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I certify that the attached copies are true, full and correct copies of the PERMANENT Rule(s) adopted on 11/21/2014 by the
Water Resources Department 690
Agency and Division Administrative Rules Chapter Number
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To become effective Upon filing, Rulemaking Notice was published in the September 2014 Oregon Bulletin.

RULE CAPTION

Well construction rules focused on: Bentonite seals, deepenings, sparge wells, grout reporting and closed loops.
Not more than 15 words that reasonably identifies the subject matter of the agency's intended action.

RULEMAKING ACTION

Secure approval of new rule numbers with the Administrative Rules Unit prior to filing.

ADOPT:

AMEND:

690-200-0005, 690-210-0310, 690-210-0340, 690-215-0045, 690-240-0005, 690-240-0035, 690-240-0046

REPEAL:

RENUMBER:

AMEND AND RENUMBER:

Statutory Authority:

ORS 183; ORS 536; ORS 537 & 540

Other Authority:

Statutes Implemented:

ORS 183; ORS 536; ORS 537 & 540

RULE SUMMARY

The rule changes vary in scope and include:

- Changes the classification of a sparge well from a geotechnical hole to a monitoring well.
- Requires well constructors to calculate and report how much sealing material is required and how much is used when placing an annular seal.
- Clarifies the requirements when deepening an existing well and requires a copy of the original well report or the original well report number to be submitted with the deepening well report.
- Corrects a rule reference error in the Geotechnical Hole rules.
- Clarifies that the quality of water cannot interfere with the proper hydration of bentonite in closed loop installations.
- Allows unhydrated bentonite to be used to 200 feet through up to 50 feet of standing water to seal water supply wells.
- Requires unhydrated bentonite to be screened during placement through water, water quality to be tested and describes when it cannot be used.



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OREGON ADMINISTRATIVE RULES
 WATER RESOURCES DEPARTMENT
 CHAPTER 690 DIVISION 240
 MONITORING WELL, GEOTECHNICAL HOLE AND OTHER HOLE
 CONSTRUCTION STANDARDS

TABLE 240-1

CONSTRUCTIONS STANDARDS THAT APPLY

The Department regulates the construction of borings through which ground water may [be] become contaminated. The type of boring (and its purpose) will determine the construction standards that apply. The table below lists common types of holes and the standards that apply. This is not a complete list of borings and there are other types of borings regulated by other agencies. Contact the Water Resources Department if you have any questions.

The construction standards and the Oregon Administrative Rule that apply are as follows:

- | | |
|--|---------------------------------------|
| 1. Water Supply Wells | OAR 690-200 through 690-235 |
| 2. Monitoring Wells, Geotechnical Holes
and other Holes | OAR 690-240 through 690-240-0640 |
| Other Holes | OAR 690-240-0030 |
| Geotechnical Holes | OAR 690-240-0035 through 690-240-0049 |

Type of Boring	Construction Standards that Apply
Air Sparging [Hole] <u>Well</u>	[Geotechnical Holes] <u>Monitoring Wells</u>
Aquifer Storage and Recovery Well	Water Supply Wells
Cathodic Protection Hole	Geotechnical Holes
Community Well	Water Supply Wells
Construction Hole	Other Holes
Dewatering Well	Water Supply Wells
Domestic Well	Water Supply Wells
Drive Point (Core holes)	Geotechnical Holes
Drive Point Well (Dewatering)	Water Supply Wells
Drive Point (Water Sampling)	Monitoring Wells
Drive Point (Water Supply)	Water Supply Wells
Dry (Disposal) Well	Other Holes
Elevator Shaft	Other Holes
Extraction Well	Monitoring Wells
Gas Migration Hole	Geotechnical Holes
Geothermal Well	Water Supply Wells
Gravel Pit	Other Holes
Ground Source Heat Pump Borings (Closed Loop)	Geotechnical Holes
Ground Source Heat Pump Borings (Open Loop)	Water Supply Wells
Horizontal Drain (Slope Stability)	Geotechnical Holes

[Text to be deleted is bracketed]

Language to be added is bolded and underlined.

Horizontal Well (Monitoring)	Monitoring Wells
Horizontal Well (Water Supply)	Water Supply Wells
Hydrologic Data Hole	Geotechnical Holes
Inclinometer	Geotechnical Holes
Industrial Well	Water Supply Wells
Injection Well (Water)	Water Supply Wells
Irrigation Well	Water Supply Wells
Monitoring Well (>72 Hours)	Monitoring Wells
Municipal Well	Water Supply Wells
Observation Hole	Monitoring Wells

Permeability Test Hole	Geotechnical Holes
Piezometer (Electric)	Geotechnical Holes
Piezometer (Pneumatic)	Geotechnical Holes
Piezometer Well	Monitoring Wells
Piling Hole	Other Holes
Post Hole	Other Holes
Power Pole Hole	Other Holes
Public Supply Well	Water Supply Wells
Remediation Or Recovery Well	Monitoring Well/Water Supply Wells
Rock Boring (<10 Feet)	Other Holes
Rock Boring (>10 Feet)	Geotechnical Holes
Seismic Shot Hole	Geotechnical Holes
Slope Stability Hole	Geotechnical Holes
Soil Boring (<10 Feet)(geophysical borings)	Other Holes
Soil Boring (>10 Feet)(geophysical borings)	Geotechnical Holes
Soil Vapor Hole	Geotechnical Holes
Sparging [Hole] <u>Well</u>	[Geotechnical Holes] Monitoring Wells
Storm Water Disposal	Other Holes
Sump	Other Holes (if < 10 ft. deep and > 10 ft. dia.)
Temporary Monitoring Well (<72 Hours)	Geotechnical Holes
Trench	Other Holes
Underground Storage Tank (Ust) Pit	Other Holes
Vapor Extraction Hole	Geotechnical Holes
Wetland Delineation Hole	Other Holes

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690-240-0035

Geotechnical Holes: General Performance and Responsibility Requirements

- (1) A geotechnical hole is defined in OAR 690-240-0010(36). Geotechnical holes, cased or uncased, are generally constructed to evaluate subsurface data or information (geologic, hydrogeologic, chemical, or other physical characteristics). Geotechnical holes are divided into the following classifications:
- (a) Temporary (abandoned within 72 hours) geotechnical holes;
 - (b) Cased permanent geotechnical holes;
 - (c) Uncased permanent geotechnical holes; or
 - (d) Slope stability geotechnical holes.
- (2) A geotechnical hole report shall be signed by a professional and must be submitted to the department if the geotechnical hole is:
- (a) Greater than 18 feet deep;
 - (b) Within 50 feet of a water supply or monitoring well;
 - (c) Used to make a determination of water quality; or
 - (d) Constructed in an area of known or reasonably suspected contamination.
- (3) Geotechnical holes between ten and eighteen feet in depth that do not meet any of the criteria spelled out in OAR 690-240-0035(2) do not require a geotechnical hole report to be filed with the Department, but shall be required to have a professional as described in OAR 690-240-0035(4)(c) be responsible for the construction and abandonment of the geotechnical hole.
- (4)(a) Although enforcement actions may be exercised against other parties, the landowner of the property where the geotechnical hole is constructed is ultimately responsible for the condition, use, maintenance, and abandonment of the geotechnical hole;
- (b) Conversion of a geotechnical hole to a water supply or monitoring well shall be considered by the Department on a case by case basis;
 - (c) When a geotechnical hole report is required, or if it is between 10' and 18' in depth, the professional responsible for the construction, alteration or abandonment of a geotechnical hole shall have one of the following certifications or licenses at the time the professional signs the geotechnical hole report:
 - (A) A valid Oregon Monitoring Well Constructor's License;
 - (B) A valid Oregon Water Supply Well Constructor's License;
 - (C) Valid certification by the State of Oregon as a Registered Geologist; or
 - (D) Valid certification by the State of Oregon as a Professional Engineer.
 - (d) The professional shall provide proof of license, certification or registration and photo identification to Department employees upon request.
 - (e) In order to protect the ground water resource, all geotechnical holes shall be constructed, operated, used, maintained, and abandoned in such a manner as to prevent contamination or waste of ground water, or loss of artesian pressure.
 - (f) If the geotechnical hole is completed above ground, it shall have a minimum casing height of one foot above finished grade and a lockable cap with lock shall be attached to the top of the casing. If a geotechnical hole, except a slope stability hole, is completed flush with the land surface, a lockable watertight cap with lock, shall be attached to the top of the casing. A vault or monument designed to be watertight, level with the ground surface, shall be installed to prevent the inflow of surface water. The cover must be designed to withstand the maximum expected loadings.

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Language to be added is bolded and underlined.

(5)(a) A 'Geotechnical Hole Report' shall be prepared for each geotechnical hole, including unsuccessful geotechnical holes, constructed, altered, converted, or abandoned if the hole meets any of the requirements of OAR 690-240-0035(2) above.

(b) The 'Geotechnical Hole Report' shall be filed with the Department within 30 days of the completion of the geotechnical hole;

(c) The report shall be prepared in triplicate on forms furnished or previously approved in writing by the Water Resources Department. The original shall be furnished to the Director, the first copy shall be retained by the professional, and the second copy shall be given to the landowner or customer who contracted for the construction of the geotechnical hole;

(d) In the event any drilling equipment or other tools are left in a geotechnical hole the professional shall enter this fact on the Geotechnical Hole Report;

(e) A copy of any special authorizations or special standards issued by the Director shall be attached to the Geotechnical Hole Report. See OAR 690-240-0006 for information concerning special standards;

(f) The report of geotechnical hole construction shall include, as a minimum, the following:

(A) Landowner name and address;

(B) Started/Completed date;

(C) Location of the geotechnical hole by County, Township, Range, Section, tax lot number, if assigned, street address, or nearest address, and either the 1/4, 1/4 section or Latitude and Longitude as established by a global positioning system (GPS);

(D) Use of geotechnical hole;

(E) Type of geotechnical hole;

(F) Depth;

(G) Map showing location of geotechnical hole on site must be attached and shall include an approximate scale and a north arrow;

(H) General hydrologic and geologic information as indicated on the Geotechnical Hole Report; and

(I) Such additional information as required by the Department.

(6) Temporary geotechnical holes:

(a) Temporary geotechnical holes include but are not limited to: drive points, soil and rock borings, temporary sample holes, permeability test holes, and soil vapor holes;

(b) Temporary geotechnical holes shall be abandoned within 72 hours of initial construction;

(c) Any temporary casing that has been installed shall be removed as part of the abandonment.

(7) Cased permanent geotechnical holes:

(a) Cased permanent geotechnical holes include but are not limited to: gas migration holes, cathodic protection holes[,] **and** vapor extraction holes[, and air sparging holes];

(b) If permanent casing is installed in a geotechnical hole, it shall meet the casing requirements in OAR 690-240-0430, 690-210-0210, or 690-210-0190 and the sealing requirements in 690-240-0475.

(8) Uncased permanent geotechnical holes:

(a) Uncased permanent geotechnical holes include but are not limited to: pneumatic and electrical piezometers;

(b) Temporary casing can be used during the construction of the uncased permanent geotechnical hole but must be removed prior to completion. Surface casing (5 feet maximum) may be installed for placement of logging or recording equipment.

(9) Slope stability geotechnical holes.

(a) Slope stability geotechnical holes include but are not limited to: slope instrumentation holes such as slope inclinometers, and slope remedial holes.

(b) Slope stability geotechnical holes are defined in OAR 690-240-0010(7[2]4). Such holes shall be constructed, operated, used, maintained, and abandoned in such a manner as to prevent contamination or waste of ground water.

(c) When a Geotechnical Hole Report is required under OAR 690-240-0035(2) for a slope stability geotechnical hole that is constructed to facilitate water level measurements, an affidavit from an engineer or geologist qualified to perform geotechnical investigations shall be attached to the Geotechnical Hole Report. The affidavit shall have the qualified engineer or geologist's stamp on it and shall certify that the slope stability geotechnical hole is on a landslide or a mass-wasting feature.

(10) Geotechnical Holes abandonment:

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Language to be added is bolded and underlined.

(a) Geotechnical holes shall be abandoned so that they do not:

(A) Connect water bearing zones or aquifers;

(B) Allow water to move vertically with any greater facility than in the undisturbed condition prior to construction of the geotechnical hole; or

(C) Allow surface water to enter the hole.

(b) Temporary geotechnical holes constructed to collect a water quality sample shall be abandoned in accordance with OAR 690-240-0510.

(Stat. Auth: ORS 537.780)

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690-240-0046

Grouting of Uncased Boring

(1) Grouting of an uncased boring shall be completed after the heat exchange loop is installed. The boring shall be completed in a manner to allow ease in locating including but not limited to the use of marking or locating magnetic tape if maintenance or abandonment is necessary. The area near land surface where the ground source heat pump boring will be connected to a manifold or to the closed loop system may be filled with earth materials.

(2) Sealing shall be completed using active solids content bentonite grout slurry (minimum 20% active solids by weight) or high solids fluid mixture of cement. Controlled density fill (CDF), fly ash, drill cuttings or drilling fluids shall not be used in grouting the uncased boring.

(3) Mixes of bentonite or cement slurry shall be installed by pumping through a grout pipe in a continuous operation from the bottom of the boring upward. The grout pipe shall extend the full depth of the borehole before pumping begins. Minimum slurry volume used shall be equal to or exceed the calculated annulus volume in the borehole. Grouting material shall surround all pipes remaining in the borehole.

(4) The quality of the water in the boring shall not interfere with the proper hydration of bentonite.

Stat. Auth.: Stats. Implemented: Hist. WRD 1-2012, f. & cert. ef. 2-2-2012

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