



COLORADO

Division of Water Resources

Department of Natural Resources

Board of Examiners of Water Well Construction
and Pump Installation Contractors

December 2, 2025

Policy 2025-3

CLARIFICATION OF ACCEPTABLE USES AND PLACEMENT OF BENTONITE GROUT IN HOLES/WELLS CONSTRUCTED UNDER RULE 14

Background

On May 29, 2025 the Board of Examiners of Water Well and Ground Heat Exchanger Contractors (Board” or BOE) adopted a revised set of Rules and Regulations for Water Well Construction, Pump Installation, Cistern Installation, and Monitoring and Observation Hole/Well Construction, 2 CCR 402-2 (Rules), that will be effective January 1, 2026. All references to Rule numbers in this policy will reflect the Rules effective January 1, 2026.

The adopted modifications to Rule 14, specifically Rule 14.3.5, include requirements for annular seal materials for use in monitoring and observation holes/wells, what intervals they must be used in, and what placement methods are appropriate for those materials to protect the groundwater resources and public health from the entry or migration of surface water or shallow groundwater vertically through the borehole. For bentonite grout, references to Rule 10.5.1, Table 2 and Rule 10.5.3 (specifically subrule 10.5.3.6), and thereby Rules 10.4.4.6 and 10.4.5.2, conflict with the less stringent construction standards intended to be afforded to monitoring and observation hole/well construction in Rule 14.

Additional errors were found in Rule 14.3.3 which references an exception in Rule 14.3.5.4 that does not exist, and labels in Figures 13.a and 13.b that do not match the requirements in Rule 14.3.5. A detailed discussion of the conflicts in the construction requirements for monitoring and observation holes/wells constructed with bentonite grout, and other errors this policy is intended to correct and clarify are included in the basis and purpose statement attached to this policy.

Objective

This policy provides clarification on the intervals, annulus, and placement methods for bentonite grout when used as an annular seal material in monitoring and observation holes/wells constructed in accordance with the standards of Rule 14 (those that do not penetrate through a confining layer and that will not be converted to a production well).



Policy

1. Bentonite grout use and placement in monitoring and observation holes/wells constructed to the standards of Rule 14.3 are exempt from the requirements of Rules 10.4.5.2.e and 10.5.3.6 and instead must comply with the less stringent use and placement requirements in Rule 14.3.5, with the following additional requirements:
 - a. Bentonite slurry grout is restricted to those intervals that will remain saturated.
 - b. Granular bentonite grout used in the intervals allowed by Rules 14.3.5.3 and 14.3.5.4 are not restricted to only saturated intervals.
2. No exception to the requirement to restrict the screened, open or filter packed interval to a single aquifer per Rule 14.3.3 exists in Rule 14.3.5.4.
3. Corrected figures presenting typical monitoring and observation hole/well designs as addressed in this policy are attached for reference.

Approval

This policy becomes effective January 1, 2026. This policy may only be modified or revoked in writing by the Board of Examiners of Water Well and Ground Heat Exchanger Contractors.

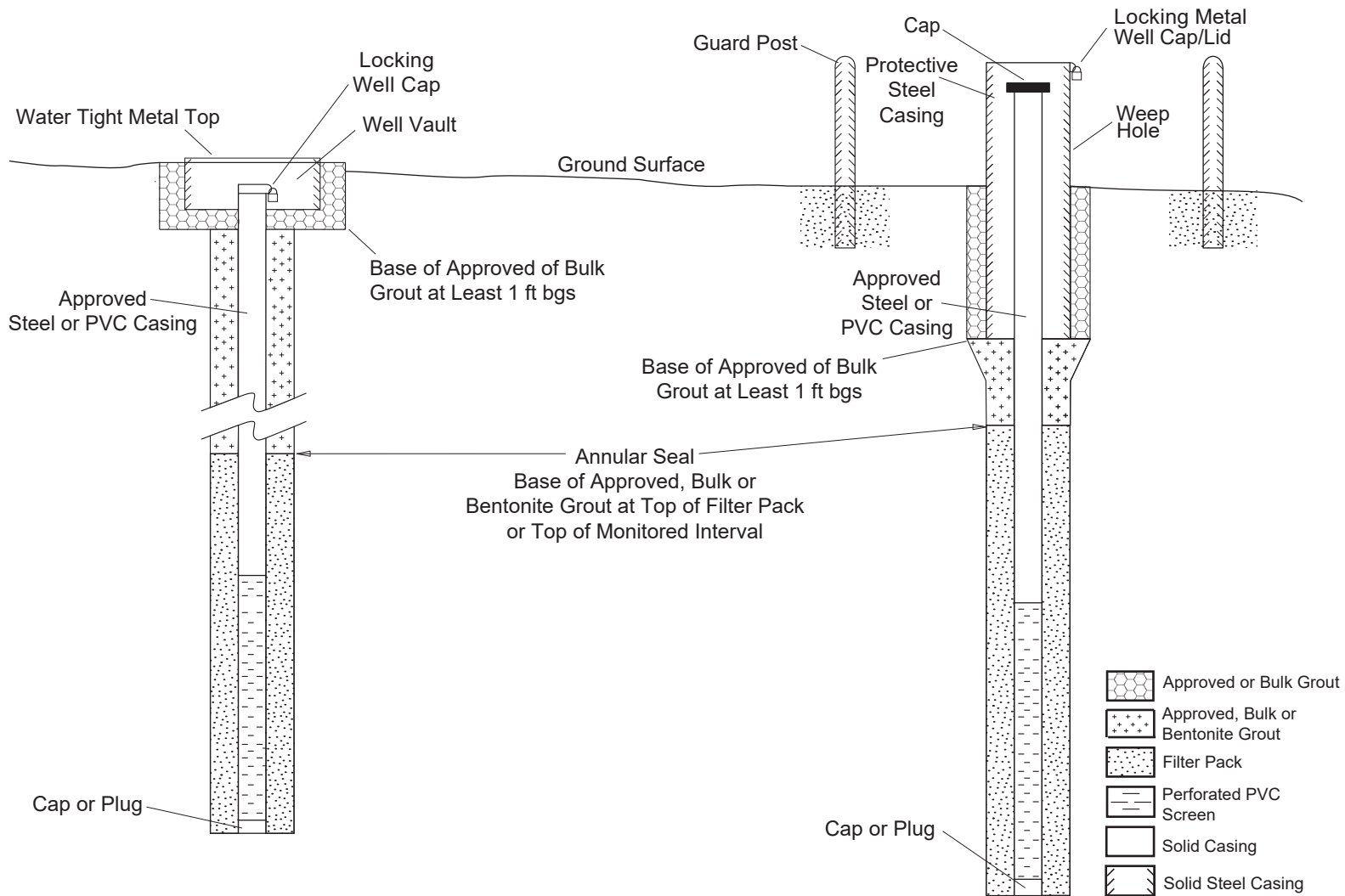


Approved _____

Christopher J. Sanchez, P.G., Chair
Board of Examiners of Water Well and
Ground Heat Exchanger Contractors

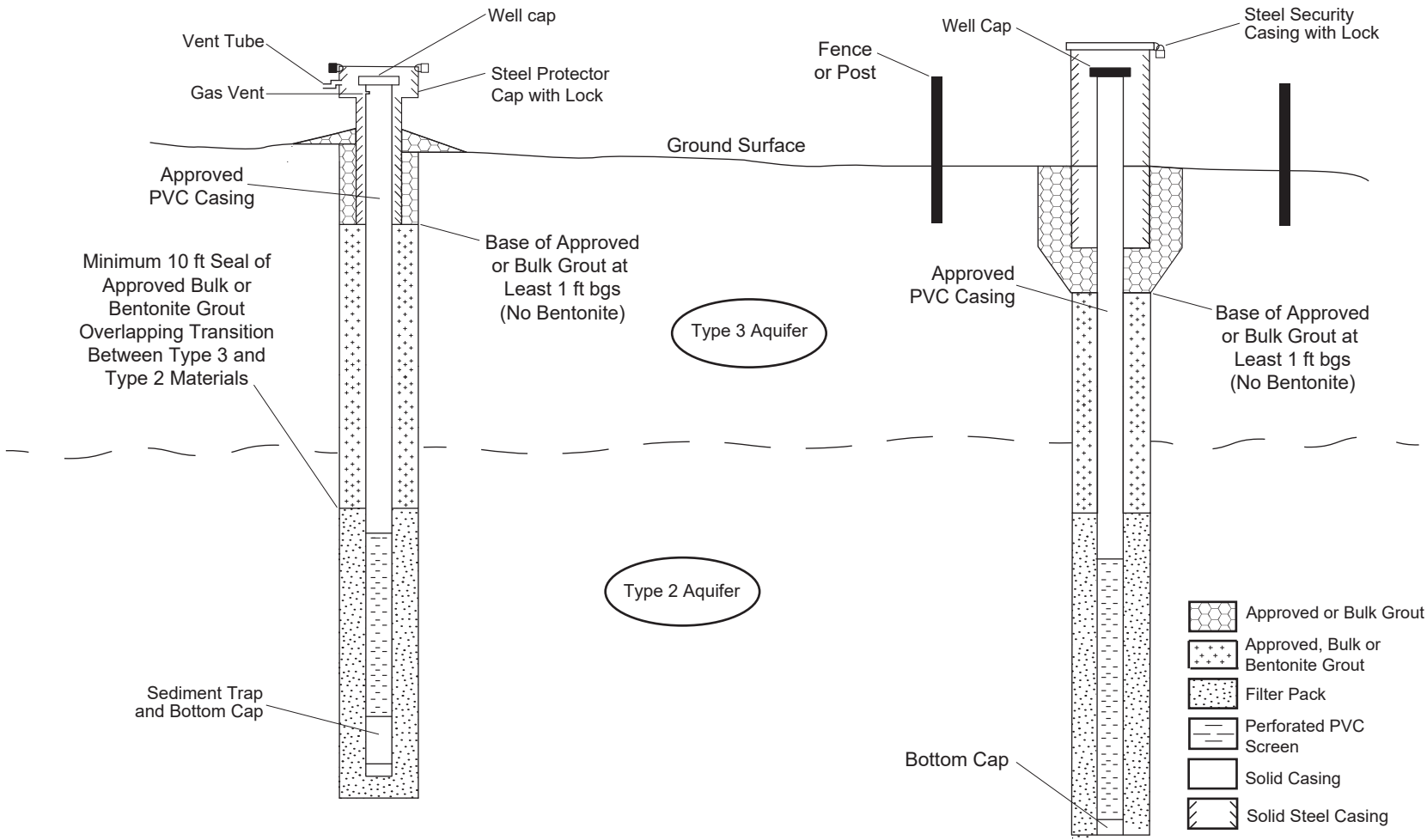
Attachments: Figures - Corrected Typical Monitoring and Observation Hole/Well Designs;
Basis and Purpose Statement

MONITORING AND OBSERVATION HOLES/WELLS



Modification of Figure 13a. Schematic diagrams of typical monitoring and observation hole/well designs.

MONITORING AND OBSERVATION HOLES/WELLS



Modification of Figure 13b. Schematic diagram of typical monitoring and observation hole/well designs.

Policy 2025-3 Basis and Purpose

The standards for annular seal materials used in monitoring and observation hole/well construction are located in Rule 14.3.5 which states:

14.3.5 Annular Seal - An approved grout, bulk grout or bentonite grout material meeting the requirements of Rule 10.5.1, Table 2. Grout must be uniformly mixed prior to placement in the hole/well. The grout mixture constituents' weight, volume, density and/or the percent by weight of each constituent used in the grout mixture must be reported on the well construction report.

14.3.5.1 Annular Space Requirements - The annulus in which the approved grout or bentonite grout is placed must not be less than one (1) inch (the borehole must not be less than two (2) inches larger than the outside diameter of the casing). The annulus for bulk grout must meet the requirements of Rule 10.4.4.5 if poured or Rules 10.4.4.1 and 10.4.4.2 if placed via positive displacement.

14.3.5.2 Placement of Grout - The placement of grout must meet the requirements of Rule 10.5.3 with the exception that granular bentonite may be placed without the use of a tremie.

14.3.5.3 Surface Seal - Annular seal materials must be placed beginning at the top of the filter pack, or the top of the interval being monitored/observed if no filter pack is used. The base of the seal must start no shallower than two feet (2) feet below the ground surface and must extend up to the ground surface. The seal must consist of an approved grout, bulk grout and/or bentonite grout meeting the requirements of Table 2. At a minimum, the upper one (1) foot of annular seal must consist of a cement-based grout such as an approved grout or bulk grout.

14.3.5.4 Deep Seal - Annular seal materials must be placed to completely fill any portions of the borehole and annular space outside of the casing necessary to isolate the monitored/observed interval to one aquifer or geologic unit.

Rules 14.3.5 and 14.3.5.3 reference Table 2 of Rule 10.5.1. Item B of the "Bentonite" section of Table 2 states:

B. Granular Bentonite: Except as allowed in Rule 10.4.5.2.e, solid granular bentonite (pellets, granules and chips) may only be used as grout material in saturated zones and must be placed directly into the appropriate interval.

As adopted, the reference to Table 2 contains limitations on the use of granular bentonite that are more restrictive than those uses intended to be allowed in Rule 14.3. The reference

to Table 2 was not intended to:

- prevent the use of granular bentonite in a monitoring and observation hole/well constructed to the standards of Rule 14,
- prevent the use of granular bentonite in portions of the borehole of a monitoring and observation hole/well that is not saturated, or
- require direct placement of the granular bentonite into the annular seal interval (see Rule 14.3.5.2).

Reference to placement methods in Rule 10.5.3 from Rule 14.3.5.3 create further problems for monitoring and observation hole/wells constructed with bentonite grout; specifically Rule 10.5.3.6 which states:

10.5.3.6 Bentonite grout may be used in required grout intervals only pursuant to Rule 10.4.5.2.e or a variance from the Board. Bentonite grout's use must be consistent with the requirements of Rule 10.5, Table 2 and 10.4.4.6. Bentonite must not be used to seal the casing of a well within thirty-nine (39) feet below ground surface. A fully-hydrated bentonite slurry must not be used as a grout where a difference in hydrostatic head exists across the grout interval or if the interval will not remain saturated.

Rule 10.5.3.6 is appropriately written for the water well construction standards (those intended to comply with Rule 10) but conflict with the less stringent construction standards intended to be afforded to monitoring and observation hole/well construction in Rule 14. The following sentences of Rule 10.5.3.6 will have unintended consequences on the standard of practice of many licensed contractors and authorized individuals who currently construct monitoring and observation holes/wells:

- *“Bentonite grout may be used in required grout intervals only pursuant to Rule 10.4.5.2.e or a variance from the Board.”*
 - Restrictions to intervals pursuant to Rule 10.4.5.2.e is not intended for monitoring and observation holes/wells that do not penetrate a confining layer.
- *“Bentonite grout's use must be consistent with the requirements of Rule 10.5, Table 2 and 10.4.4.6.”*
 - Conflict in Rule 10.5.1 Table 2 Item B, discussed above.
 - Reference to Rule 10.4.4.6 is inappropriate because it references only those intervals required by Rule 10.4.5.2.e while Rule 14.3.5.1 sets a less restrictive minimum annulus for bentonite grout used in monitoring and observation holes/wells,
 - Reference to Rule 10.4.4.6 is also inappropriate because Rule 14.3.5.2 allows granular bentonite to be poured from the surface.
 - Reference to 10.5.3.1 adequately addresses the size of the annulus for

bentonite slurry grout relative to the tremie pipe that are also referenced in Rule 10.4.4.6.

- *“Bentonite must not be used to seal the casing of a well within thirty-nine (39) feet below ground surface.”*
 - Rule 14.3.5.3 is intended to set the requirements for upper-most intervals where bentonite grout can and cannot be used.

However the last sentence of Rule 10.5.3.6, *“A fully-hydrated bentonite slurry must not be used as a grout where a difference in hydrostatic head exists across the grout interval or if the interval will not remain saturated”*, is protective of the groundwater resources and is beneficial to ensuring annular seal materials will continue to act as a seal to prevent groundwater flow through the borehole.

A reference was found in Rule 14.3.3 to an exception in Rule 14.3.5.4 which does not exist and is an error.

14.3.3 Monitoring or Observed Interval - Monitoring and observation holes or wells must restrict the screened, open or filter packed interval to a single aquifer except as allowed by Rule 14.3.5.4.

Errors were found in Figure 13.a and 13.b in the referenced minimum depth for approved or bulk grout as 2 feet bgs which should be 1 foot bgs (per Rule 14.3.5.3), but where annular seal material (approved grout, bulk grout or bentonite grout) must extend an additional minimum 1 foot or to the top of the interval being monitored, whichever is deeper. Errors were also found in the legend of Figure 13.a and 13.b which references only granular bentonite grout where bentonite grout, inclusive of both bentonite slurry and granular bentonite are referenced in Rule 14.3.5.