowed. No part of a pitless adapter can extend inside the well casing prior to pump installation with the exception of bolt-through pitless adapters installed on PVC well casing having a permanently attached screen. This is a statute requirement that cannot be changed by rule revision. It is unclear as to why this is in statute. (MN)
      - vii. The statute change in 1998/1999 required numerous hearings. There were arguments on both side of the issue and what is in statute now reflects the compromise that was reached between parties. Minnesota, Michigan, Illinois and Canada used it. Wisconsin was the only state that did not have the requirement. It needed to go to legislature and the statute to resolve and reach a compromise. (BE)
      - viii. Much work was done by Bill Rock who sent adapters out the university and the engineering department to test on PVC casing and the finding was that it is a good adapter that works well. (BE)
    - c) Above ground discharge units
    - d) Well head components including well caps and seals
      - i. The proposed revision will remove the requirement for approval of wellhead equipment. (MN)
      - ii. The proposed revision would include language similar to: *“Well caps and seals shall be weather-proof and vermin-proof compression type components and shall attach securely to the well. Nuts and bolts shall be made of materials that minimize corrosion. Any component attached to a wellhead shall enter the well in a manner that maintains sanitary integrity and prevents the entrance of contaminants or vermin into the well.”* (MN)
      - iii. This is intended to be a simple standard that can be met with most available wellhead equipment. (MN)
3. **Pump work on non-complying wells** [NR 812.27 \(2\)](#): This is addressed in current code language but needs clarification.
- a) New well in noncomplying location – not allowed without variance or approval
    - i. The pump cannot be installed if well is in a noncompliant location. This will be added to code language.
    - ii. Why would you have a new well located in a noncomplying location? (EP)
    - iii. The well may have been drilled before the septic tank was installed or another similar situation. There are cases when the pump installer is aware something that causes the location to be noncomplying that the well driller was not aware of or overlooked. (MN)

- iv. There are a lot of reasons that can cause a well location to be noncomplying. (TH)
- v. This scenario (noncomplying location) will be moved from the situations where to try to bring things into compliance, but if you can't bring everything into compliance, you can still get the homeowner into water. (MN)
- vi. We are looking for comments from the Advisory Committee on what may be the best way to handle new well in noncomplying location situations. (MN)
- vii. The noncomplying feature form was intended for situations where the homeowner is out of water and provides the means to get them back into water. Are there any comments or suggestions available from the group? (MN)
- viii.
- b) Out of water situation – allowed with notification to well owner
- c) Other situations?
- d) Should simple fixes be required?
  - i. Well cap
  - ii. Missing or threaded sample tap
- e) I have a situation where a customer with recreational property has a defective shallow well pump in the basement. The well has a sticker and well construction report that provides information on who the installer was, and the installer is now retired. It had concentric piping with a sealed cross on a shallow well setup. We could not get water after checking for air leaks. The sealed cross was not hooked up when we got there. The annular space was not pressurized with system pressure. Ultimately, we found that pitless adapter used was a deep well pitless adapter, so the water was being sent back down the well. So, there was an unpressurized annular space cemented into the wall. The well driller used the wrong pitless adapter figuring no one would ever know the difference. (BW)



- f) So, the pitless is the wrong type for the well type? (MN)
- g) For a shallow well pitless, the annular space ends at the pitless adapter. With a deep well pitless adapter, it circulates down and jets up from below. It's a pressurized system. With the deep well pitless, when you are attempting to pressurize the annular space, it's just going back down the well and recirculating. You could remove all the concentric piping and put a shallow well pitless adapter in. This would require a significant amount of money. (BW)
- h) So, in order to get them back into water, is that what you would need to do? (MN)
- i) To get them back into water, we disconnected the pressurize line and put the plug back into the seal cross and it worked because there was a functioning

- pump now. In order to make it code compliant, the annular space needs to be a system pressure.
- j) So, there is no water going through the water pipe? (MN)
  - k) That is correct. (BW)
  - l) In that case you probably should have replaced the pitless rather than what was done. (MN)
  - m) So, you are doing an emergency repair. (TM)
  - n) You will need to excavate yard where there is landscaping. It could be \$5000 to \$10,000 to fix it and bring it into compliance. Then the owner is not going to be inclined to spend that money because you already have them in water. The question is what do you do in that situation. (TH)
  - o) That is where you would use the noncompliance form. (SB)
  - p) The form is given to the owner, and the pump installer keeps a copy. It is not sent to the DNR. (JS)
  - q) The noncomplying feature is for the pump installer to protect themselves. (TM)
  - r) Is there a situation where the pump installer should send a noncomplying feature form to the DNR? (MN)
  - s) No. You will lose that job and future business. If it comes up in a future inspection, you have a copy of the noncomplying feature form that covers you and clears you of liability. (TM)
  - t) In the case where a past issue does come up in an inspection and the noncomplying feature form is on file, I provide another noncomplying feature form to the new owner. (SB)
  - u) The realtor sold the property knowing there was a noncomplying feature with the well. (BE)
  - v) The property is sold as is. But the pump installer is protected because they informed them of the problem. That is the way it works, and it should stay that way. (SB)
  - w) The new owner made the decision to accept the noncomplying situation. (RP)
  - x) The 2" pipe goes all the way back to the casing. I could never understand why a 6" or 4" non pressurized are ok, but anything less than 4" has to be pressurized. It's still protected by the outer pipe. The supply pipe is not in contact with the soil. (RP)
  - y) It is open to the well and it could be open to the basement. (MN)
  - z) The difference is that you are talking about a shallow well situation. So, you have a suction line off the well that is protected by the pressurized line. The 4" line is usually from a submersible pump. (MN)
  - aa) The non pressurized conduit was allowed until 1992 I believe. (MN)
  - bb) Would this be a situation where you could issue a variance for continued use? It would be difficult to get equipment there to work on it. This is a lake lot with limited space. (BW)
  - cc) Is it possible to replace the pitless? (MN)
  - dd) You would need to dig by hand with a shovel. (BW)
  - ee) This work was done by a licensed professional and it was after 1991. (BW)
  - ff) Chances are that once you got this customer back in water, they are not going to want you to come back. (TM)
  - gg) It would require digging 5 to 6 ft down with a shovel and have maybe 3 guys on site. (TH)
  - hh) You give them the noncomplying feature form and then you are done. (SB)
  - ii) Unless the DNR could issue a variance for continued use on that one feature. (BW)

- jj) The owner likely would not want to do that as it would be opening a can of worms. (TM)
- kk) Part of the reason the well inspection is done at time of real estate transaction is because there is money available then to address these issues. Realtors are not always interested in having these issues addressed. They want the sale. (BE)
- ll) The time when they get fixed is when a lending institution is involved, and they require the repair before the loan will go through. (TM)
- mm) They used to require that. Often times now, there is no inspection, or if there is an inspection and the problem is found, the lender will look the other way. The lenders used to be the enforcer. Not anymore. (RP)
- nn) There is existing code language that addresses existing installations and working on existing installations. **It does require some work to be done without use of the noncomplying features form.** Is there anything on the list that should be handled differently? (MN)
  - i. Pits and alcoves
  - ii. Reconstruction
  - iii. Sample faucet
- oo) **Sample faucet.** Entering a crawl space to take a water sample from a sample tap is not a sanitary environment. Maybe wording should include “accessible”. (BF)
- pp) There is something in code that states if a sample tap is not available of accessible, take the water sample at the first faucet downstream and before treatment.? (RP)
- qq) That may only be in property transfer well inspection requirements. Let’s talk about sampling faucets on existing systems. Should the language state that if the sampling faucet is not in an accessible location, that one should be installed in an accessible location? (MN)
- rr) Various comments made regarding accessibility including required distance off the floor being 12”. Why can’t sample be taken at any unfiltered location? Pressure tanks located in confined closet areas and where to locate a sample faucet in those situations.
- ss) Why are you not allowed to grind threads off of an existing faucet for use as a sampling faucet? (EP)
- tt) Often times samples were being taken from a ¼ turn boiler valve. Also, boiler drains were being installed with threads ground off for a sample tap. (MN RP)
- uu) It was decided that existing language in NR 812 regarding sample tap and sample tap location was good and no revision is required.
- vv) **Casing height** is also something that a noncomplying feature form can be used to address. You are required to bring the height up to 12” Has that been a problem? (MN)
- ww) Morrison heads and the casing is less than 8”, you need to break the pipe apart to bring it up higher. This can result in an air leak. Sometimes it is better to leave it as is. (TM)
- xx) Morrison heads are top discharge. They sometime allow insects to enter. (MN)
- yy) It would be good to be able to tell a customer that Morrison head is illegal and that has to be replaced. (SB)
- zz) That will require you to dig below frost and you will have to change the pressure tank. (BF)
- aaa) In 30 years of sampling for a real estate transaction, there has not been one sample from a Morrison that has come back safe. (BW)
- bbb) We are replacing one today because we can’t get a good sample. (SB)

- ccc) This may be the section of code to put in the requirement that if well cap is not vermin proof and cannot be repaired, it must be replaced. (MN)
- ddd) It is time to do that. The Morrison head was typically used in areas where you couldn't dig. Now with boring equipment and backhoes, you can get the pipe in there. (BE)
- eee) I am referring to where the tank is in the ground. (SB)
- fff) Maybe the requirement should be to leave it as is, but if there is a problem, then you have to upgrade. (BF)
- ggg) I had a Morrison that was 12 above grade, where grade was bedrock. The pipe ran 12" above ground into the building. It was bedrock at the surface and digging was not an option. (BW)
- hhh) You can still have top discharge with the proper seals. (MN)
- iii) You would have to set it up with drainage back to the well. (TM)
- jjj) If grade allows that. Often the well is located upgrade from the building. (TH)
- kkk) It is not illegal to drain back to the well if the pipe is above ground. (TM)
- lll) With casing height, the code states "*when doing any water well work or pump installing work that involves entry into the well*". The definition of pump installing includes replacing the sample faucet. You don't need to extend well casing when replacing the sample faucet, do you? (RP)
- mmm) No, just when making entry into the well. (MN)
- nnn) **Nonpressurized conduit.** When the pump is replaced, you are required to pressure test the conduit, correct? (RP) That is correct. (MN)
- ooo) Realtors are often under the impression that nonpressurized conduit is grandfathered in and acceptable. (BE)
- ppp) **Returning to new well in non-complying location,** the intent then is to not allow a variance if something is non-complying? (SB)
- qqq) The pump installer will not be allowed to use a non-complying features form to install a pump in a well that is in a non-complying location.
- rrr) The home owner may already have a \$20,000 investment and if the sample is safe, isn't there something that can be done? This is something that is a rare occurrence. (SB)
- sss) I had a situation where a well was drilled within 1200 feet of a landfill. It was in a subdivision with 200 other houses already there. I didn't check to see if it was within the circle for a landfill.
- ttt) A variance is granted in those cases. These are handled on a case-by-case basis. The point here is that you cannot just use a form to call out the noncompliance and not contact the DNR. (MN)

**4. Pitless Unit and Adapter (installation) Requirements – comments that NR 812.31 are too prescriptive**

- a) We want to make sure language here is clear. There has been some confusion regarding riser pipes. Currently, you could have a steel riser on a PVC well, or you could put PVC riser on a steel well casing as long as it is not bolt-through. Technically the code allows you to do that. If this is something that the group agrees strongly that is should not be allowed, code will be revised to reflect that. (MN)
- b) What is the likely scenario is a PVC coupler above the pitless. (SB)
- c) What happens with a PVC riser is the strength need to maintain integrity of the seal is not there. A schedule 40 coupling is not strong enough. The steel casing doesn't move, and if there is a schedule 40 coupler installed on it, it only takes collision with a lawn mower to crack the PVC. The PVC coupler is the problem. (BE)

- d) It shouldn't matter if the coupler is installed on steel or PVC. The strength should be the same. (BW)
- e) If you have a steel cased well, it should be steel all the way up. Otherwise, it could lead to wrong reporting with a visual inspection when you have a PVC riser on a steel well or steel riser on a PVC well. PVC at the top should be representative of PVC well casing. (TM)
- f) The use of PVC riser on steel casing is common in Lynn township. (BE)
- g) PVC pipe will bend if the grout is still soft where steel pipe will not bend at all. (BE)
- h) The requirement should be that if it is a steel well, steel is used all the way to the top. If it is a PVC well, PVC should be used all the way to the top. (EP)
- i) Do you still want the option to put a bolt-on pitless adapter on PVC pipe? (MN)
- j) In the last revision for PVC casing, the requirement went into place for non-transient, non-community wells. There are a few scenarios: (MN)
  - i. PVC casing / steel riser with a weld-on
  - ii. Short steel pitless on a PVC casing
- k) So, what do you use for a riser, steel or PVC? (MN)
- l) What Terry is saying is that the riser should be representative of the casing below. (EP)
- m) In some cases, it could be less expensive to put a PVC riser on. It shouldn't make a big difference in the integrity of the well. (BW)
- n) Should the option be removed to have a PVC riser on a steel well? (MN)
- o) Absolutely! (BE)
- p) No. (BW)
- q) There does not seem to be a consensus here. It sounds like it is being done more in some parts of the state than others. (MN)
- r) This mostly applies to well system repairs, does it not? (BW)
- s) It would apply to installations too. The requirement is for new installations essentially. (MN)
- t) If you remove the option for PVC riser on steel casing, you are requiring those using cable tool with threaded steel casing to have a welder to complete work on the riser. (BW)
- u) I can't see a cable tooler using PVC casing. (JS)
- v) This could be overthinking something that does not need to be dealt with "yet" (TM)
- w) It is a rare occurrence and if the owner damages the riser with a lawn mower, they will just have to pay to have it fixed. (TH)
- x) If this is added to code, it will be another thing that needs to be enforced and may be opening a can of worms. (JS)
- y) So, there will be no change and there will be another opportunity to voice your opinion on this matter. (MN)

#### **5. Off-set Pump Installations**

- a) Are there any changes or improvements needed? (MN)
- b) We're back to concentric piping and pressurized annular spaces now. Why is it lawful for a homeowner (in a driven point installation) to drive 1 ¼ or 2" galvanized pipe from the surface of the ground vertically. In that case there is a vertical suction line which is not a problem, but if it is horizontal suction line going to the basement, it is a problem. What is the difference? (BW)
- c) There is not a lot of difference except that the horizontal line is shallower and if the water table is deeper, you're going to know when you lose suction when that

suction line isn't protected. If the water table is high, you won't be aware of the suction line being compromised or that you are losing suction. (MN)

- d) That same scenario applies to a driven point. This is something that has been in code for a long time and may not be easy to change. Not that it needs to be changed, but it would be good to know the reasoning why it is ok for driven point but not for horizontal buried line. There seems to be a lot of rules in this case that don't make sense. I'm not advocating for anything other than it does not appear to make sense. (BW)
- e) It may be a compromise in a way. Some states don't allow point wells. Wisconsin does, it always has. We required the non-pressure conduit in the past or concentric piping. Non-pressure conduit was eliminated. This has been brought up by others in the past. (MN)
- f) Is there a way on systems with horizontal suction line to provide an indicator that would warn when suction is being lost and whether it is above or below the water table? (MN)
- g) Is this a common occurrence. How big of a problem is this? (BF)
- h) In some areas this is a rather common occurrence. (group)
- i) A lot of samples with PFAS contamination in areas with land spreading are coming from sand point wells.

## 6. Hand Pump Installations

- a) One of the biggest issues that we have had over the past 20 years is the question of a hand pump on a well where the submersible pump works. Current rule language does not address this arrangement and it needs to be addressed. We are looking for suggestions on how to limit handpump use to emergency situations only. (MN)
- b) It makes no sense to require the concrete platform around the well for a hand pump or any other installation. (TM)
- c) The intent is to keep the area more sanitary. This is something that has been in code for a long time. Would a smaller pad be preferred? (MN)
- d) There should not be a requirement for a concrete pad. (TM)
- e) It sounds like a good idea but shouldn't be a code requirement. (EP)
- f) The requirement stems from state park installations where people wash dishes, and the water goes directly around the well. How many residential installations are there? (MN)
- g) Parks and waysides have moved away from handpumps because they cannot get a safe sample from them. (JS)
- h) Placing a lock on the handle is not a good idea. In case of an emergency, the lock may hinder access when key is lost, or they forget where the key is located.

## 7. Sampling Requirements

- a) Existing requirements for water sampling:
  - i. New pump installation
  - ii. Replacing a pump or pressure tank on an existing water system that does not involve entry into the well
    - 1. This was intended to provide a sample requirement for offset pump installations or when a pressure tank comes out.
  - iii. Entry into a well to diagnose any feature or problem with a well or to measure casing depth.
  - iv. After corrective action following a total coliform positive test result.
- b) Why does a sample need to be taken when replacing the pressure tank? (EP)
- c) Does an offset pump replacement require a sample to be taken? (MN)
  - i. Yes... it's a pump. (BE)



- ii. Why is required for the pressure tank when it is not required for a pressure switch or a pressure gauge, or sample tap? (BW)
  - d) The quality of pressure tanks has declined. Tanks need to be replaced every 2 to 6 years. People may be concerned with the cost involved with the sampling requirement. (BE)
  - e) It is just a coliform test, not the full spectrum test. Maybe the full test should be required because people are not sampling every year like they should, and this would provide an opportunity for them to determine what their water quality is. It is understood that it is not required for a master plumber to replace a pressure tank. (MN)
  - f) There is room here to make a revision to require a sample when the pump is replaced or when entering the well. We are requiring bacteria nitrate and arsenic for a pump installation in the well. What is the difference when changing an offset or jetted well pump. (MN)
  - g) There is a check valve installed that isolates the pump side of the system from the well. What is the reason for sampling with offset pump installations other than the DNR's desire to acquire more sample data? (BW)
  - h) Would a nitrate sample requirement be a better indicator than bacteria for gathering data? Bacteria tests often result in false positive results. (MB)
  - i) The question that is being asked is what is the difference between installing a pump in the well and installing an offset pump? Why require sampling for pump installed in the well, but not for installation of an offset or jetted pump? (MN)
  - j) When will the DNR make a requirement to have homeowners test their water periodically? Also question why the DNR allows homeowners to do their own water sampling when often they do it wrong. (BF)
  - k) Sampling is only required at the time of a property transfer well inspections (and not for all of them). That is why the question is raised as to whether more sampling should be required to provide more of an opportunity for homeowners to get information on their well. (MN)
  - l) There are too many false positives. Homeowners are reluctant to pay for a tank installation because they think the installer messed up their water. (BE)
  - m) Inspections required on septic systems, why not well systems – septic systems can impact other individuals in the community, not just the homeowner. A private well affects the people in the home and not the surrounding community. (RP)
  - n) Just remove pressure tank from the sampling requirement. (TM)
- 8. Bacteria and Nitrate**
- a) Entering an existing well to perform pump installing activities
    - i. "Pump installing" activities may change a little bit, based on what comes out of our NR 146 changes. NR 812 changes will match what is in NR 146.
    - ii. If needed, specific pump installing activities that require sampling can be added in the NR 812 revision.
  - b) Why do we want to say the sampling is required when measuring water level, but not when measuring casing depth? You are entering the well to measure the water level in the same way as that you are to measure the casing depth.
  - c) The requirement for sampling when measuring water level should not include measurements taken using sonar which is less intrusive. (RP)
- 9. Bacteria Sample Collection/Analysis**
- a) Regarding the increase in false positive bacteria samples in the summer vs winter samples, but it only happens less than 20% of time vs 9% during the

- winter months. Percentage wise, it is greater in the summer, but it is not 75% of the samples that are coming back positive (statewide).
- b) Was there any correlation determined between false positive sample results and geographic location in the state? If you are in an area where they a spreading waste from CAFOs at certain times of the year, it may have an impact on the water sample. (BW)
  - c) We did not look at geographic correlation in the data. (MN)
  - d) Requirements are to analyze within 48 hours of collection, the safe drinking water act requires analysis within 30 hours of collection. The time required to get a sample submitted for analysis may impact whether or not you get a coliform positive sample.
  - e) It is difficult now for some to have samples analyzed within 48 hours, so shortening the requirement to 30 hours to reduce the number of coliform positive samples would not be a good idea. (MN)
  - f) Who determines the hold time for samples, the lab or the DNR? (JS)
  - g) We can only go by what is written on the lab slip regarding time collected. (RP)
  - h) Why is there a specified time frame for when the sample has to get into the lab? (JS)
  - i) Because the bacteria can die off. (RP)
  - j) The opposite could happen too, some put the samples on ice and others don't. (MN)
  - k) Is it possible to bring back the 10-tube test as an alternative (BE)
  - l) If the lab does it, you can use it. (MN)
  - m) There is an HPC test available that uses light (balm?? - inaudible). (RP)
  - n) Coliform bacteria are everywhere so getting a zero count can be difficult (TH)
  - o) If there are 2 or 3, they can rapidly multiply. (RP)
  - p) The zero-count requirement is an EPA regulation. It is not coming from the DNR. (TM)
  - q) Showing graph of percentage of samples showing positive coliform bacteria result vs time of the year. 360,000 samples were used in the data analysis. The data shows that you have bacteria positive samples, no matter what month of the year. (MN)
  - r) At the last meeting it was mentioned that there is a significant increase in the number of positive coliform sample results in the summer months vs in the winter months. On a percentage basis, how many of the samples in the summer months are positive vs those submitted in the winter months? (BG)
  - s) Close to 75% of samples submitted in the summer months result in positive coliform. I almost never have a positive coliform test result in the winter months. (TH)
  - t) We have had instances where the pump runs continuously for 24 hours before we sample, we take the sample and run it to the lab on ice and the sample still comes back coliform positive. (TH)
  - u) Where do you get your bottles? (BF)
  - v) Lab Tech services – Deerbrook because they are the closest. Or Great Lakes testing in Crandon. (TH)
  - w) The bottles we send out are sanitized, sealed and irradiated. (RP)
  - x) When is the labs cutoff for testing a sample? (BW)
  - y) It would be 48 hours if it is not a public sample.
  - z) Code requirements read “Deliver samples or have arrangements made to deliver the sample to the lab no later than 48 hours after the sample was collected.”

There should be a provision to allow time for the lab to test the sample within 48 hours from collection. (BW)

- aa) Deliver so the sample can be analyzed by the lab within 48 hours would be a better way to state it. DATCP has been consulted on the sample procedure and they will provide feedback on what should be required by the labs. (MN)

#### **10. Existing Wells in Limes**

- a) We are not able to change anything for existing construction. This would apply to new wells only.
- b) There is no difference here in allowing 4" to 5" wells that were drilled in sandstone prior to 1975. They are still in use. I see nothing wrong with this. (TM)
- c) I agree. (BW)
- d) NR 812.44(1)(b) will say wells drilled before 1992 may continue to be used if they continue to provide safe water.
- e) Will this statement refer to any type of bedrock or are you just referring to limestone with this statement? (TM)
- f) This will be referring to any type of bedrock. (MN)
- g) So, then you are changing the date for 4" wells in sandstone?
- h) Similar to what we did with the casing height? (TM)
- i) Yes. This hasn't been run past Public Water as of yet. In the past, they have been somewhat reluctant. They made a lot of people replace their wells in the past and they don't want people getting upset (MN)
- j) In Door County, all of our wells are in bedrock. The understanding has been that you can keep your 4" well until the pump had to be replaced and then it had to go. So now are we going to say you can keep the well after replacing the pump? (BF)
- k) Yes. (MN)
- l) Is there going to need to be an inspection of casing depth relative to how close the limestone bedrock is to the surface? (BW)
- m) The casing depth requirement isn't going to change. (MN)
- n) So, if you pull the pump from a 4" well, you have to check the casing depth in limestone and it is less than 40ft, it then has to be replaced. (BF)
- o) It would be 30 ft for sandstone bedrock. Prior to 1991, it was 25 ft. (TM BW)
- p) We are just referring to the diameter of the well here. (MN)
- q) So, on a well inspection of visual components and you don't open the well, if the well diameter is 4", the well is OK. (BF)

#### **11. Use of Bentonite Chips as Annular Space Sealing Material**

- a) The biggest question here is if you drill an upper enlarged drillhole with drilling mud, should you be allowed to use bentonite chips in the annular space for consolidated or unconsolidated formations? (MN)
- b) How big is the annular space? (SB)
- c) Now it is allowed if there is a 10" upper in consolidated with voids down below, you are allowed to use bentonite chips to fill the void area and then resume grouting. It has to be a 10" upper enlarged drillhole and it has to be air drilled so there is free-fall of the bentonite chips. My suggestion is... don't try to change what is working. (TM)
- d) In a drilling mud situation, typically your mud is going to be close to the surface of the grout. The mud needs to be less than 9lbs per gallon. Or if you have high solids bentonite grout, that going to float anyway unless your mud weight is low enough. The chips are going to be 9.2 to 9.4 lbs. per gallon once they are hydrated. They will sink through drilling mud. (BW)

- e) What does the mud weight need to be when you are drilling? (TM)
- f) Less than the grout weight which would be 9.2 to 9.4 lbs./gallon. (BW)
- g) Mud weight is typically 9 lbs./gallon. (MN)
- h) Is this used so that you don't need a grouter? (SB)
- i) It is to provide another option for how to seal an annular space. We know that chips provide a good seal. It is allowed in monitoring well construction and is in use throughout the country. (MN)
- j) There are advantages and disadvantages to using bentonite chips. We are working on sealing PVC well with a shale trap on the bottom. If you are far enough into bedrock to where you need to use neat cement grout, that is a lot of weight at the bottom that can cause the neat cement grout to migrate past the shale trap. If you put ½ bag or 1 bag of chips in there, it will create a lens that will help to support the weight of the grout. (BW)
- k) The disadvantages are when used in areas where water is fairly acidic. Tests have shown that with acidic water, the bentonite chips will not hydrate properly. Acidic water can dissolve the chips resulting in a void. (BW)
- l) Are we considering pouring bentonite chips down to seal the entire annular space.? (EP)
- m) What is the depth that this is going to be allowed? (TH)
- n) Should there be a limit on well depth for use of bentonite chips in unconsolidated formations? We have an option to expand the use of bentonite chips, but how and where should it be allowed? (MN)
- o) It was mentioned that bentonite chips are widely used in other states. There is limited experience with the use of bentonite chips by those in this room. What are the criteria that other states use where it is currently being allowed?
- p) I can look into that and come up with something that the group could provide feedback on. Mud weight and the size of the chips are considerations. The size of the hole also matters. Dry hole vs drilling mud will also be researched.
- q) 3/8" or 5/8" chips are available through Wyo-Ben. (EP)

## **12. Landfills and Property Transfer Well Inspections**

- a) The question was raised as to what course of action to take when doing a property transfer well inspection and it is determined that the well is located on well driller viewer to be within an area affected by a landfill. There is no record of it on the well construction report. (RP)
- b) For the property transfer well inspection report, you are only required to report that further investigation is needed regarding well location relative to the landfill. (MN)
- c) Is there any difference if it is an active vs an inactive landfill? (RP)
- d) No. You are not required to mark it as being noncompliant. It is rare that a variance would not be provided. The variance likely would not be issued in time for a closing. The well may have been driller prior to the time that landfill setback distance was established.

## **13. Casing Advancement NR 812.13 (6) & (7), NR 812.20(2)**

- a) There needs to be an adjustment to some of the language. The old language had clay slurry or mud and cutting surrounding the casing while it was being advanced with a weight of 11 lbs./gal. which is too heavy. With past language, it didn't matter if you drove casing through an upper enlarged drillhole as long as there were mud and cuttings in the annulus and the annulus collapsed because the mud and cutting served as a seal at the annulus. With new language, you can no longer use mud and cuttings as a seal, so if the hole collapses, the upper

- enlarged drillhole must remain open all the way to the bottom while advancing the casing to allow the annulus to be grouted from the bottom up.
- b) The type unconsolidated in this part of the state is sand and gravel glacial till. As soon as you start to pull the stabilizer mud out, it is going to start to wash into the annulus. As soon as you stop circulation, it will start coming into the annulus. What is being discussed is pumping in a high solids bentonite. (TH)
  - c) The problem is that the upper drillhole is caving in. <sup>TM</sup>
  - d) According to code, you need to keep the upper enlarged drillhole open and then grout from the bottom up. (MN)
  - e) As long as you keep the upper enlarged drillhole open to the bottom of where you had originally drilled, there is nothing in code that prevents you from advancing casing below that in sand and gravel. (TM)
  - f) The problem may have been that there were too many prior issues with the upper enlarged drillhole caving in. (MN)
  - g) We can simplify this by allowing mud and cuttings to be used or sand and bentonite. Only allow it with steel casing in unconsolidated formations. (TH)
  - h) But is your upper enlarged drillhole staying open? (TM)
  - i) Not always. (TH)
  - j) The problem here is not with advancing casing, it is with the loss of the upper hole. Its caving in. (TM)
  - k) That can't be stopped. It is the nature of the material we are drilling in. (TH)
  - l) There may be some provisions that can be made here. We would not want to move to allow mud and cuttings for the entire hole. We could make a revision to *"When an upper enlarged drillhole is constructed for any reason, it shall be completed in accordance with all of the following requirements:*
    - i. *(a) Minimum depth. The minimum depth of an upper enlarged drillhole shall be one of the following:*
      - 1. *To the final depth that the well casing is set.*
      - 2. *To the bottom of any clay formation, or 20 feet, whichever is less when the casing is driven or mechanically advanced as specified in sub. (6) (b) 3.* (MN)
  - m) I'm not sure what the revision might be at this point. The mud weight could be no less than 11 lbs./gal. (MN)
  - n) Most of our wells are between 50 to 100 feet. The upper enlarged drillhole is typically 15 to 20 feet above the final depth of the well.
  - o) If you have a 100' upper enlarged drillhole, and then you are going to drive your casing beyond that, how do you know that your upper enlarged drillhole with 11 lbs./gal mud hasn't been bridged somewhere on the way down?
  - p) We're losing track of what the actual situation is. The situation is that he wants to be allowed to finish the job if it caves in and he wants to drive the pipe below to get to the better formation and because it is easier to develop. You don't have drilling mud and bentonite and the need to put chemicals down to develop the well. The ask is for a little bit of mud and cuttings to serve as a seal which is something that was done for years and is still safe. <sup>TM</sup>
  - q) But how far up do you allow it to cave? The minimum casing depth is 25'. So maybe as long as the top 25 feet are grouted. Not saying that this is how it will go. This may not be included in the scope, but we can make certain clarifications. We may be able to do something to help in that situation. If it is done for this specific situation, then it can be done by others in other situations. (MN)
  - r) How many other people drill that way? (TH)

- s) We drill sand and gravel wells too and we set screens. I can see drilling the upper enlarged drill hole with mud down to a certain depth to get past the boulders and then resume drilling and driving. (TM)
- t) If we allow exceptions, we are stepping back from earlier revisions. This will require some internal discussion. I appreciate why this is difficult for your situation, but the change will need to be applied to the entire state. There may be something in the Minnesota code that addresses this type of situation. This may be a major change that is outside of the current scope statement. This may not be included in this particular code revision, but there may be adjustments that can be made to the language that would help. (MN)
- u) We didn't to have a code change to allow calling in regarding chips used in voids as long as it was noted on the report. You could do the same thing here on a case-by-case basis. (TM)
- v) It seems like you need to address the top 30 feet of drillhole. That is where the contamination would affect the well. (SB)
- w) There is also concern about attaching tremie to the casing while setting the casing. NR 812.20(2) states that the tremie can not be permanently attached to the casing during setting. What does "permanently" attached mean? (TH)
- x) We should also look into the use of under reamer bits to advance casing in cavernous areas. This would be to address the potential for micro annulus. This is another situation that can be addressed on a case-by-case basis.

#### **14. Closing**

- a) There may not be another meeting before the environment impact analysis is done.
- b) The analysis will have a draft revision and there will be a public meeting scheduled. Information will be shared with the Committee as it becomes available. Changes can be made following the impact analysis and review of the drafts by the Advisory Committee.
- c) Any comments made regarding the impact analysis have to be directed toward economic impact. One request would be to have an opportunity to review the draft earlier rather than later. The sooner the draft is available for review before the hearing the better in order to provide opportunity for input by the Committee.
- d) We should have on more meeting after the draft is available to provide input before the hearing.
- e) Ultimately what we want is for everyone to have an opportunity to provide input so when it goes to the hearing, there will be overall support by the committee for the revision and then allow additional input from the public. (JB)
- f) Something will be scheduled before the environmental impact analysis. It will likely be close to when the draft revision needs to be ready for environmental impact analysis. There will be a second public hearing before the final rule is set for approval. There are still a few more steps and there will be additional opportunities to provide input.