Verification of Abandoned Wells with No Filling and Sealing Report on File

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Since 1936, the State of Wisconsin has required that unused wells be properly sealed with approved materials and that the person who sealed the well submit a report to the state describing how the well was filled and sealed. (Information pertaining to well filling and sealing may be found on the following internet site: http://dnr.wi.gov/org/water/dwg/wellaban.htm.) However, there are many instances where a well was properly sealed but the required paperwork was not submitted, a well was improperly sealed, cut off and buried, or an old well was just assumed to be sealed and subsequent landowners never verified the condition of the well. An improperly sealed well and a sealed well without appropriate documentation are each in noncompliance with the existing well code. Wells that are not properly sealed could pose environmental and safety risks, potentially resulting in liability issues for property owners. Thus, it is important to document the condition of old wells and, if necessary, take steps to ensure the wells are properly filled and sealed.

The DNR recognizes that there are practical limitations associated with identifying, locating and verifying the condition of lost and improperly abandoned wells. The following guidance is based on experience of what has been found to be feasible in various situations. The DNR believes the following suggested procedures will provide a reasonable balance between reducing risks associated with undocumented wells and the practical limitations of complete re-drilling and resealing.

Upon completion of the verification efforts, a Well Filling and Sealing Report (Form #3300-005) must be completed and submitted along with a statement describing the verification process. (http://dnr.wi.gov/org/water/dwg/Forms/3300005.pdf) The report must be filed with the DNR and a copy of the report should also be provided to the property owner.

The following are some typical examples of undocumented wells along with the procedures that must be followed to verify whether the well is properly filled and sealed.

A. A well that is located outside of a building, with an above-grade well casing that has been filled with concrete, bentonite or other approved material.

1. Verify the type of filling material. Look into the top of the casing to verify that approved materials were used to fill the well. If the well was filled with non-approved materials, refer to the procedures described below in D. and E. as appropriate.

2. Verify the depth of filling. Dig down around the casing to the depth of the water service lateral, or if it was an over-the-top discharge, then to at least 5 feet. To help determine if the casing was properly filled, use a hammer to tap on the outside of the casing at different depths. If the entire length of excavated casing sounds as though it has been filled, it is acceptable to assume the entire well was properly filled. If the casing sounds hollow, it could indicate that the well was not completely filled, in which case it will be necessary to drill out the top plug and reseal the entire well. If heavy equipment is used for the pit excavation and it is practicable to dig deeper than 5 feet below the top of the casing, this must be done to a depth of up to 8 feet and, if feasible, the casing must be cut open to verify the presence of appropriate filling material at that depth.

   If the well had a 4" or larger non-pressure conduit extending from the well into a basement and the conduit is still accessible, look into the end of the conduit to see if any fill material is slumped

from the well casing into the conduit. If approved fill material is visible, it is acceptable to assume the entire well was properly filled.

B. A drilled well that is located in a below-grade basement, alcove or pit with limited access for excavation and the well casing is visibly filled at surface with approved materials.
Use a hand drill with a masonry bit on a shaft extender to drill a small diameter hole (<1 inch) to a depth of at least 18" into the filling material. Resistance to drilling will indicate if the fill material is consistent. If it appears to be filled at 18" depth with approved materials, it is acceptable to assume the entire well was properly filled.

C. A well was located in a below-grade pit or alcove, and the pit or alcove has been backfilled so that the well is no longer visible.
The pit must be carefully excavated to inspect the top of the well and determine if it was properly sealed. First, verify that the filling material present at the top of the casing is an approved sealing material. Depending on the situation, follow the steps in either A. or B. above to verify the depth of filling. If heavy equipment is used for the pit excavation and it is practicable to dig deeper than 18" below the top of the casing, this must be done to a depth of up to 8 feet and, if feasible, the casing must be cut open to verify the presence of appropriate filling material at that depth.

D. A drilled well, visible at the land surface, is filled with non-approved materials such as loose sand, gravel, dirt or debris.
An attempt must be made to blow the material out of the well using high volume compressed air. This can be done during or after excavation. Efforts must be taken to re-open the well to a depth of at least 40 feet. If coarse, porous debris with voids cannot be removed, a thin slurry of neat cement shall be poured to refusal to fill voids to the greatest depth feasible.

E. A large diameter dug or bored well is filled with non-approved materials or debris such as rocks, wood and miscellaneous junk.
The well must be excavated to at least 5 feet - deeper if feasible. If there are porous voids in the material below 5 feet, a thin slurry of neat cement grout shall be poured to refusal to fill voids to the greatest depth feasible.

F. A small diameter driven point well filled at the surface.
Since driven point wells are typically shallow and may pose limited environmental hazard, professional judgment may be used and a less rigorous verification process may be appropriate. At a minimum, the nature of the filling material must be determined. If the driven point well was filled with unapproved material, the material must be removed to the extent feasible and the well must be sealed with approved materials. If the driven point well appears to have been filled with approved materials, reasonable efforts must also be taken to verify the depth of filling using the procedures described above.

G. A property that is known to have had a well present (e.g. a Well Construction Report could be located), or it can be reasonably assumed that a well was present (e.g., the associated house or other structure was built before a public water source was available) but the well is not visible and it is not apparent where the well was located.
A reasonable attempt to locate the well must be made by a licensed well driller or pump installer using the following procedures:

1. A common magnetic pipe detector, such as the type used by surveyors to find buried monuments and manholes must be used to search for buried well casing in areas on the property where the well is believed to have been located or was most likely to have been located. If a strong magnetic reading is found (vertical well casings generate a strong magnetic field to depths of 4

feet or more), the area around the suspected casing must be excavated and the filling material and depth of filling material must be evaluated as described in A. and B. above, as appropriate.

2. If there are buildings on the property, the basements or foundations must be carefully examined for remnant pipes or conduits entering the wall or floor, or for concrete patches in the walls or floor where a well, well pit, alcove, lateral or conduit may have previously existed. Old electrical control boxes and switches must also be examined to determine if they may have served the well and could give an indication of where the well was located. A metal pipe detector must be used to search around the exterior perimeter of the building and adjacent to these basement features for evidence of a buried well casing.
3. The property must be carefully inspected, looking for sunken areas, concrete decks, old power poles or other evidence of well pits or buried dug wells. If such a feature is located, a metal detector as described above must be used to determine if there is a well casing present.
4. The possibility that the house was supplied water through a shared well located on a neighboring property must also be considered and ruled-out.

If no well can be found despite a reasonable search following the methods described above, then the following statement shall be provided along with the filling and sealing report. You can either include the statement in a signed cover letter or in the comments section of the filling and sealing report (Form# 3300-005).

I hereby certify that I inspected the property and the well in question was not found. I made a reasonable attempt to locate the well by following the procedures set forth in the DNR guidance titled "Verification of Abandoned Wells with No Filling and Sealing Report on File" dated May 2011.

H. Verify presence or absence of a pump in the well.

In all cases where a well has been located, it is important to examine the well to determine if the pump has been left in place. If pump wiring and/or piping is still present in the well, that could be an indication that the pump and other equipment may also still be in place. The pump, piping and other equipment may interfere with the placement of filling and sealing materials, resulting in an improperly filled and sealed well. Also, some older pumps could contain PCBs, a known cancer-causing pollutant. If it is determined that the pump has been left in the well, an attempt must be made to determine whether the pump contained PCBs. If the pump was installed prior to 1979 and had a two-wire connection (without a control box), it likely contained PCBs. The DNR also has a list of pump manufacturers and models that are known to contain PCBs. The well driller or pump installer must contact the DNR to discuss what procedures must be followed in cases involving wells with pumps that likely contain PCBs. If the pump and/or piping are left in the well, this information must be indicated on the well filling and sealing report submitted to the DNR.