

DUAL AQUIFERS

A fact sheet for drillers and pump installers

Wells constructed in areas of dual aquifers need to be constructed in such a way that the water from the upper aquifer cannot be introduced to and potentially contaminate the lower aquifer. This is especially important in the Niagara Dolomite/Maquoketa Shale formation along the east side of Wisconsin, primarily due to areas of elevated contaminants in the upper (Dolomite) aquifer.

REGULATIONS

- **NR 812.13(9) and NR 812.14(9)**

Wisconsin Administrative Code prohibits wells that are constructed to be open to both an unconsolidated formation and a bedrock formation.

- **NR 812.14(10)**

Wisconsin Administrative Code requires that wells constructed to withdraw water from any of the aquifers beneath the Maquoketa Shale **and** the Niagara formations in the eastern part of the state shall be cased and **grouted** into the Maquoketa Shale formation (except in areas designated by the department as special well casing depth areas). Liners installed to case off either or both the Niagara or Maquoketa Shale formations must be grouted in place in accordance with s. NR 812.21.

LOCATION OF MAQUOKETA SHALE AND NIAGARA FORMATIONS

The **general** location of these formations can be found on the [Well Driller Viewer](#). However, this layer is not exact. Areas located outside this layer may still have these geologic formations. Likewise, areas inside this layer (especially near the layer boundary) may not have these geologic formations. The layer should be used for pre-construction reference only.

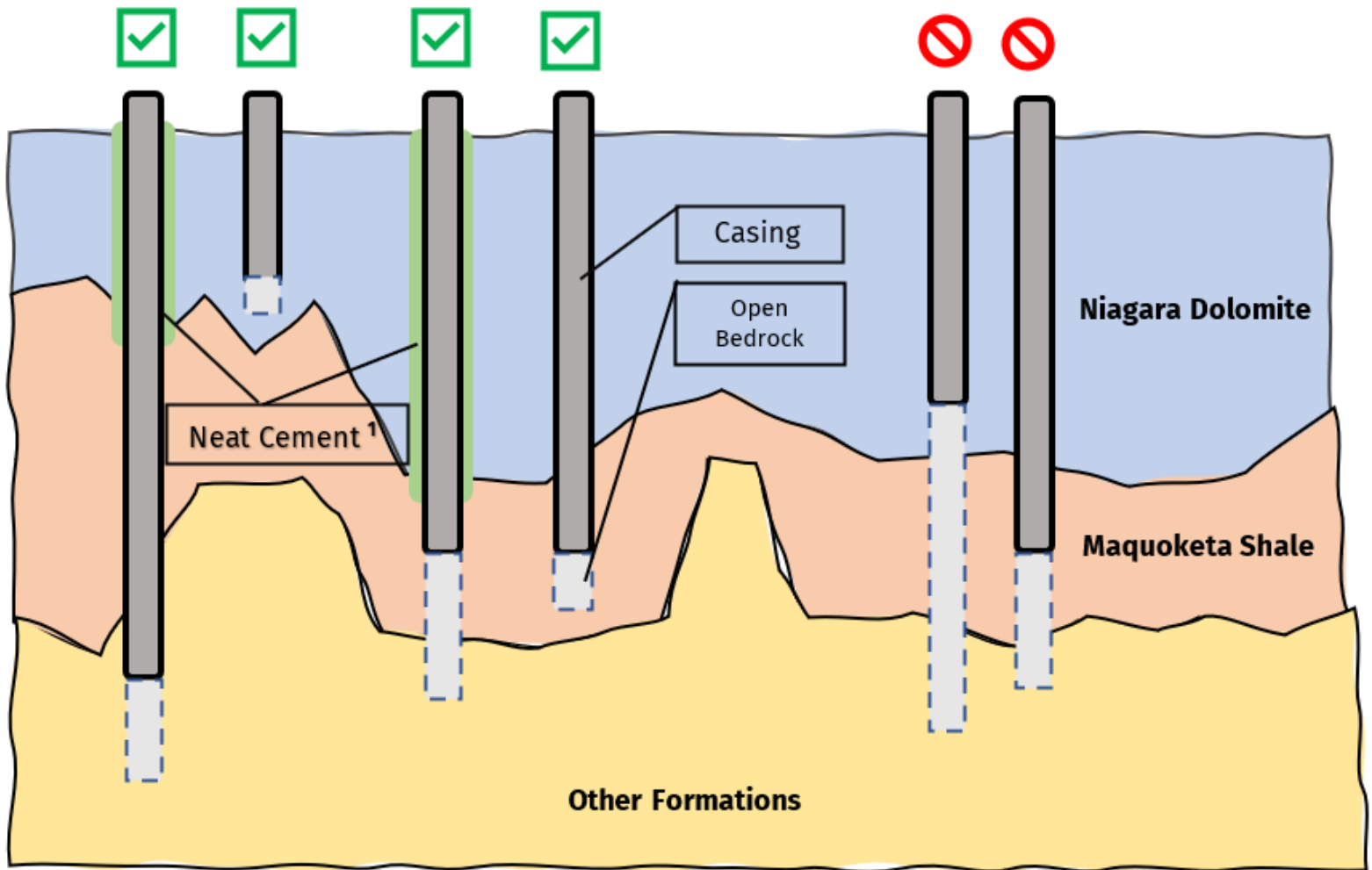
Casing and grouting requirements are based on geologic formations encountered **while constructing the well**. If a well is constructed in an area with this formation and the drillhole extends through limestone and Maquoketa Shale, the casing *must* extend at least into the Maquoketa shale, and *must* be grouted using neat cement (see diagram on the next page).

PLEASE NOTE: This fact sheet does not replace or supersede specific code language, which prohibits wells open to dual aquifers or specific requirements of wells constructed into and through the Niagara and Maquoketa Shale formations, which are found in ss. 812.13(9), 812.14(9) and 812.14(10) Wis. Adm. Code.

If you have any questions about dual aquifer wells or siting a well in or near the Niagara or Maquoketa Shale formations, please contact your regional Private Drinking Water Supply Specialist.

- Find a [list of Private Drinking Water Supply Specialists here](#).

CASING AND GROUTING REQUIREMENTS FOR WELLS CONSTRUCTED IN AREAS WITH MAQUOKETA SHALE AND NIAGARA DOLOMITE



¹The **casing and grout** shall extend into the Maquoketa shale if accessing formation(s) below the Niagara dolomite and Maquoketa shale.

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.

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