

Understanding your Property Transfer Well Inspection Results

A fact sheet for buyers and sellers

If you have a private well and pressure system inspected as part of a property transfer, the inspection results provide important information about the well's construction and any features that do not comply with NR 812, Wisconsin Administrative Code, the state's well and pump code.



Background

If a well and pressure system inspection occurs as part of a real estate transaction, the inspection must be done by a licensed water well driller or licensed pump installer, who must complete DNR Inspection Form #3300-221 to report their results. The inspector will provide a completed Inspection Form and water sample test results for each well to the person who requested the inspection. The form will identify whether or not the well and pressure system comply with NR 812 and whether more research is needed. The inspector may also provide a well construction report and other information along with the required form.

There is no state requirement to bring a well and pressure system into compliance to sell a property.

Any decision to take corrective action or bring the well into compliance is up to the buyer and seller.

This publication gives detailed information for each item on the Inspection Form. For questions about the results or advice on what action to take, ask your inspector or consult with another licensed well professional who has experience working on existing water systems or filling and sealing wells. For a general summary of the inspection requirements, see the DNR publication *Property Transfer Well Inspections*, Pub. #DG-091.

Identified Noncomplying Features

In this section of the Inspection Form, the inspector will check the box next to any of the 25 listed features of the well or pressure system if the inspector identifies that the feature does not comply with the state's well and pump code. Below is a description of each item, explaining what it means if the box is checked, why the noncompliance is a concern, and how to correct it. Some noncomplying features can be easily corrected, others cannot. It is the well owner's responsibility to prove the age of the well for age-related requirements.

1. Unused Well. There is a well on the property that is unused, not operational, or improperly filled and sealed. Wells no longer in use are often in disrepair and may allow contamination from the ground surface to enter the aquifer and harm the quality of the drinking water from the well or in the area. If an aquifer or a neighbor's well becomes contaminated due to an unused well that has not been properly filled and sealed, the well owner could be held responsible. A well owner is required to have a licensed well driller or licensed pump installer fill and seal a well that has been removed from service for more than 90 days, not including seasonal-use wells. It may be possible to bring an unused well back into service if it meets well construction requirements, has an operational pump installed, and produces water free from contamination. If the well is within an area where municipal water is provided, continued use of the well may be subject to local ordinance. [ss. NR 812.26(3) and NR 810.16, Wis. Adm. Code]

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2. □ Stovepipe or Thin-Walled Well Casing. This means the well was constructed with stovepipe casing or other thin-walled pipe that was used prior to the 1950s when there was a shortage of steel. Stovepipe casing corrodes easily, providing the drinking water with little or no protection from bacterial or viral contamination. A well with stovepipe or thin-walled well casing does not comply with the casing thickness requirements and cannot be corrected without replacing the well. [s. NR 812.42(1)(b)2., Wis. Adm. Code]

3. □ Dug Well. This means the dug well does not have a DNR approval or does not meet the code requirements to remain in service. Dug wells are typically constructed with mortared field stone or concrete, using primitive methods that require a contractor to work below the ground surface. Use of dug wells is not recommended by DNR because there is usually no well casing pipe and no adequate seal or cover, so bacteria, insects, rodents and snakes can easily enter the well water. Dug wells pose a serious health threat to both the homeowner and surrounding wells, and can be safety hazards because children or animals can fall into them. [s. NR 812.42(5), Wis. Adm. Code]

4. □ Buried Suction Line. This means the buried suction line - the horizontal pipe that brings water from the well into the home – is noncomplying or unprotected. If a buried suction line develops a hole, bacteria and viruses can be drawn into the water and contaminate the drinking water. It may be possible to upgrade the system by removing the buried suction line and replacing it with a submersible pump and a pressurized discharge line, or if the well has an offset pump, to enclose the buried suction line within a pressurized line and install a seal-cross fitting [ss. NR 812.32(2) and NR 812.42(6)(a)2., Wis. Adm. Code].

5. □ Alcove (Subsurface Pumproom) or Pit. This means the alcove or pit is noncomplying. Before the 1950's, wells often terminated in concrete, below-ground structures located outside of the house called pits, or terminated in pits adjoining basements which are known as alcoves or subsurface pump rooms. Alcoves and pits are considered less sanitary than today's methods for connecting the well pump to the water system. Alcoves and pits can be subject to flooding, allowing water to pool around and overtop the well casing. If the structural integrity of the alcove or pit is compromised, the well and aquifer can become contaminated. Regulations for alcoves and pits became more restrictive on April 10, 1953; older alcoves and pits constructed before April 10, 1953 are subject to different requirements than alcoves and pits constructed on or after that date. Based on the age of the well, the inspector can evaluate whether it's possible to upgrade the alcove or pit to comply with code by extending the casing above the ground surface and filling in the alcove or pit. This may require opening the well to measure the well casing pipe depth installed below the ground surface to determine compliance. This step involves additional cost and is not included or required during a property transfer well inspection. [ss. NR 812.36(2) and NR 812.42(2), Wis. Adm. Code.]

6. □ Non-Walkout Basement or Below-Grade Crawl Space Well. A well located in a non-walkout basement, below-grade crawl space or terminating inside a building is noncomplying if the well or building was constructed on or after April 10, 1953, or if it does not meet the code requirements for older wells. This noncompliance generally cannot be corrected. A well located inside a building is a sanitary hazard and is subject to flooding, allowing water to pool and overtop the well casing. Sewer backups may cause flooding, which can overtop the well with sewage and contaminate the well and aquifer. Wells inside buildings, basements or crawl-spaces also may not have the minimum required casing depth or may have open space around the pipe causing contamination. [ss. NR 812.08(2)(c) and NR 812.42(9)(a), Wis. Adm. Code]

7. □ Poor Well Casing Pipe Condition. This means the well casing pipe visible above the ground or floor appears to be corroded or cracked, and well water is not provided with adequate protection from bacterial or viral contamination. To verify the condition of the entire well casing pipe, the well cap must be removed so the inspector can look into the well or run a camera and/or measuring device down the well. These steps involve additional cost and are not included or required during a property transfer well inspection. If the below-ground well casing pipe is determined to be sound and meets the required well casing depth - 25 feet for a sand and gravel well; 25 feet for a sandstone well installed before February 1, 1991; 30 feet for a sandstone well installed on or after February 1, 1991; 40 feet for other bedrock formation wells; and 60 feet for a limestone or dolomite well installed on or after February 1, 1991 with bedrock less than 10 feet from the ground surface) – then the above-ground well casing that is in poor condition may be replaced. [ss. NR 812.17 and NR 812.42(12), Wis. Adm. Code]

8. □ Contamination Source Less Than Minimum Separation Distance From Well. This means the well does not meet one or more of the required separation distances from potential pollution sources. Well regulations require separation distances so that if there is a spill, leak or failure of the source, the well does not become contaminated or become a channel for contamination to get into the groundwater aquifer. Well locations must comply with minimum separation distances in effect at the time of well construction, except that wells constructed prior to April 10, 1953 must meet the separation distances that went into effect on April 10, 1953. Wells must also meet separation distances for any contamination source that was installed on a later date. Correcting this noncompliance would require moving or removing either the well or contamination source. [ss. NR 812.08 and 812.42(1)(a), Wis. Adm. Code]

9. □ Well in a Floodway or Flood Fringe. A floodplain is the area along a river where flooding occurs. The floodway is the part of the floodplain where the water is moving, and the flood fringe is the part of the floodplain inundated by non-moving water. A new well installed on or after February 1, 1991 in a floodway is noncomplying and cannot be corrected. A well located in a flood fringe, or installed in the floodway before February 1, 1991, is noncomplying if the top of the well casing pipe does not terminate at least two feet above the regional flood elevation. To correct noncomplying casing height the above-ground well casing pipe may be extended if the below-ground well casing depth meets NR 812 requirements. Casing depth can be determined by reviewing the well construction report for the well, or if there is no confirmable well construction report available, by removing the well cap to measure the casing depth. This step involves additional cost and is not included or required during a property transfer well inspection. If the below-ground well casing pipe meets the required depth – 25 feet for a sand and gravel well; 25 feet for a sandstone well installed before February 1, 1991; 30 feet for a sandstone well installed on or after February 1, 1991; 40 feet for other bedrock formation wells; and 60 feet for a limestone or dolomite well installed on or after February 1, 1991 with bedrock less than 10 feet from the ground surface) – then above-ground well casing pipe may be extended. [s. NR 812.08(3) and NR 812.42(7)(a), Wis. Adm. Code]

10. □ Well at Risk from Localized Flooding. The well is either located on a low spot, or in a place where water can collect or pond around the well. This places the well at risk from bacterial and viral contamination because water can drain into the ground immediately next to the well casing pipe or can overtop the well and enter through the well cap. This noncompliance can generally be corrected by redirecting the water to flow away from the well; or by adding fill material, if it doesn't reduce the well casing height to less than 12 inches above grade. [s. NR 812.08(1), Wis. Adm. Code]

11. □ Cross-Connection. This means the well piping has an interconnection with sewerage piping on the property, or with a community water supply. The well can become contaminated by the sewerage waste, and/or a contaminated well may contaminate a community's public water supply system through improper cross-connections. Cross-connections can and have caused disease outbreaks. Cross-connections can usually be corrected by changing the piping arrangement to remove improper water system connections; installing a smooth end faucet; or by eliminating the hose connection or installing a proper backflow prevention device on the sample faucet or sink faucet. [s. NR 812.27(9), Wis. Adm. Code]

12. □ Driven Point Well <25 feet Well Casing Pipe or Installed After January 31, 1991 With No Well Construction Report. This means that either the well construction report shows a well casing depth of less than 25-feet, or that there is no well construction report available for a well constructed on or after February 1, 1991. The minimum well casing pipe depth without the screen for a driven point well is 25 feet below the ground surface or to a depth 10 feet below the static water level in the well, whichever is greater. A well contractor or individual who installs a driven point well must submit a well construction report to DNR. A shallower well or lack of a well construction report suggests that the well was constructed by someone without an understanding of the well code, and calls into question the well construction features and materials. A driven point well less than 25-feet deep cannot be corrected without replacement. In absence of a well construction report, a licensed well driller or licensed pump installer may be able to determine compliance by opening the well to measure the well casing pipe depth and verify the materials used. This step involves additional cost and is not included or required during a property transfer well inspection. [s. NR 812.22(7) and NR 812.23, Wis. Adm. Code]

13. □ Nonpressure Conduit. A nonpressure conduit, which is the pipe that encloses the suction line between the well and the pump in the basement, may be noncomplying due to poor welding, lack of watertight seal, conduit diameter (4-inch minimum required), height above ground (6-inch minimum required), or age of installation. Nonpressure conduits are a sanitary hazard and increase the likelihood of bacteria, viruses, insects or vermin entering the well and drinking water. Before February 1, 1991 nonpressure conduits were allowed to enclose the suction or discharge piping between a well and an offset pump, if the water system served 3 or fewer homes. Nonpressure conduits have never been allowed on any water system serving more than three homes or on a water supply that serves the public (e.g. school, restaurant, tavern), and have not been allowed on any new water system since February 1, 1991. Correcting a noncomplying nonpressure conduit generally requires that it be removed and replaced with pressurized piping. [s. NR 812.42(6), Wis. Adm. Code]

14. □ Hand Pump. The hand pump has a noncomplying feature, which may be an upturned spout where water can collect, unsealed openings, a poor connection to the top of the well, or a platform that allows water to accumulate around the base of the well. Hand pumps must be designed and installed in a way that doesn't allow contaminated water to enter the well and piping. Downturned spouts and sealed openings help to protect the well water from contamination. Noncomplying features can often be corrected by using different well components and proper seals. [s. NR 812.32(7), Wis. Adm. Code]

15. □ Offset Pump or Piping Height Above Basement Floor. An offset pump or offset pump piping in the basement which is too close to the floor can allow the well and drinking water to become contaminated if flooding occurs. The required height for pump installation before February 1, 1991 is 6 inches above the floor. For pump installation on or after

February 1, 1991, the required height is 12 inches above the floor. This noncompliance can usually be corrected by elevating the pump or piping. [ss. NR 812.32(2) and NR 812.42(6), Wis. Adm. Code]

16. □ Yard Hydrant. A yard hydrant may be noncomplying if it is installed in or on the well, was not approved by the department of safety and professional services or was installed upstream of the pressure tank after October 1, 2014 without required backflow preventers and/or hose connection vacuum breakers. Yard hydrants were never allowed to be installed in or on wells, so correcting this situation requires removing the yard hydrant. Yard hydrants can result in water contamination because the drain feature that protects some of them from freezing can allow shallow groundwater to be sucked into the water line. Also, if a hose is connected to the hydrant, it can allow water from a tank to be back-siphoned into the well. If the yard hydrant is installed upstream of the pressure tank it can be corrected with proper backflow preventers and hose connection vacuum breakers. If the yard hydrant is installed downstream of the pressure tank, it is regulated by the state plumbing code which has similar requirements. [s. NR 812.35, Wis. Adm. Code]

17. □ Materials for Pump and Supply Piping. This means that visible noncomplying pump discharge or water supply piping is installed. Noncomplying plumbing and pipe material could consist of nonapproved poly pipe; corrugated pipe; radiator, garden or braided hose; or drain waste and vent material, and may have been installed by an unlicensed individual. Specific standards apply for the kinds of materials that can be used to supply water, and noncomplying materials may allow contaminants to leach into the drinking water supply. This noncompliance can usually be corrected by replacement with approved materials. [s. NR 812.28, Wis. Adm. Code]

18. □ Flowing Well Installation. The flowing well does not meet the specific code requirements designed to protect drinking water and the aquifer, which include specifications for the underground connection between the well and water system and for overflow piping. Correction requires changing these components of the system. [s. NR 812.32(9), Wis. Adm. Code]

19. □ Check Valve Location. This means a check valve is installed downstream of the buried portion of the water supply line from the well. A check valve in that location can cause the system to behave like an unprotected buried suction line and draw contaminants into the piping, causing well and drinking water contamination. Correction requires removing the check valve. [s. NR 812.32(4), Wis. Adm. Code]

20. □ Well Cap or Seal. The well cap or seal may be noncomplying because it is the incorrect type for the age or location of the well; or because it is broken, has openings, is corroded or does not fit the well properly. A properly-fitting, vermin-proof cap or seal will keep out earwigs, spiders, mice and insects. Wells located outside a building must be topped with a vermin-proof cap or a one-piece well seal. Prior to February 1, 1991, overlapping well caps were allowed to be installed on wells located outside a building. Wells located below grade, such as in a pit or alcove, must be topped with a one-piece well seal. Wells located in an above-grade structure must be topped with a one-piece or two-piece well seal. Replacing the well cap can generally correct the noncompliance. [ss. NR 812.30 and NR 812.42(8)(a), Wis. Adm. Code]

21. □ Casing Height. This means the well casing pipe does not extend far enough above the ground or above the floor of a basement, crawl space, pit or alcove to meet the minimum casing height. Proper casing height makes it less likely that the well will be overtopped during a flooding situation. The well casing height is noncomplying if it is:

- Less than 8 inches above the outside ground grade for a well installed before February 1, 1991.
- Less than 12 inches above the outside ground grade for a well installed on or after February 1, 1991.
- Less than 6 inches above the non-walkout basement or crawlspace floor for a well installed on or before April 10, 1953. *Note: wells were prohibited in a non-walkout basement or below-grade crawlspace after April 10, 1953.*
- Less than 6 inches above a walkout basement, pit or alcove floor for a well installed before February 1, 1991.
- Less than 12 inches above a walkout basement, pit or alcove floor for a well installed on or after February 1, 1991.

See item #9 for required casing height for wells located in the floodplain. To correct noncomplying casing height, the above-ground well casing pipe may be extended if the below-ground well casing depth meets NR 812 requirements. Casing depth can be determined by reviewing the well construction report for the well, or if there is no confirmable well construction report available, by removing the well cap to measure the casing depth. This step involves additional cost and is not included or required during a property transfer well inspection. If the below-ground well casing pipe meets the required depth – 25 feet for a sand and gravel well; 25 feet for a sandstone well installed before February 1, 1991; 30 feet for a sandstone well installed on or after February 1, 1991; 40 feet for other bedrock formation wells; and 60 feet for a limestone or dolomite well installed on or after February 1, 1991 with bedrock less than 10 feet from the ground surface) – then above-ground well casing pipe may be extended. [ss. NR 812.29 and NR 812.42(7), Wis. Adm. Code]

22. □ Electrical Wires Not Properly Enclosed in Conduit. The electrical wires connecting the pump in the well to the electrical box in the house are not properly enclosed at the wellhead. Electrical wires must be enclosed in Rigid PVC, Intermediate Metal conduit, or galvanized Rigid Metal Conduit. If the sleeve is absent; doesn't fit tightly into the well cap;

or doesn't extend into the ground at least two feet as required by code, mice and insects can enter the well and introduce bacteria and viruses. This can generally be corrected by replacing the conduit. [s. NR 812.30(5), Wis. Adm. Code]

23. □ Sample Faucet is Missing or Noncomplying. The system either lacks a sample faucet on the tee of the pressure tank or upstream of the pressure tank, or the sample faucet does not meet the code requirements for diameter, material, height above the floor and being plain end (without threads). A complying sample faucet is required for all private wells and noncommunity water systems. Sample faucets allow collection of a water sample directly from the well to find out the groundwater quality, and determine if any water quality problem is coming from the well or from other piping in the system. Sample faucets with threads can create a cross connection and can harbor bacteria that may be introduced into the well or a water sample. Filing or cutting off threads on an existing threaded sample faucet is not allowed, and petcock valves are not acceptable as sample faucets. Installing or replacing a sample faucet is usually an easy correction. [ss. NR 812.34 and NR 812.42(11)]

24. □ Casing less than 6" in diameter for a well terminating in limestone, dolomite, shale, quartz or granite. This means the well was constructed on or after April 10, 1953, and the well casing is less than 6-inches in diameter and the well terminates in the listed geology based on the well construction report. Since April 10, 1953, the minimum well casing diameter is 6-inches for existing bedrock wells, not including sandstone. Six-inch diameter well casing allows for a well to be reconstructed with liner pipe and grout if it becomes contaminated. Noncomplying casing diameter cannot be corrected. [s. NR 812.14(1), Wis. Adm. Code]

25. □ Extreme Health or Safety Hazard. This means there is a significant health or safety concern related to the water system, clearly visible to the inspector and not noted elsewhere on the inspection form. Examples can include electrical concerns such as bare insulation, no wire nuts, no cover on pressure switch, lack of doors on the electrical box; or safety and sanitary concerns such as storage of chemicals too close to the well, or an obviously-failing septic system.

Comments

In this section of the Inspection Form, the inspector will provide additional comments on issues related to the well that are important for a well owner to know, but do not indicate noncompliance with the state's well and pump code.

□ Pre-1991 Driven Point Well. The driven point well on the property was installed before February 1, 1991. Older driven point wells were often installed by unlicensed persons, to an inadequate depth and with unapproved materials. To comply with code, the well must have at least 25 feet of casing pipe below ground, not including the well screen. [s. NR 812.42(1)(b)4., Wis. Adm. Code]

□ Well Construction Report Not on File or Unavailable. Well construction reports have been required to be filed with the DNR since 1936. The well construction report for this well was either not filed by the well driller or could not be located because it had incorrect or incomplete well location information. Well construction reports are important because they include well construction details and geologic information for the well [s. NR 812.22(7), Wis. Adm. Code].

□ Well Located in Special Well Casing Depth Area. This means the well is located in an area where extra well casing depth is required to protect the well from contamination either because of local geologic conditions, local groundwater contamination or both. Extra well casing pipe and other special construction requirements prevent contaminated water closer to the ground surface from being drawn into the well. If the well needs to be deepened in the future, the driller must check that the existing well casing extends deep enough below the ground surface to meet the special well casing depth requirements in place at the time the well was installed [s. NR 812.12(3), Wis. Adm. Code].

□ Pre-1979 Two-Wire Submersible Pump. Prior to 1979, some two-wire submersible pumps and pump capacitors contained polychlorinated biphenyls, or PCBs. The pump in the inspected well may contain PCBs, which could leak from the pump and contaminate the drinking water. Further investigation is needed to evaluate this, which will likely involve additional cost. To avoid PCB exposure, replace the pump.

□ Evidence of Some Corrosion on Well Casing Pipe. The visible portion of the well casing pipe shows evidence of some corrosion or pitting. Though not currently serious, this concern should be evaluated regularly. If the corrosion becomes bad enough to significantly reduce the wall thickness of the casing pipe, corrective work may be necessary.

□ Inaccessible or Difficult Location for Future Well Work. The well is located where it would be difficult or impossible for a drilling rig to access the well in the future. If the well is under a building or building extension or inside a

building, it will be difficult to get a drilling rig over the well if the well needs to be deepened or lined. Other features on the property may limit access by a drilling rig, such as overhead power lines, fences, landscaping, swimming pools, etc.

Inaccessible or Difficult Location for Future Pump Work. The well is located where it would be difficult or impossible to pull out the pump to repair it or install a new pump in the future. Examples include a well located under a building or building extension or inside a building.

Non-Vermin-Proof Well Cap or Well Seal. When any work is done on this well and pressure system that requires removal of the cap, the existing overlapping well cap must be replaced with a new vermin-proof well cap or well seal. Replace the cap during well or pump work to prevent future bacteria problems caused by insects or other vermin entering the well. If a fake stone "wishing well" or other decorative cover is installed over the well, consider replacing the cap right away because these decorative well covers can provide housing for mice, which may enter the well under the rim of the overlapping cap. [s. NR 812.42(8), Wis. Adm. Code]

Unable to confirm whether well terminates in limestone, dolomite, shale, quartz or granite. The inspector observes that the well's casing is less than 6-inches in diameter, but is unable to locate the well construction report or other information to confirm what type of rock the well casing terminates in. [see #24 above]

Compliance Determination

In this section of the Inspection Form, the inspector will indicate their conclusion about the well and pressure system's compliance with the state's well and pump code by checking one of three choices:

- Complies** with NR 812, Wis. Adm. Code
- Does not Comply** with NR 812, Wis. Adm. Code
- Complies** with NR 812, Wis. Adm. Code. A more comprehensive search or additional research is needed...

If the third choice is checked, this means there are indications that potential violations exist that are not fully identifiable as part of the visual inspection. The inspector has discovered clues during the inspection that potential noncompliance exists, but additional investigation is needed to confirm it. Additional work or research may include excavation, certified surveying, pressure testing a non-pressurized conduit, a map review or a records search. This additional investigation is not included or required during a property transfer well inspection. Potential violations that may be checked include:

an unused well - Based on the presence of piping in the basement or in outbuildings and the lack of a well filling and sealing report in DNR records, the inspector indicates the possibility that an unused well exists on the property. The unused well is either not properly filled and sealed, or it may have been filled and sealed but no report was submitted to DNR. An additional records search and/or a magnetic locator survey of the property can help to find the well so that it can be properly filled and sealed. A licensed well driller or licensed pump installer may be able to verify that the well was properly filled and sealed and complete a filling and sealing report for the well. [see #1 above]

floodway/floodplain - Based on the location of the well and its proximity to a lake, river or stream, the inspector indicates the possibility that the well is located in a floodway or floodplain. Wells have not been allowed to be constructed in a floodway since 1991, and must meet specific requirements if located in a floodplain. Additional investigation may include map review, property records investigation, and/or a certified survey of the property elevations. [see # 9 above]

contamination source - Based on something seen during the inspection, review of DNR or well owner records or alternate sources, the inspector suspects the well is located too close to a contamination source. By code, wells must be located a minimum separation distance from listed possible contamination sources. Many of these sources can be identified and measured during the inspection, but some contamination sources are not located on the same property as the well, may not be visible to the inspector or may not be identified on readily-accessible records. Additional investigation may include property records review, physical measurement on or to the neighboring property, or other research. [see #8 above]

This document is intended solely as guidance and does not contain any mandatory requirements except where requirements found in statute or administrative rule are referenced. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.