Oregon
Kate Brown, Governor

Water Resources Department
725 Summer St NE, Suite A
Salem, OR 97301
(503) 986-0900
Fax (503) 986-0904

MEMORANDUM

TO: Water Resources Commission

FROM: Thomas M. Byler, Director

SUBJECT: Agenda Item G, August 18, 2016
Water Resources Commission Meeting

OAR Chapter 690, Division 200, 205, 210, 215 and 240 - Request for Adoption of Rules to Update Well Construction Standards

I. Introduction

Staff will update the Commission on recent rulemaking activity in the Well Construction Program and request that the Commission adopt the proposed well construction rules (OAR Chapter 690, Divisions 200, 205, 210, 215, and 240).

II. Background

The Well Construction and Compliance Section is responsible for ensuring compliance with the laws and regulations related to well construction. The Section also prepares formal enforcement actions for water law and administrative rule violations that are referred from other divisions. In addition, the section advises and provides training to field personnel on regulatory and enforcement procedures and recommends actions and civil penalties to the Director and Water Resources Commission.

The Well Construction program licenses well constructors, enforces well construction statutes and standards, and maintains the repository of well log reports for the State of Oregon. Additional programs include the Exempt Use Well Fee program, Well Identification Label program, Landowner Well Construction Permit program, and the Geotechnical Hole Fee program.

A number of the well construction rules have not been updated for years. Department staff determined that updates were warranted for specific well construction rules contained in OAR Chapter 690, Divisions 200 (Water Supply Well Construction and Maintenance), 205 (Licensing), 210 (Well Construction Standards), 215 (Maintenance, Repair and Deepening of Water Supply Wells), and 240 (Construction and Maintenance of Monitoring Wells and Other Holes in Oregon).

The Department organized a rules advisory committee (RAC) to develop these rules. The RAC consisted of licensed and bonded well drillers, consultants, a member of the Oregon Health Authority (OHA), as well as a member of the Benton County Department of Environmental Health. The RAC met to discuss the potential rule changes in January and May 2016.

The Department submitted a Notice of Proposed Rulemaking Hearing and Statement of Need and Fiscal Impact to the Secretary of State on May 13, 2016. The notice was published June 1, 2016, in the Oregon Bulletin. The hearing draft of the proposed rules is shown in attachment 1. A public hearing was held in Salem on June 24, 2016. The public comment period was open from June 1 through June 29, 2016. Three written comments were received by the rules coordinator as shown in attachment 2.

III. Discussion

A. Proposed Rule Changes

Staff proposed a number of changes aimed at updating and clarifying the existing well construction rules, including:

- ***Cleaning-up out of date, or incorrect, rule, table, or appendix numbers***: The well construction rules contained incorrect rule, table, and appendix number references. The Department is taking this opportunity to correct these errors.
- ***Clarifying and cleaning-up existing rule language so that it is clear and easy to read***: Some existing rule language, specifically in the water supply well sealing standards, did not accurately explain how well constructors should describe the material that they drill through when constructing a well. Staff worked with the RAC to craft language that uses the appropriate terminology so that constructors can provide information that is useful and precise.
- ***Adding setback requirements from petroleum storage tanks***: The Oregon Health Authority already has setback standards from petroleum tanks for public water supply wells. Establishing a petroleum tank setback for all water supply wells provides additional protection to Oregon's well owners and helps to ensure the safety of Oregon's drinking water.
- ***Clarifying geotechnical hole requirements***: "Wet soil monitoring holes" are being added to the geotechnical hole rules to allow shallow, near surface, groundwater research and studies to proceed without needing to meet the monitoring well standards. In addition, the geotechnical hole rule language was modified so that the requirements are easier to understand for professionals that are installing or abandoning them.
- ***Adding requirements for information on submitted well reports***: Since 2009, well constructors who want to abandon water supply wells with unhydrated bentonite have been required to test and report total dissolved solids (TDS) content of the water prior to use. This information is important, because unhydrated bentonite will not be effective under certain conditions. In addition, the water quality information has also proven useful to well constructors, well owners, and the Department. Because of the usefulness of the information, and because it won't be an undue burden on well constructors due to the fact that most already have a meter to test water quality, the RAC and the Department moved to require TDS on all submitted well reports.
- ***Cleaning-up and modifying well construction sealing standards***: The under-reaming sealing method in the water well construction standards requires a small annular space, the

space between the drillhole wall and the outer well casing, and currently requires a five-foot lower seal. In order to provide more protection for Oregon's aquifers from commingling and waste, the RAC recommended extending the lower seal length from five feet to fifteen feet. In addition, language throughout the sealing standards was modified so that it is easier to understand.

- ***Clarifying piezometer abandonment requirements*:** Piezometers are a type of monitoring well installed solely to obtain groundwater levels. Currently there are no piezometer specific abandonment standards detailed in rule. For clarity, language was added that specifies which requirements apply.
- ***Adding requirements for direct push monitoring wells and piezometers*:** Direct push wells are installed by pushing the tooling into the ground, whereas typical wells are installed using drilling methods. The current requirements for direct push wells have been in place for many years and were created when the technology was new. In order to provide more protection to Oregon's aquifers, the proposed rule modifications are intended to more accurately reflect current direct-push technology related to annular space size and proper seal placement.
- ***Adding a requirement for dedicated measuring tubes*:** Measuring tubes are designed to allow unobstructed access to aquifers, so that accurate water levels can be determined at any time. A dedicated measuring tube can help to assess complaints of a dry well from a landowner to determine whether it is in fact a dry well or some other issue. The ability to make reliable measurements can not only help the Department conduct site specific analyses to assess complaints of interference between wells, provide inputs into groundwater studies, assess compliance with permit conditions, evaluate compliance with well construction standards, and better understand the resource, but it can also help drillers to assist well owners when they have questions. Currently, the rules only recommend, rather than require, a measuring tube be installed at the time of pump installation.

  The proposal was to require measuring tubes to be installed when a pump is installed, repaired, or replaced. The rule modifications were proposed in order to provide unobstructed access for individuals to collect accurate water level measurements in all water wells with pumps installed. RAC members disagreed with each other on support for the measuring tube requirement. Questions were raised relating to the added costs to landowners, who should bear the burden of compliance, technical construction concerns, and whether all wells should be subject to the requirement. With the disagreement about measuring tubes on the record, staff decided that public input would better inform the process, and included the measuring tube provision in the hearing draft, so that the public could comment.

B. Ground Water Advisory Committee Feedback

The Ground Water Advisory Committee (GWAC), which advises the Commission on rules for development and protection of groundwater (ORS 536.090), met on June 17, 2016, to review and discuss the draft rules. GWAC unanimously recommended that the provision requiring measuring tubes only apply to new wells. GWAC also unanimously recommended that the other proposed rule changes be approved by the Commission as written.

C. Public Comment and Department Response

The Department received three public comments regarding the proposed rule changes. All of the comments were associated with specific sections of the proposed rules as contained in the public hearing draft. The following presentation of the Department's response to these public comments shows the section of the proposed rule [example: 690-210-0280], a summary of the public comments in bullets, followed by the Department's response in italics. Copies of the public comments are included in Attachment 2.

Public Comments to Specific Sections of the Proposed Rules (Public Hearing Draft):

1. All three public comments received referenced proposed changes to Oregon Administrative rules (OAR) 690-210-0280, 690-215-0060, and 690-215-0200, Dedicated Measuring Tubes.

    - Two of the public comments received were against the measuring tube requirement, and one comment was in favor.

    Department Response: Concerns expressed in the written comments have been addressed by the removal of the proposed measuring tube rule changes. The Department continues to support the need for measurement tubes as a useful and important means for well owners and the Department to measure and understand groundwater levels. However, the Department acknowledges that the rulemaking process did not sufficiently involve the well owner community in the discussions. Given the potential fiscal implications associated with the proposed rule change to the well owner community, the Department decided to not include the proposal in the final rules before the Commission. Staff intend to reach out to a broader group of stakeholders to discuss the measurement tube issue at a future date.

2. OAR 690-210-0030, Setbacks

    - A comment was received indicating that there was a desire to have the Department's proposed setbacks the same as Oregon Health Authority setbacks for public water supply wells in regards to underground petroleum tanks.

    Department Response: This issue was discussed during rulemaking. In response, the Department clarified in OAR 690-210-0030(6) that additional Oregon Health Authority setbacks apply to wells used for public water systems. No additional changes were made to the Amended Final Proposed Rules based on this comment.

3. OAR 690-210-0150, Sealing of Wells
    - A comment was received in support of proposed changes to material description requirements.

    Department Response: No changes were made to the Amended Final Proposed Rules based on this comment.

IV. Summary of Amended Proposed Final Rules

The final proposed rules in Attachment 3 were developed in conjunction with stakeholders and provide clear standards and guidance for well constructors, landowners, Oregon Registered Geologists, and Oregon Professional Engineers, when constructing, altering or abandoning water supply wells, monitoring wells, and geotechnical holes in Oregon.

The final proposed rules have been modified from the hearing draft by removing the requirement to install dedicated measuring tubes in all wells during pump installation, repair, or replacement. This change was made in response to comments and concerns expressed through the rulemaking process.

V. Alternatives

The Commission may consider the following alternatives:

1. Adopt the final proposed rules in Attachment 3.
2. Adopt modified final proposed rules.
3. Not adopt rules and request the Department to further evaluate the issues.

VI. Recommendation

The Director recommends Alternative 1.

Attachments:
1. Hearing Draft Proposed Rules - Chapter 690, Divisions 200, 205, 210, 215, 240
2. Copies of written comments received
3. Final Proposed Rules - Chapter 690, Divisions 200, 205, 210, 215, 240

Kristopher Byrd
(503) 986-0851

Brenda Bateman
(503) 986-0879

ATTACHMENT 1

Hearing Draft Proposed Rules - Chapter 690, Divisions 200, 205, 210, 215, 240

Summary of Contents:

- Division 200, Appendix 200-2, Figure 200-5, Table 200-1
- Division 200, Sections 0028, 0048, 0050
- Division 205, Section 0210
- Division 210, Appendix 210-3
- Division 210, Sections 0030, 0140, 0150, 0155, 0280
- Division 215, Sections 0055, 0060
- Division 240, Appendix 240-1, Table 240-1
- Division 240, Sections 0010, 0024, 0035(3), 0035(4(c)), 0035(7), 0035(10), 0043, 0395, 0440, 0510, 0525, 0540

[Text to be deleted is bracketed and in red] **Language to be added is bolded and underlined**

Existing Rules are Available Online for Reference at www.oregon.gov/owrd/pages/law/oar.aspx:

Division 200	Appendices, Tables and Figures
Division 205	Appendices, Tables and Figures
Division 210	Appendices, Tables and Figures
Division 215	Appendices, Tables and Figures
Division 240	Appendices, Tables and Figures

[APPENDIX 200-2

METHODS FOR ATTACHING WELL IDENTIFICATION TAG

WATER SUPPLY WELLS

Tags should be placed in an accessible and visible location. Place tags at least 6 inches above ground level.

Attach tags to permanent items such as well casing or monuments, NOT to pumps, pump equipment, water delivery lines or sanitary well seals (well caps).

The following methods are recommended by the Oregon Water Resources Department:

A Strap the tag to the well casing or access port. Stainless steel bands or large hose clamps designed for exterior use are recommended. Straps may be available at electrical, auto supply or construction supply stores. Ultra violet resistant nylon straps are also acceptable. Any band used should be designed for exterior applications.

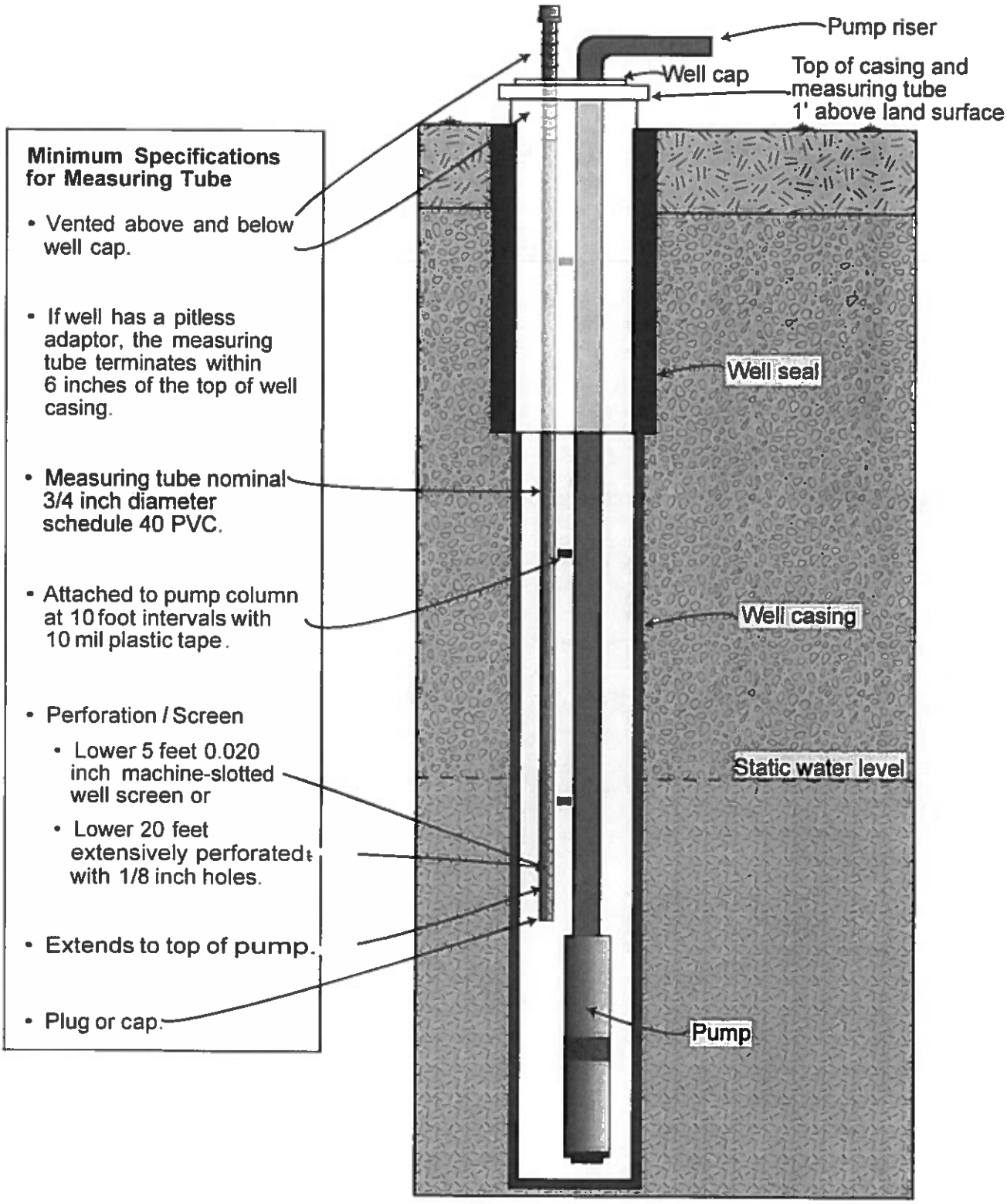
B. Rivet or bolt the tag to the well casing. Stainless steel rivets may be used.

Other options may be used provided the installation is permanent and visible. Please contact the Water Resources Department for other options.]

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

Measuring Tube Diagram and Specifications

Figure 200-5



This diagram details the [recommended] minimum standards for a dedicated measuring tube. A measuring tube may be constructed in a manner that exceeds these standards without prior Department approval. The dedicated measuring tube shall not be reduced in size over the length of the pipe and shall remain free from wires or any other obstruction.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690, DIVISION 200
WATER SUPPLY WELL CONSTRUCTION STANDARDS

TABLE 200-1

WHICH [SET OF]STANDARDS APPLY[IES]?

The Department [currently] regulates the construction of borings through which ground[ ]water [could]**may** become contaminated. The type of boring (and its purpose) will determine which set of regulations apply. Questions often arise as to how a certain boring is to be regulated. In general, if the purpose of a boring is to seek water then it is considered a well. The table below lists common types of holes and [which category they fall into]**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 [there is a question as to what standard applies or what agency may need to be contacted.]**you have any questions.**

The general standards and their Oregon Administrative Rule reference are:

Water Supply Wells	OAR 690-200 through 690-235
Monitoring Wells	OAR 690-240
Other Holes	OAR 690-240-0030
Geotechnical Holes	OAR 690-240-0035 **through 690-240-0049**

Description of Boring:	Standards that Apply
Air Sparging Well	Monitoring Well
Aquifer Storage and Recovery Well	Water Supply Well
Cathodic Protection Hole	Geotechnical Hole
Community Well	Water Supply Well
Construction Hole	Other Hole
Dewatering Well	Water Supply Well
Domestic Well	Water Supply Well
Drive Point (Core[ing] **holes**)	Geotechnical Hole
Drive Point Well (Dewatering)	Water Supply Well
Drive Point **Well** (Water Sampling)	Monitoring Well
Drive Point **Well** (Water Supply)	Water Supply Well
Dry (Disposal) Well	Other Hole
Elevator Shaft	Other Hole
Extraction Well	Monitoring Well
Gas Migration Hole	Geotechnical Hole
Geothermal Well	Water Supply Well
Gravel Pit	Other Hole
Heat Exchange Hole (Closed Loop)	Geotechnical Hole
Heat Exchange Hole (Open Loop)	Water Supply Well
Horizontal Drain (Slope Stability)	Geotechnical Hole
Horizontal Well (Monitoring)	Monitoring Well
Horizontal Well (Water Supply)	Water Supply Well
Inclinometer	Geotechnical Hole
Industrial Well	Water Supply Well

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

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

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

690-200-0028

Designated Special Area Standards

(4) Special Area Standards for New, Altered, Deepened or Converted Water Supply Wells in the "Mosier Area," Wasco County.

(i) A rough log that describes the kind and nature of the material in each **formation**[stratum] penetrated, with at least one entry for each change of formation, the thickness of aquifers and available static water level measurements; and

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 200
WELL CONSTRUCTION AND MAINTENANCE

690-200-0048

[Label]Well Identification **Label**

(1) Within 30 days of completion of well construction, conversion, or alteration, the constructor shall permanently affix a well identification label to the wellhead **in an accessible and visible location in the following manner:**[as described in **Appendix 200-2.**]

(a) Labels shall be at least six inches above ground surface and shall be permanently attached to the outside of the casing using a stainless steel band, stainless steel rivets, or screws; and

(b) Labels shall be attached in such a manner as to be easily readable upon inspection.

(2) Identification labels may not be attached to pumps, pump equipment, water delivery lines, or well caps.

(3) The identification **label** number shall be recorded on the well report **at the time the report is submitted**. [The well identification label shall be attached in such a manner as to be easily readable upon inspection. Identification labels shall be furnished by the Department.]

(4) Identification labels shall be furnished by the Department.

([2]**5**) If a well identification label is already affixed to an existing well that is being altered, converted, or abandoned, the constructor shall record the identification **label** number on the well report.

([3]**6**) When a well that has a well identification label [(tag)]on it is permanently abandoned, the well identification **label**[tag] shall be destroyed. The well identification **label**[tag] shall not be reused.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 200
WELL CONSTRUCTION AND MAINTENANCE

690-200-0050

Definitions

(17) "Casing Seal" means the water tight seal established in the well bore between the well casing and the drillhole wall to prevent the inflow and movement of surface water or shallow ground water in the well annulus, or to prevent the outflow or movement of water under artesian or hydrostatic pressures. **This term is synonymous with "annular seal" or "surface seal".**

(25) "Confining **Interval**[Formation]" means **a low permeability material such as clay or solid, unfractured, consolidated rock**[the "impermeable" stratum] immediately overlying an artesian (confined) aquifer (see Figure 200-2).

[(60) "Impermeable Sealing Material" means cement, concrete, or bentonite which is used to fill the open annulus between the lower and upper sealing intervals.]

(6[1]**0**) "Inspection Port" means an orifice or other viewing device from which the low-pressure drain and check valve may be observed.

(6[2]**1**) "Jetted Well" means a well in which the drillhole excavation is made by the use of a high velocity jet of water.

(6[3]**2**) "Leakage" means movement of surface and/ or subsurface water around the well casing or seal.

(6[4]**3**) "Liner Pipe" means the inner tubing, pipe, or conduit installed inside the well casing or lower well bore. The liner pipe is used to protect against caving formations and is not permanently affixed to the drillhole wall or casing.

(6[5]**4**) "Lower Drillhole" means that part of the well bore extending below the **casing**[surface] seal interval in a well.

(6[6]**5**) "Mineralized Water" means any naturally occurring ground[ ]water containing an amount of dissolved chemical constituents limiting the beneficial uses to which the water may be applied.

(6[7]**6**) "Monitoring Well" means a well designed and constructed to determine the physical (including water level), chemical, biological, or radiological properties of ground[ ]water.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

(6[8]**7**) "Monitoring Well Constructor" means any person who has a current water well constructor's license with a monitoring well endorsement issued in accordance with ORS 537.747(3).

(6[9]**8**) "Monitoring Well Constructor's License" means a Water Well Constructor's License with a monitoring well endorsement issued in accordance with ORS 537.747(3).

([70]**69**) "Municipal or Quasi-Municipal Well" means a water supply well owned by a municipality or nonprofit corporation that may be used as a community or public water supply.

(7[1]**0**) "Order" means any action satisfying the definition given in ORS Chapter 183 or any other action so designated in ORS 537.505 to 537.795.

(7[2]**1**) "Other Hole" means a hole other than a water supply well, a monitoring well, or geotechnical hole, however constructed, in naturally occurring or artificially emplaced earth materials, through which ground[ ]water can become contaminated. Holes constructed under ORS Chapters 517, 520, and 522 are not subject to these rules. Other holes are regulated under OAR 690-240. Examples of other holes are listed in 690-240-0030.

(7[3]**2**) "Perched Ground[W]**w**ater" means ground[ ]water held above the regional or main water table by a less permeable underlying earth or rock material (see Figure 200-2).

(7[4]**3**) "Permeability" means the ability of material to transmit fluid, usually described in units of gallons per day per square foot of cross-section area. It is related to the effectiveness with which pore spaces transmit fluids.

(7[5]**4**) "Person" includes individuals, corporations, associations, firms, partnerships, joint stock companies, public and municipal corporations, political subdivisions, the state and any agencies thereof, and the Federal Government and any agencies thereof.

(7[6]**5**) "Petcock Valve" is a valve used to contain pressure which when opened will drain the line or pipe.

(76) "Petroleum" means gasoline, crude oil, fuel oil, diesel oil, lubricating oil, oil sludge, oil refuse, and crude oil fractions and refined petroleum fractions, including gasoline, kerosene, heating oils, diesel fuels, and any other petroleum-related product or waste or fraction thereof that is liquid at a temperature of 60 degrees Fahrenheit and a pressure of 14.7 pounds per square inch absolute. "Petroleum" does not include any substance identified as a hazardous waste under 40 CFR Part 261.

[(103) "Stratum" means a bed or layer of a formation that consists throughout of approximately the same type of consolidated or unconsolidated material.]

(10[4]**3**) "Sump" means a hole dug to a depth of ten feet or less with a diameter greater than ten feet in which ground water is sought or encountered.

(10[5]**4**) "Suspension" means the temporary removal of the privilege to construct wells under an existing license for a period of time not to exceed one year.

(10[6]**5**) "System Interlock" means an interlocking mechanism used to link irrigation pumps and chemical injection units, other pumps, or supply tanks so designed that in the event of irrigation pump malfunction or failure, shutdown of the chemical injection units will occur. (Back-siphon prevention)

(10[7]**6**) "Unconsolidated Formation" means naturally occurring, loosely cemented, or poorly indurated materials including clay, sand, silt, and gravel.

(10[8]**7**) "Underground Injection" means the emplacement or discharge of fluids to the subsurface.

(10[9]**8**) "Underground Injection System" means a well, improved sump, sewage drain hole, subsurface fluid distribution system, or other system or ground water point source used for the emplacement or discharge of fluids.

(1[10]**09**) "Upper Oversize Drillhole" means that part of the well bore extending from land surface to the bottom of the surface seal interval.

(11[1]**0**) "Violation" means an infraction of any statute, rule, standard, order, license, compliance schedule, or any part thereof and includes both acts and omissions.

(11[2]1) "Water Supply Well" means a well, other than a monitoring well, that is used to beneficially withdraw or beneficially inject ground or surface water. Water supply wells include, but are not limited to, community, dewatering, domestic, irrigation, industrial, municipal, and aquifer storage and recovery wells.

(11[3]2) "Water Supply Well Constructor" means any person who has a current water well constructor's license with a water supply well endorsement issued in accordance with ORS 537.747(3).

(11[4]3) "Water Supply Well Constructor's License" means a Water Well Constructor's License with a water supply well endorsement issued in accordance with ORS 537.747(3).

(11[5]4) "Water Supply Well Drilling Machine" means any power-driven driving, jetting, percussion, rotary, boring, digging, augering machine, or other equipment used in the construction or alteration of water supply wells.

(11[6]5) "Water Table" means the upper surface of an unconfined water body, the surface of which is at atmospheric pressure and fluctuates seasonally. The water table is defined by the levels at which water stands in wells that penetrate the water body (see Figure 200-2).

(11[7]6) "Water Well Constructor's License" means a license to construct, alter, deepen, abandon or convert wells issued in accordance with ORS 537.747(3). Endorsements are issued to the

license and are specific to the type of well a constructor is qualified to construct, alter, deepen, abandon or convert.

(11[8]7) "Well" means any artificial opening or artificially altered natural opening, however made, by which ground water is sought or through which ground water flows under natural pressure, or is artificially withdrawn or injected. This definition shall not include a natural spring, or wells drilled for the purpose of exploration or production of oil or gas. Prospecting or exploration for geothermal resources as defined in ORS 522.005 or production of geothermal resources derived from a depth greater than 2,000 feet as defined in 522.055 is regulated by the Department of Geology and Mineral Industries.

(118) "Wet Soil Monitoring Hole" means a shallow geotechnical hole set vertically in the ground and constructed to a depth of three and one-half feet or less for studying and/or monitoring the upper portion of the shallowest water-bearing unit within and immediately below the surface soil horizon.

690-205-0210

Well Report Required (Water Supply Well Log)

(1) A water well report (water well log) shall be prepared for each water supply well constructed, altered, converted, or abandoned. This requirement includes unsuccessful wells and wells exempt from appropriation permit requirements under ORS 537.545. The log shall be certified as correct by signature of the Water Supply Well Constructor constructing the water supply well. The completed log shall also be certified by the bonded Water Supply Well Constructor responsible for construction of the well. A water well report must be submitted by each bonded constructor (if drilling responsibility is shifted to a different bonded constructor), showing the work performed by each bonded constructor.

(2) The log 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 Water Supply Well Constructor, and the second copy shall be given to the customer who contracted for the construction of the water supply well.

(3) The bonded Water Supply Well Constructor shall file the water well log with the Director within 30 days after the completion of the construction, alteration, conversion or abandonment of the water supply well.

(4) The trainee or Water Supply Well Constructor operating the water supply well drilling machine shall maintain a rough log of all geologic strata encountered and all materials used in the construction of the water supply well. This log shall be available for inspection by the Watermaster, or other authorized agent of the Water Resources Department at any time before the water well report is received by the Department. The rough drilling log shall be in handwritten or electronic form, or a voice recording.

(5) In the event a constructor leaves any drilling equipment or other tools in a water supply well, this fact shall be entered on the water well report.

(6) A copy of any special authorizations or special standards issued by the Director shall be attached to the water supply well report.

(7) The report of water well construction required in section (1) of this rule shall be recorded on a form provided or previously approved in writing by the Department. The form shall include, as a minimum, the following:

(a) Name and Address of Landowner;

(b) Started/Completed date;

(c) Location of the well 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) Start card number;

(e) Well identification label number (well tag number);

(f) Use of well;

(g) Type of work;

(h) Temperature of water; [and]

(i) **Total dissolved solids (TDS); and**

([i]j) Such additional information as required by the Department.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 210
WATER SUPPLY WELL CONSTRUCTION STANDARDS

APPENDIX **210-**3

I. Recommended Methods of Placement of Cement Grout (OAR 690-210-0320)

Method A - The well bore shall be plugged with a drillable plug or bridge at the lowest point to be sealed. A well casing with a float shoe at its lower end shall be placed in the well and suspended slightly above the point of bearing. A grout pipe shall be run inside the casing to the check valve. The grout pipe shall be connected to a suitable pump and water or drilling fluid shall first be circulated to clear the annular space. Grout shall be pumped through the grout pipe until clean grout completely fills the interval to be sealed. The grout pipe shall then be removed and the cement allowed to set. (See Figure 210-**1**[5])

Method B - Grout shall be placed by pumping or air pressure injection through a grout pipe installed inside the casing from the casing head to a point five (5) feet above the bottom of the casing. The grout pipe shall extend through an airtight sealed cap on the head of the well casing. The casing head shall be equipped with a relief valve and the grout pipe shall be equipped at the top with a valve permitting injection. The lower end of the grout pipe and the casing shall be open. Clean water shall be injected down the grout pipe until it returns through the casing head's relief valve. The relief valve is then closed and injection of water is continued to clean the hole until it flows from the bore hole outside the casing that is to be grouted in place. Without significant interruption, grout shall be substituted to water and, in a continuous manner, injected down the grout pipe until it returns to the surface outside of the casing. A small amount of water may be used to flush the grout pipe, but the pressure should remain constant on the inside of the grout pipe and the inside of the casing until the grout has set. Pressure shall be maintained for at least twenty-four (24) hours, or until such time as a sample of the grout indicates a satisfactory set. Cement grout shall be used for this procedure with a minimum annular space of one (1) inch completely surrounding the casing. (See Figure 210-**1**[5])

Method C - The well bore shall be plugged with a drillable **plug**[packer] or bridge at the lowest point to be sealed. The well casing shall be firmly seated at the bottom of the drillhole. A grout pipe shall be run to the bottom of the hole through the annular space between the casing and the well bore. After water or any other drilling fluid has been circulated in the annular space sufficiently to clear obstructions, the grout pipe shall be connected to a suitable pump and grout shall be pumped through the grout pipe until clean grout is circulated to land surface, or until grout completely fills the interval to be sealed. The lower end of the grout pipe shall remain submerged in grout while grout is being placed. The grout pipe shall be withdrawn before the initial set of the grout. (See Figure 210-**1**[5])

Method D - The well bore shall be plugged with a drillable **plug**[packer] or bridge at the lowest point to be sealed. After the casing is run and landed, a casing plug, having a length greater **than**[that] the diameter of the casing, shall be placed in the casing. If the drillhole is free of mud or water, this lower separation plug may be eliminated. A measured amount of cement grout necessary to completely fill the annular space of the interval to be grouted is pumped or placed by bailer in the casing. A second casing plug, having a length greater that the diameter of

the casing, shall be placed in the casing above the grout. The casing shall then be capped with a pressure cap and shut-off valve, and shall be connected to a suitable pump. The casing shall then be raised far enough above the point of bearing to clear the first separation plug. Water or drilling mud shall then be pumped under pressure into the casing forcing the grout and upper casing plug down the casing. The position of the plug must be known at all times. A small amount of grout may remain in the lower end of the casing. When the plug reaches the point desired above the bottom of the casing, the pump shall be stopped and the casing seated. (See Figure 210-**1**[5])

Method E - The well bore shall be plugged with a drillable **plug**[packer] or bridge at the lowest point to be sealed. A sufficient amount of cement grout to completely fill the interval of the well to be sealed shall be placed at the bottom of the drillhole by pump bailer or grout pipe. The well casing shall have centering guides attached at appropriate intervals to keep the casing centered in the bore hole. The bottom of the well casing shall be fitted with a tight drillable plug and shall be lowered into the drillhole forcing the grout upward into the annular space. Gravity installation without the aid of a grout pipe shall not be used. In no instance shall this method be used deeper than thirty (30) feet and in no case for a municipal, community, or public water supply well. (See Figure 210-**1**[5])

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 210
WATER SUPPLY WELL CONSTRUCTION STANDARDS

OAR 690-210-0030

(1)(h) Within 500 feet of a hazardous waste storage, disposal or treatment facility without written permission of the Director[.]**; or**

OAR 690-210-0030(1)(i) Within 25 feet of an underground or aboveground petroleum storage tank that is used for residential purposes; or

OAR 690-210-0030(1)(i) Within 50 feet of an underground or aboveground petroleum storage tank that is used for commercial purposes.

(5) To enable drilling equipment future access to the water supply well for alteration, repair, or abandonment, the property owner should maintain a minimum twenty-foot separation distance between the well and any power pole.

([5]**6**) Additional **Oregon Health Authority** setback standards [may]apply to wells used for public water systems. See OAR 333-061-0050(2) or contact the Oregon Health Authority for more information.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 210
WATER SUPPLY WELL CONSTRUCTION STANDARDS

690-210-0140

Sealing of Water Supply Wells in Unconsolidated Formations with Significant Clay Beds

Water supply wells drilled into water-bearing [strata]**intervals** overlain by unconsolidated deposits of clay, or sand and gravel in which significant interbeds of clay are present, shall have a watertight, nonperforated, permanent well casing extending at least five feet into [a]**the** clay **interval**[or other impermeable stratum] overlying the water-bearing zone. In all cases, an upper oversize drillhole, at least four inches greater in diameter than the nominal diameter of the permanent well casing shall be constructed to this same depth. In the event that the subsurface materials penetrated by the upper drillhole cave, or tend to cave, an outer, temporary surface casing shall be used to case out caving materials throughout the construction of the oversize drillhole. If the clay **interval**[or other impermeable stratum] is 13 feet or less below land surface, the watertight, nonperforated well casing and the upper, oversize drillhole shall extend to a minimum depth of 18 feet below land surface. If necessary to complete the well, the single, permanent well casing may be extended below the required sealing depth prior to sealing the well with grout. If preferred, a smaller diameter casing, liner, or well screen may be installed. The annular space between the permanent well casing and the upper, oversize drillhole shall be completely **filled with**[full of] grout in accordance with OAR 690-210-0310 through 690-210-0360 after the permanent well casing is set into final position. The temporary surface casing shall be removed from the well as the annular space is filled. (See Figure 210-3).

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 210
WATER SUPPLY WELL CONSTRUCTION STANDARDS

690-210-0150

Sealing of Water Supply Wells in Consolidated Formations

(1) Water supply wells drilled into a water-bearing rock formation overlain by clay, silt, sand, gravel, **cobbles**, or similar materials, shall be constructed in accordance with one of the following methods:

(a) Method 1 (Continuous Seal):

(A) An upper **oversize** drillhole, **at least** four inches greater in diameter than the nominal diameter of the permanent well casing to be installed, shall extend from land surface to at least five feet into solid, [uncreviced]**unfractured**, consolidated rock overlying the water-bearing rock formation below a depth of 13 feet. Unperforated permanent well casing shall extend to this same depth.

(B) The annular space between the **permanent well** casing and the drillhole wall within the **consolidated** rock formation shall be filled with grout **using an approved grout placement method**.

(C) The upper annular space between the **permanent well** casing and the drillhole wall shall be filled **with grout using an approved grout placement method** from land surface to at least five feet into a[n impermeable] clay **interval**[stratum] below a depth of 13 feet.

(D) The annular space between the upper and lower sealing intervals shall be filled with[an impermeable sealing material] **grout using an approved grout placement method**.

(E) [If necessary to complete the well, a]**A** smaller diameter [well casing,]liner pipe[.] or well screen may be installed **to complete the well**.

(F) If cement grout is placed by a suitable method from the bottom of the **permanent well** casing to land surface (Methods A, B, D, Appendix 210-3), the upper drillhole shall be at least two inches larger than the nominal diameter of the **permanent well** casing. (See Figure 210-4);

(b) Method 2 (Step-Down Casing**/Inner Casing**):

(A) An upper **oversize** drillhole, **at least** four inches greater in diameter than the **upper** permanent well casing to be installed, shall extend from land surface to at least five feet into a[n impermeable] clay **interval**[stratum] below a depth of 13 feet.

(B) Unperforated, permanent well casing shall extend to, and be driven into, solid, [uncreviced]**unfractured**, consolidated rock overlying the water-[ ]bearing rock formation.

(C) A lower drillhole, [equal in diameter to the]**at least as large as the** inside diameter of the upper permanent well casing, shall be constructed at least five feet into solid [uncreviced]**unfractured consolidated** rock overlying the water-bearing **rock** formation.

(D) A smaller diameter **steel well** casing, at least two inches smaller in diameter than the diameter of the upper permanent well casing, shall extend at least five feet into[the] **solid unfractured consolidated rock overlying the water-bearing rock formation** [lower drillhole] and at least eight feet into the upper permanent well casing.

(E) The annular space between the upper oversize drillhole and the **upper** permanent well casing, and the annular space between the smaller diameter lower **permanent well** casing and the lower drillhole, shall be completely filled with grout **using an approved grout placement method**[in accordance with OAR 690-210-0310 through 690-210-0360] after the **upper** permanent well casing and the lower **permanent well** casing are set into final position. (See Figure 210-5);

(c) Method 3 (Under-Reaming):

(A) An upper **oversize** drillhole, **at least** four inches greater in diameter than the permanent well casing to be installed, shall extend from land surface to at least five feet into a[n impermeable] clay **interval** [stratum]below a depth of 13 feet.

(B) A lower drillhole, at least two inches greater in diameter than the diameter of the permanent well casing **to be installed**, shall be constructed at least **fifteen**[five] feet into solid, [uncreviced]**unfractured**, consolidated rock **overlying the water-bearing rock formation** by under-reaming methods.

(C) Unperforated, permanent well casing shall extend to and be driven into solid, [uncreviced]**unfractured**, consolidated rock **overlying the water-bearing rock formation** at the bottom of the under-reamed section following placement of the [sealing]**casing seal** material.

(D) The annular space between the upper oversize drillhole and the [upper]permanent well casing shall be filled with cement grout using Method C or **unhydrated** bentonite. The annular space between the lower under- reamed drillhole [wall]and the permanent well casing shall be completely filled with grout applied under pressure in accordance with **grout placement**[the appropriate] Method A, B, or D, in Appendix 210-3.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

(E) Casing seals may not be placed in unconsolidated formation materials using the under-reaming method.

(2) In all cases, (Methods 1, 2, or 3, above), if materials penetrated by the upper oversize drillhole cave, or tend to cave, an outer temporary surface casing shall be used to case out all caving material throughout construction of the oversize drillhole. The temporary surface casing shall be withdrawn as the annular space is filled with grout.

690-210-0155

Additional Standards for Artesian Water Supply Wells

(1) Water supply wells penetrating into an artesian aquifer shall have an upper oversize drillhole **at least** four inches greater in diameter than the nominal diameter of the permanent well casing **to be installed**. Watertight unperforated casing shall extend and be sealed at least five feet into the confining **interval**[formation] immediately overlying the artesian water-bearing zone. In all cases, a minimum of 18 feet of casing and casing seal will be required. If cement grout is placed by a suitable method from the bottom of the casing (Methods A, B, [and]**or** D, in Appendix 210-3 and Figure 210-1), the diameter of the upper **oversize** drillhole shall be at least two inches larger than the nominal diameter of the **permanent well** casing.

(2) To complete the well, [smaller diameter]**inner** casing, [perforated]liner, or a well screen may be installed. When artesian pressures are encountered in the absence of a confining **interval**[formation], casing and casing seal requirements shall be determined by the Director upon written application. In the alternative, the person constructing the well may construct the well in conformance with the minimum standards for artesian wells with a confining **interval**[formation], set forth in section (1) of this rule.

(3) If an artesian water supply well flows at land surface, the well shall be equipped with a control valve and a watertight mechanical cap, threaded or welded, so that all flow of water from the well can be completely stopped.

(4) All flowing artesian wells shall be equipped with a pressure gauge placed on a dead- end line. A petcock valve shall be placed between the gauge and well casing. (See Figure 210-7).

(5) All flowing artesian water supply wells shall be tested for artesian shut-in pressure in pounds per square inch and rate of flow in cubic feet per second, or gallons per minute, under free discharge conditions. This data shall be reported on the well report.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 210
WATER SUPPLY WELL CONSTRUCTION STANDARDS

690-210-0280

Access Ports**, Dedicated Measuring Tubes** and Airlines

(1) Water supply wells without installed pumps:

(a) All water supply wells **without installed pumps, including wells that have been temporarily removed from service, temporarily abandoned due to a recess in construction, or temporarily abandoned before commencing service, shall be properly covered and** shall be equipped with a usable access port with a minimum diameter of 1/2-[ ]inch for the purpose of determining the water level in the well at any time.

(b) Access ports shall be installed prior to the Water Supply Well Constructor removing the well drilling machine from the well site.

(2) Water supply wells with installed pumps:

(a) Dedicated measuring tubes **that meet the requirements of OAR 690-215-0060 shall**[are recommended to] be installed on all **water supply** wells at the time of pump installation**, pump repair, or pump replacement**.

(b)[Where required,] **D**[d]edicated measuring tubes shall be a minimum of 3/4-inch **diameter** schedule 40 PVC **and shall** extend[ing] to the top of the pump (See [Dedicated Measuring Tube Diagram and Specifications in] Figure 200-5).

(c) The 3/4-inch diameter dedicated measuring tube may be reduced in size to 1/2-inch where it goes through the watertight well cap, but shall not be reduced in size over the length of the pipe.

(d) An airline is not a substitute for a required dedicated measuring tube and, if installed, must enter the well in a location other than the access port.

(3) Access ports, dedicated measuring tubes or airlines **on all water supply wells** shall**:**

(a) [b]**B**e capped and be a minimum of twelve inches above finished ground surface or pumphouse floor (See Figure 210-12) (See Figure 200-5)[.]**; and**

(b) [The access port, airlines and dedicated measuring tubes on all water supply wells required by OAR 690-210-0280 shall b]**B**e maintained in a condition that will prevent

contamination of the ground[ ]water **resource**, and shall remain unobstructed and be maintained by the landowner so that the water level can be determined at any time.]**; and**

(c) Remain free from wire or other obstruction and be maintained by the landowner so that the water level can be determined at any time.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 215
ALTERATION, DEEPENING, MAINTENANCE, AND REPAIR OF WATER SUPPLY WELLS

690-215-0055

Well Identification Label Maintenance

The well **identification** label shall not be removed from the wellhead and shall be maintained by the landowner in an accessible location and in a readable condition. See OAR 690-200-**0048**[. Appendix 200-2] for well identification label placement **methods and** instructions.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 215
ALTERATION, DEEPENING, MAINTENANCE, AND REPAIR OF WATER SUPPLY WELLS

690-215-0060

Access Ports, Dedicated Measuring Tubes [or]**and** Airlines

(1) Water supply wells without installed pumps:

(a) All water supply wells **without installed pumps, including wells that have been temporarily removed from service, temporarily abandoned due to a recess in construction, or temporarily abandoned before commencing service, shall be properly covered and** shall be equipped with [an unobstructed] **a usable** access port with a minimum diameter of 1/2-[ ]inch for the purpose of determining the water level in the well at any time.

(2) Water supply wells with installed pumps:

(a) Dedicated measuring tubes **shall**[are recommended to] be installed on all **water supply** wells at the time of pump installation**, pump repair, or pump replacement. Dedicated measuring tubes must meet the following requirements:**

(1) [Where required, d]**D**edicated measuring tubes shall be a minimum of 3/4-inch diameter schedule 40 PVC and shall extend to the top of the pump[.]**; and**

(2) The 3/4-inch diameter dedicated measuring tube may be reduced in size to 1/2-inch where it goes through the watertight well cap ,but shall not be reduced in size over the length of the pipe; and

(3) [The d]**D**edicated measuring tube**s** shall be vented above and below the well cap and shall be attached to the pump column at 10 foot intervals with 10 mil plastic tape[.]**; and**

(4) The lower five feet of the dedicated measuring tube shall be either 0.020 inch machine slotted well screen or the lower 20 feet of the dedicated measuring tube shall be extensively perforated with 1/8 inch holes[.]**; and**

(5) [The d]**D**edicated measuring tube**s** shall be plugged or capped at the bottom (Figure 200-5).

(b) [The d]**D**edicated measuring tube**s** shall [not be reduced in size over the length of the pipe and shall]remain free from wire or other obstruction.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

(c) An airline is not a substitute for a required dedicated measuring tube and, if installed, must enter the well in a location other than the access port.

(3) Access ports, dedicated measuring tubes or airlines shall be capped and a minimum of twelve inches above finished ground surface or pumphouse floor. If the well has a pitless adaptor then the dedicated measuring tube shall terminate within six inches of the top of the well casing.

(4) [The a]**A**ccess port**s**, airline**s** and dedicated measuring tube**s** on all water supply wells [required by OAR 690-210-0280] shall be maintained **by the landowner** in a condition that will prevent contamination of the ground water **resource**[. and shall remain unobstructed and be maintained by the landowner so that the water level can be determined at any time].

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 215
ALTERATION, DEEPENING, MAINTENANCE, AND REPAIR OF WATER SUPPLY WELLS

[690-215-0200

Dedicated Measuring Tube

A dedicated measuring tube as described in 690-215-0060 shall be installed in any water supply well at the time of pump installation, pump repair or pump replacement in the following areas (See Figures 200-4, 200-5, 200-7 and 200-8):

(1) Petes Mountain Area of Clackamas County (See OAR 690-200-0028(2));

(2) Eola Hills Ground Water Limited Area of Polk and Yamhill Counties (See OAR 690-200-0028(3);

(3) "Mosier Area" Special Area Standards area of Wasco County (See OAR 690-200-0028(4)).]

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

[APPENDIX 240-1

METHODS FOR ATTACHING WELL IDENTIFICATION TAG

MONITORING WELLS

Tags should be placed in an accessible and visible location.

For above ground completion wells:

Place tags at least 6 inches above ground level. Attach the tag to the outside of the protective casing.

The following methods are recommended by the Oregon Water Resources Department:

A. Strap the tag to the well casing or access port. Stainless steel bands or large hose clamps designed for exterior use are recommended. Straps may be available at electrical, auto supply or construction supply stores. Ultra violet resistant nylon straps are also acceptable. Any band used should be designed for exterior applications.
B. Rivet or bolt the tag to the well casing. Stainless steel rivets may be used.

For flush grade completion wells:

B. Rivet or bolt the tag to the inside of the monument skirting.
B. Band or strap the tag to the well casing.
C. Insert the strap or band into the concrete in the bottom of the vault.

Regardless of which method is used, the identification label must be easily readable.

Other options may be used provided the installation is permanent and visible. Please contact the Water Resources Department for other options.]

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

TABLE 240-1

WHICH[CONSTRUCTIONS] STANDARDS [THAT]APPLY?

The Department regulates the construction of borings through which ground[ ]water may become contaminated. The type of boring (and its purpose) will determine [the construction standards that]**which set of regulations** apply. **Questions often arise as to how a certain boring is to be regulated. In general, if the purpose of a boring is to seek water then it is considered a well.** 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 **general**[construction] standards and the**ir** Oregon Administrative Rule **reference** [that apply]are[as follows]:

Water Supply Wells	OAR 690-200 through 690-235
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]**Description** of Boring	[Construction]Standards that Apply
Air Sparging Well	Monitoring Wells
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 **Well**(Water Sampling)	Monitoring Wells
Drive Point **Well**(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 **Exchange Hole** [Pump Borings] (Closed Loop)	Geotechnical Holes
[Ground Source]Heat **Exchange Hole** [Pump Borings](Open Loop)	Water Supply Wells
Horizontal Drain (Slope Stability)	Geotechnical Holes
Horizontal Well (Monitoring)	Monitoring Wells
Horizontal Well (Water Supply)	Water Supply Wells

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

Inclinometer	Geotechnical Holes
Industrial Well	Water Supply Wells
Injection Well (Water)	Water Supply Wells
Injection Well (Remediation) (>72 Hours)	Monitoring Wells
Injection Well (Remediation) (<72 Hours)	Geotechnical Holes
Irrigation Well	Water Supply Wells
Monitoring Well	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 Well	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
Temporary Monitoring Well (>72 Hours)	Monitoring Wells
Trench	Other Holes
Underground Storage Tank (UST) Pit	Other Holes
Vapor Extraction Hole	Geotechnical Holes
Wetland Delineation Hole	Other Holes
Wet Soil Monitoring Hole	**Geotechnical Holes**

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 240
WELL CONSTRUCTION STANDARDS

690-240-0010

Definitions

(11) "Casing Seal" means the water tight seal established in the well bore between the well casing and the drillhole wall, above the filter pack seal, to prevent the inflow and movement of surface water or shallow ground water in the well annulus, or to prevent the outflow or movement of water under artesian or hydrostatic pressures. **This term is synonymous with "annular seal" or "surface seal".**

(17) "Confining **Interval**[Formation]" means **a low permeability material such as clay or solid, unfractured, consolidated rock**[the "impermeable" stratum] immediately overlying an artesian (confined) aquifer. (Figure 240-1)

[(46) "Impermeable Sealing Material" means cement or bentonite which is used to fill the open annulus.]

(4[7]**6**) "Jetted Well" means a well in which the drillhole excavation is made by the use of a high velocity jet of water.

(4[8]**7**) "Leakage" means movement of surface and/ or subsurface water around the well casing or seal.

(4[9]**8**) "Monitoring Well" means a well designed and constructed to determine the physical (including water level), chemical, biological, or radiological properties of ground[ ]water.

([50]**49**) "Monitoring Well Constructor" means any person who has a current water well constructor's license with a monitoring well endorsement issued in accordance with ORS 537.747(3).

(5[1]**0**) "Monitoring Well Constructor's License" means a Water Well Constructor's License with a monitoring well endorsement issued in accordance with ORS 537.747(3).

(5[2]**1**) "Monitoring Well Drilling Machine" means any driving, jetting, percussion, rotary, boring, auguring, or other equipment used in the construction, alteration, or abandonment of monitoring wells.

(5[3]**2**) "Order" means any action satisfying the definition given in ORS Chapter 183 or any other action so designated in ORS 537.505 to 537.795.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

(5[4]**3**) "Other Hole" means a hole other than a water supply well, monitoring well, or geotechnical hole, however constructed, in naturally occurring or artificially emplaced earth materials through which ground[ ]water can become contaminated. Holes constructed under ORS Chapters 517, 520, and 522 are not subject to these rules. Examples of other holes are listed in OAR 690-240-0030.

(5[5]**4**) "Perched Ground[W]**w**ater" means ground[ ]water held above the regional or main water table by a less permeable underlying earth or rock material. (Figure 240-1)

(5[6]**5**) "Permeability" means the ability of material to transmit fluid, usually described in units of gallons per day per square foot of cross-section area. It is related to the effectiveness with which pore spaces transmit fluids.

(5[7]**6**) "Person" includes individuals, corporations, associations, firms, partnerships, joint stock companies, public and municipal corporations, political subdivisions, the state and any agencies thereof, and the Federal Government and any agencies thereof.

(5[8]**7**) "Petcock Valve" is a valve used to contain pressure which when opened will drain the line or pipe.

(58) "Petroleum" means gasoline, crude oil, fuel oil, diesel oil, lubricating oil, oil sludge, oil refuse, and crude oil fractions and refined petroleum fractions, including gasoline, kerosene, heating oils, diesel fuels, and any other petroleum-related product or waste or fraction thereof that is liquid at a temperature of 60 degrees Fahrenheit and a pressure of 14.7 pounds per square inch absolute. "Petroleum" does not include any substance identified as a hazardous waste under 40 CFR Part 261.

[(77) "Stratum" means a bed or layer of a formation that consists throughout of approximately the same type of consolidated or unconsolidated material.]

(7[8]**7**) "Sump" means a hole dug to a depth of ten feet or less with a diameter greater than ten feet in which ground water is sought or encountered.

(7[9]**8**) "Suspension" means the temporary removal of the privilege to construct wells under an existing license for a period of time not to exceed one year.

([80]**79**) "Unconsolidated Formation" means naturally occurring, loosely cemented, or poorly indurated materials including clay, sand, silt, and gravel.

(8[1]**0**) "Underground Injection" means the emplacement or discharge of fluids to the subsurface.

(8[2]**1**) "Underground Injection System" means a well, improved sump, sewage drain hole, subsurface fluid distribution system, or other system or ground water point source used for the emplacement or discharge of fluids.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

(8[3]**2**) "Upper Oversize Drillhole" means that part of the well bore extending from land surface to the bottom of the surface seal interval.

(8[4]**3**) "Violation" means an infraction of any statute, rule, standard, order, license, compliance schedule, or any part thereof and includes both acts and omissions.

(8[5]**4**) "Water Supply Well" means a well, other than a monitoring well, that is used to beneficially withdraw or beneficially inject ground water. Water supply wells include, but are not limited to, community, dewatering, domestic, irrigation, industrial, municipal, and aquifer storage and recovery wells.

(8[6]**5**) "Water Supply Well Constructor" means any person who has a current water well constructor's license with a water supply well endorsement issued in accordance with ORS 537.747(3).

(8[7]**6**) "Water Supply Well Constructor's License" means a Water Well Constructor's License with a water supply well endorsement issued in accordance with ORS 537.747(3).

(8[8]**7**) "Water Table" means the upper surface of an unconfined water body, the surface of which is at atmospheric pressure and fluctuates seasonally. The water table is defined by the levels at which water stands in wells that penetrate the water body. (See Figure 240-1)

(8[9]**8**) "Water Well Constructor's License" means a license to construct, alter, deepen, abandon or convert wells issued in accordance with ORS 537.747(3). Endorsements are issued to the license and are specific to the type of well a constructor is qualified to construct, alter, deepen, abandon or convert.

([90]**89**) "Well" means any artificial opening or artificially altered natural opening, however made, by which ground water is sought or through which ground water flows under natural pressure, or is artificially withdrawn or injected. This definition shall not include a natural spring, or wells drilled for the purpose of exploration or production of oil or gas. Prospecting or exploration for geothermal resources as defined in ORS 522.005 or production of geothermal resources derived from a depth greater than 2,000 feet as defined in ORS 522.055 is regulated by the Department of Geology and Mineral Industries.

(90) "Wet Soil Monitoring Hole" means a shallow geotechnical hole set vertically in the ground and constructed to a depth of three and one-half feet or less for studying and/or monitoring the upper portion of the shallowest water-bearing unit within and immediately below the surface soil horizon.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 240
WELL CONSTRUCTION STANDARDS

690-240-0024

Well Identification Label

(1) Within 30 days of completion of well construction, conversion, or alteration, the constructor shall permanently affix a well identification label to the wellhead **in an accessible and visible location in the following manner:** [as described in **Appendix 240-1**.]

(a) For above ground completions:

(A) Labels shall be at least six inches above ground surface and shall be permanently attached to the outside of the protective casing using a stainless steel band, stainless steel rivets, or screws.

(b) For flush grade completions:

(A) Rivet or bolt the label to the inside of the monument skirting; or

(B) Band or strap the label to the well casing; or

(C) Insert the strap or band into the concrete in the bottom of the vault.

(2) Identification labels may not be attached to pumps, pump equipment, water delivery lines, or well caps.

(3) The identification **label** number shall be recorded on the well report **at the time the report is submitted**.

(4) The well identification label shall be attached in such a manner as to be easily readable upon inspection.

(5) Identification labels shall be furnished by the Department.

([2]**6**) If a well identification label is already affixed to an existing well that is being altered, converted, or abandoned, the constructor shall record the identification **label** number on the well report.

([3]**7**) When a well that has a well identification label [(tag)]on it is permanently abandoned, the well identification **label**[tag] shall be destroyed. The well identification **label**[tag] shall not be reused.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 240
WELL CONSTRUCTION STANDARDS

OAR 690-240-0035(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 690-240-0035(4)(c) be responsible for the construction and abandonment of the geotechnical hole.

OAR 690-240-0035(4)(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.

OAR 690-240-0035(7) Cased permanent geotechnical holes

(a) Cased permanent geotechnical holes include but are not limited to: gas migration holes, cathodic protection holes**, wet soil monitoring holes,** and vapor extraction holes;

(b) [If p]**P**ermanent 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].

(c) The borehole diameter for cased permanent geotechnical holes shall be at least four inches larger than the nominal casing diameter. If the cased permanent geotechnical hole is constructed using a hollow stem auger drilling machine, the inside diameter of the auger must be at least four inches larger than the nominal diameter of the casing to be installed. Cased permanent geotechnical holes installed using direct push technology shall meet the annular space requirements in OAR 690-240-0540.

(d) Cased permanent geotechnical holes, except wet soil monitoring holes, shall be sealed in accordance with the filter pack seal requirements in OAR 690-240-0460, and the casing seal requirements in OAR 690-240-0475.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

(e) Wet soil monitoring holes shall have a casing seal that extends to a minimum depth of one-foot. The casing seal shall be placed in accordance with OAR 690-240-0475.

(f) Wet soil monitoring holes shall not exceed three and one-half feet in depth.

OAR 690-240-0035(10) Geotechnical Holes abandonment:

(a) Geotechnical holes shall be abandoned **in the following manner**[so that they do not]:

(A) [Connect water bearing zones or aquifers]**If it can be verified that the geotechnical hole was constructed in accordance with these rules, it shall be abandoned by filling the well from the bottom up with an approved grout as described in OAR 690-240-0475. The casing shall then be removed below grade, as compatible with local site conditions and land practices. The following are acceptable methods of original geotechnical hole construction verification:**

(1) A geotechnical hole report previously submitted to the Water Resources Department;

(2) Geotechnical hole information submitted to the Oregon Department of Environmental Quality;

(3) Other information as approved by the Water Resources Department;

(B) [Allow water to move vertically with any greater facility than in the undisturbed condition prior to construction of the geotechnical hole]**If the geotechnical hole construction cannot be verified by means listed in section (A) of this rule, or if the geotechnical hole was not constructed in accordance with these rules, the geotechnical hole shall be abandoned by completely redrilling the hole to a minimum of the original diameter. All casing, screen, annular sealing material, drill cuttings, debris, and filter pack material shall be removed prior to sealing.**[; or]

[(C) Allow surface water to enter the hole.]

(b) [Temporary g]**G**eotechnical holes constructed to collect a water quality sample shall be abandoned in accordance with OAR 690-240-0510.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

690-240-0043

Construction Standards

(1) If permanent casing is needed in a ground source heat pump boring, it shall meet the standards set out in OAR 690-210-0190 through 690-210-0220 for steel and plastic.

(2) Site specific conditions shall be assessed to determine the best method and materials to be used for sealing the boring annulus to protect the groundwater resource and that method shall meet the standards set out in OAR 690-210-0300 through 690-210-0360 for sealing wells.

(3) The diameter of the borehole for cased and uncased ground source heat pump borings shall allow placement of the heat exchange loop and grout pipe to the bottom of the boring as follows:

(a) For installation of a 3/4 inch loop, the diameter of the borehole shall be a minimum of 4 inches;

(b) For installation of a 1 inch loop, the diameter of the borehole shall be a minimum of 4 1/2 inches; and

(c) For installation of a 1 1/4 inch loop, the diameter of the borehole shall be a minimum of 5 inches.

(4) The type of sealing material used shall be compatible with the heat exchange loop material and permanent casing material used in the construction of the boring.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

690-240-0395

Monitoring Well Report Required (Monitoring Well Log)

(1) A monitoring well report shall be prepared for each monitoring well constructed, altered, converted, or abandoned including unsuccessful monitoring wells. The log shall be certified as correct by signature of the Monitoring Well Constructor constructing the monitoring well. The completed log shall also be certified by the bonded Monitoring Well Constructor responsible for construction of the monitoring well. A monitoring well report must be submitted by each bonded constructor (if drilling responsibility is shifted to a different bonded constructor), showing the work performed by each bonded constructor.

(2) The log 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 Monitoring Well Constructor, and the second copy shall be given to the customer who contracted for the construction of the monitoring well.

(3) The bonded Monitoring Well Constructor shall file the monitoring well log with the Director within 30 days after the completion of the construction, alteration, conversion, or abandonment of the monitoring well.

(4) The trainee or Monitoring Well Constructor operating the monitoring well drilling machine shall maintain a rough log of all geologic strata encountered and all materials used in the construction of the monitoring well. This log shall be available for inspection by the Watermaster or other authorized agent of the Water Resources Department or other delegated agency representative at any time before the monitoring well report is received by the Department. The rough drilling log shall be in handwritten or electronic form, or a voice recording.

(5) In the event a constructor leaves any drilling equipment or other tools in a monitoring well this fact shall be entered on the monitoring well report.

(6) A copy of any special authorizations or special standards issued by the Director shall be attached to the monitoring well report.

(7) The report of monitoring well construction required in section (1) of this rule shall be recorded on a form provided or previously approved in writing by the Department. The form shall include, as a minimum, the following:

(a) Name and Address of Landowner;

(b) Started/Completed date;

(c) Location of the well 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);

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

(d) Start card number;

(e) Well identification label number (well tag number);

(f) Use of well;

(g) Type of work;

(h) Type and amount of sealant used and measured weight of the grout slurry as required in OAR 690-240-0475(2)(g);

(i) Temperature of water;

(j) Total dissolved solids (TDS);

([j]**k**) Map showing location of monitoring well on site, must be attached and shall include an approximate scale and a north arrow; **and**

([k]**l**) Such additional information as required by the Department.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

690-240-0440

Additional Standards for Artesian Monitoring Wells

(1) Monitoring wells penetrating into an artesian aquifer shall have an upper oversize drillhole at least four inches greater in diameter than the nominal diameter of the permanent well casing except as noted in OAR 690-240-0525 concerning piezometers. Watertight unperforated casing shall extend and be sealed, according to OAR 690-240-0475, at least five feet into the confining **interval**[formation] immediately overlying the artesian water-bearing zone.

(2) If an artesian monitoring well flows at land surface, the well shall be equipped with a control valve and a watertight mechanical cap, threaded or welded, so that all flow of water from the well can be completely stopped.

(3) All flowing artesian monitoring wells shall be equipped with a pressure gauge placed on a dead-end line. A petcock valve shall be placed between the gauge and well casing.

(4) All flowing artesian monitoring wells shall be tested for artesian shut-in pressure in pounds per square inch and rate of flow in cubic feet per second, or gallons per minute, under free discharge conditions. This data shall be reported on the well report.

690-240-0510

Abandonment of Monitoring Wells

(7) When abandoning artesian monitoring wells, in addition to sections (1)-(6) of this rule, the flow shall be confined or restricted by cement grout applied under pressure, or by the use of a suitable well packer, or a wooden plug placed at the bottom of the confining **interval**[formation] immediately above the artesian water bearing zone. An approved **grout**[sealant] shall be used to fill the well to land surface as specified in OAR 690-240-0475.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 240
WELL CONSTRUCTION STANDARDS

OAR 690-240-0525 Piezometers

(2) Piezometer well abandonment:

(a) Piezometer wells shall be abandoned as described in OAR 690-240-0510 concerning monitoring wells.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 240
WELL CONSTRUCTION STANDARDS

690-240-0540

Direct Push Monitoring Wells and Piezometers

(1) Monitoring wells and piezometers that are installed using direct push technology shall comply with the applicable standards in these rules[for reporting, casing, screening, filter pack, filter pack placement, filter pack seal, development, surface seal, cleaning, protection, marking, and completion].

(2) Monitoring wells and piezometers that are installed using direct push technology shall also comply with the following standards:

(a) Only prepacked screens shall be used; and

(b) The outside diameter of the borehole shall be a minimum of **two**[one] inch**es** greater than the outside diameter of the well casing; and

(c) Granular bentonite shall not be used in the **casing** seal[ed] interval below the static water level; and,

(d) **Monitoring** [W]**w**ells and piezometers shall not be constructed through more than one water bearing formation and shall not be greater than 50 feet in depth[unless a special standard is obtained.]**; and**

(e) Monitoring wells and piezometers that extend deeper than 30 feet shall be equipped with centering guides to insure proper centering of casing. Guides shall be spaced at minimum ten foot intervals and attached to the casing.

(3) Monitoring wells and piezometers larger than two inches in diameter shall not be installed using direct push technology without prior Department approval.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

SENATOR TED FERRIOLI
900 Court Street NE, S-323
Salem, Oregon 97301
(503) 986-1950

SENATOR TIM KNOPP
900 Court Street NE, S-309
Salem, Oregon 97301
(503) 986-1727

SENATOR DOUG WHITSETT
900 Court Street NE, S-311
Salem, Oregon 97301
(503) 986-1728

Diana Enright
Rules Coordinator
Water Resources Department
725 Summer St. NE
Salem, OR 97301

Re: Comments on Proposed Well Measuring Tubes Rules

June 22, 2016

Dear Ms. Enright,

We are writing to officially request modification of Oregon Water Resources Department's proposed change to OAR 690-210-0280, 690-215-0060, and 690-215-0200. The new requirements for well measuring tubes create a costly burden for all rural Oregonians, but especially those in economically disadvantaged areas in Central and Eastern Oregon. At a cost of $1 per foot, many deep well owners in Central and Eastern Oregon will be facing costs far over the $400 average estimated by the Department. In fact, costs could be as high as $800 to $1,000 per well. Due to the necessity of wells in rural areas, this new requirement places an unreasonable additional cost on low-income rural Oregonians.

There are several additional concerns beyond unreasonable and unnecessary costs. One of which is the Department's blatant disregard of the Rules Advisory Committee put in place to advise the Department on well construction standards. In the public process, we would hope that the Department would have taken into consideration the comments and concerns of those most impacted by the policy the Department creates. After RAC members voted down the change in rule regarding metering tubes, it was discouraging to learn that the Department disregarded the RAC's advice on the matter.

Eastern Oregon contractors have expressed concern to the Department that the measuring tubes could be compromised as they may crack or freeze during harsh weather conditions such as extreme cold and condensation. We also understand that many suppliers are not currently able to provide the necessary equipment for installation of these tubes, which will not only increase costs, but cause delays.

Further, the entire rationale for this rule is problematic as domestic wells are not intended for water level measurement due to constant pumping activity, and the Department does not have staff resources to monitor thousands of new wells involved with this rule.

Beyond the aforementioned concerns, we believe that overall, the new requirements for well measuring tubes are unreasonably costly, unproductive, and result in a relatively negligible public benefit, and will engender hostility toward the Water Resources Department and Department staff. We ask that you follow the input of Oregonians who will be affected by this policy.

Sincerely,

Ted Ferrioli
Senate District 30

Tim Knopp
Senate District 27

Doug Whitsett
Senate District 28

Public Health Division
Drinking Water Program
Kate Brown, Governor

Oregon Health Authority

444 A St
Springfield, OR 97477
Phone: (541) 726-2588
Fax: (541) 726-2596

Diana Enright, Rules Coordinator
Water Resources Department
725 Summer St, N.E.
Salem, OR 97301

Diana:

As the Groundwater Coordinator for Oregon Health Authority Drinking Water Services and as a member of the Water Resource Departments Groundwater Advisory Committee and the recent Well Construction Rules Advisory Committee, I would like to express my support for the proposed amendments to the well construction rules regarding measuring tubes, rule references, setbacks, well seals, geotechnical holes, and TDS requirements.

I would like to specifically encourage the Water Resources Commission to give strong consideration to the proposed amendments to:

OAR 690-210-0280 (dedicated measuring tubes).

> I believe that requiring a dedicated measuring tube in all water supply wells is good for future public health. Currently Oregon has three Groundwater Management Areas for nitrate contamination and numerous groundwater clean-up sites. These areas often overlap with both public and private well water supplies. While measuring tubes and water-level measurements can be collected retro-actively after the release of a contaminant to groundwater, having the ability to collect accurate water-level measurements quickly would allow for a faster characterization of groundwater flow and contaminant migration direction. In turn, a faster characterization of contaminant migration direction would help better define the wells and individuals at risk in a timely manner.
>
> The Groundwater Rule Advisory committee endorsed requiring measuring tubes on all new wells but chose not to endorse requiring measuring tubes in existing wells due in part to concerns with the potential difficulty of finding enough room in an older well to install a measuring tube. Considering that there is an established procedure for granting special construction standards exemptions from the proposed measuring tube requirement, I have to humbly disagree with my fellow Advisory Committee members and believe that the requirement would be as reasonable for older wells as it would be for new wells. In the long run, maximizing the number of wells where accurate water-level measurements can be obtained is of benefit to the well owner and natural resource agencies.

690-210-0030 (setbacks from petroleum tanks),

> Establishing a minimum setback for new water wells from above ground and underground petroleum tanks helps reduce the risk of contaminating a water supply. Establishing a well setback of 25 ft from household tanks and 50 ft from commercial tanks seems like an appropriate requirement for new wells. However, it should be understood that these setbacks would be different than the Oregon Health Authority well construction standards for public water supply wells as OAR 333-061-0050(2)(a)(E) requires a 100 ft setback from fuel transfer and storage activities. As such, we do have concerns that having different setback distances in OHA and WRD rules may cause some confusion among smaller public water systems (such as rural residential developments, restaurants, gas stations, etc…) even though there is language in OAR 690-210-0030 that indicates there are additional setback standards for public water systems. Having a single setback distance of 100 ft for all new water supply wells would eliminate any potential confusion and would ensure that new private water supply wells are as protected from petroleum tanks as new public water supply wells.

The various revisions of terms used to describe materials encountered during the well construction process.

> Although revising the terms used to describe the materials encountered during the well construction process (such as OAR 690-210-150) can be viewed as a house cleaning effort, it is an important step that helps clarify that, filling out a Well Drillers Report or the regulatory review of a Well Drillers Report does not constitute the public practice of geology. ORS 672.505(7) defines the public practice of geology as "the performance for another of geological service or work, such as consultation, investigation, surveys, evaluation, planning, mapping and inspection of geological work, that is related to public welfare or safeguarding of life, health, property and the environment…". Terms such as "stratum" or "formation" imply a knowledge of the geology of an area and the lateral extent of the materials encountered while drilling a well. This kind of knowledge is most often gained from the investigation of geologic reports, mapping, and/or the construction of cross-section diagrams using several well logs and as such, the use of these terms imply the public practice of geology. Replacing these terms with "interval" is appropriate as proper well construction and regulatory review of well construction is typically determined by the materials encountered while drilling and not a geological investigation of the surrounding area.

Sincerely,

Tom Pattee, R. G.
Groundwater Coordinator
OHA Drinking Water Services

OREGON ASSOCIATION OF REALTORS®

June 20, 2016

ATTN: Kristopher Byrd
Oregon Water Resources Department
725 Summer St NE
Salem, OR 97301

RE: Admin Rule Amendments, Chapter 690 – Specifically OAR 690-210-0280: Access Ports, **Dedicated Measuring Tubes** and Airlines.

Mr. Byrd:

Oregon Association of REALTORS® (OAR) submits these comments in reference to the proposed Administrative Rule amendments to chapter 690, filed May 13, 2016.

Specifically, OAR has concerns with the amendments contained in OAR 690-210-0280. We understand the department held multiple rule advisory committee (RAC) meetings prior to formal rule making comment, and that the RAC formally voted to object to the language contained in this portion of the proposed rule amendments.

We join in the concerns expressed as a result of this process and concur with those expressed during the technical review. Namely:

a. Contractors specializing in installation and servicing of water wells were concerned with the ability of suppliers to provide the actual equipment needed for installation.
b. We understand that the proposed changes would limit the ability of well rehabilitation. It may not be possible to recirculate treatment fluids after limiting access to the well with the installation of a dedicated measuring tube, thus adding an additional expense to the property owner.
c. We understand that objections to the installation of measuring tubes were raised by central and eastern Oregon installers. Specifically they expressed concerns that condensation could occur in the measuring tubes, along with freezing temperatures, causing the apparatus to crack and fail.

We assume the language included in the draft amendments, despite objection, has remained in the draft because the OWRD believes the inclusion of such measuring devices in every well is necessary to manage the waters of the State. However, from our research, smaller domestic

wells (that are constantly being pumped) are not the preferred place to obtain static water level measurement or overall aquifer information, yet the language was changed to include all wells.

We also have concern with OWRD's enforcement of the standard proposed in the draft language. OWRD has no authority over pump contractors; they are regulated by the Oregon Construction Contractors Board. Thus, the burden of compliance is on a homeowner, who would likely not have the sophistication or awareness and ensure compliance with the standard.

In summation, the proposed standard could add significant costs to the land owner, in some cases involving deeper wells the estimated costs could reach far in excess of $800. Further, the mandated cost may not provide the service or the intended benefit to the property owner or the State of Oregon to justify the expense.

With these concerns in mind, we ask OWRD to remove the proposed amendments in OAR 690-210-0280 before moving forward with adopting the rest of the proposed amendments. We are happy to assist with further rulemaking specific to dedicated measuring tubes at a later date.

Respectfully submitted,

Shawn Cleave
Government Affairs Director
Oregon Association of REALTORS®

2110 Mission St. SE, #230
Salem, OR 97302

PO Box 351, Salem, OR 97308

scleave@oregonrealtors.org

Copy: Tom Byler, Oregon Water Resources Department Director
Bob Baumgartner, Commissioner
Bruce Corn, Commissioner
Dennis Doherty, Commissioner
John Roberts, Commissioner
Carol Whipple, Commissioner

ATTACHMENT 3

Final Proposed Rules - Chapter 690, Divisions 200, 205, 210, 215, 240

Summary of Contents:

- Division 200, Appendix 200-2, Table 200-1
- Division 200, Sections 0028, 0048, 0050
- Division 205, Section 0210
- Division 210, Appendix 210-3
- Division 210, Sections 0030, 0140, 0150, 0155, 0280
- Division 215, Sections 0055, 0060
- Division 240, Appendix 240-1, Table 240-1
- Division 240, Sections 0010, 0024, 0035(3), 0035(4(c)), 0035(7), 0035(10), 0043, 0395, 0440, 0510, 0525, 0540

[Text to be deleted is bracketed and in red] **Language to be added is bolded and underlined**

Existing Rules are Available Online for Reference at www.oregon.gov/owrd/pages/law/oar.aspx:

Division 200	Appendices, Tables and Figures
Division 205	Appendices, Tables and Figures
Division 210	Appendices, Tables and Figures
Division 215	Appendices, Tables and Figures
Division 240	Appendices, Tables and Figures

[APPENDIX 200-2

METHODS FOR ATTACHING WELL IDENTIFICATION TAG

WATER SUPPLY WELLS

Tags should be placed in an accessible and visible location. Place tags at least 6 inches above ground level.

Attach tags to permanent items such as well casing or monuments, NOT to pumps, pump equipment, water delivery lines or sanitary well seals (well caps).

The following methods are recommended by the Oregon Water Resources Department:

A Strap the tag to the well casing or access port. Stainless steel bands or large hose clamps designed for exterior use are recommended. Straps may be available at electrical, auto supply or construction supply stores. Ultra violet resistant nylon straps are also acceptable. Any band used should be designed for exterior applications.

B. Rivet or bolt the tag to the well casing. Stainless steel rivets may be used.

Other options may be used provided the installation is permanent and visible. Please contact the Water Resources Department for other options.]

Text to be deleted is bracketed]
anguage to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690, DIVISION 200
WATER SUPPLY WELL CONSTRUCTION STANDARDS

TABLE 200-1

WHICH [SET OF]STANDARDS APPLY[IES]?

The Department [currently] regulates the construction of borings through which ground[ ]water [could]**may** become contaminated. The type of boring (and its purpose) will determine which set of regulations apply. Questions often arise as to how a certain boring is to be regulated. In general, if the purpose of a boring is to seek water then it is considered a well. The table below lists common types of holes and [which category they fall into]**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 [there is a question as to what standard applies or what agency may need to be contacted.]**you have any questions.**

The general standards and their Oregon Administrative Rule reference are:

Water Supply Wells	OAR 690-200 through 690-235
Monitoring Wells	OAR 690-240
Other Holes	OAR 690-240-0030
Geotechnical Holes	OAR 690-240-0035 **through 690-240-0049**

Description of Boring:	Standards that Apply
Air Sparging Well	Monitoring Well
Aquifer Storage and Recovery Well	Water Supply Well
Cathodic Protection Hole	Geotechnical Hole
Community Well	Water Supply Well
Construction Hole	Other Hole
Dewatering Well	Water Supply Well
Domestic Well	Water Supply Well
Drive Point (Core[ing] **holes**)	Geotechnical Hole
Drive Point Well (Dewatering)	Water Supply Well
Drive Point **Well** (Water Sampling)	Monitoring Well
Drive Point **Well** (Water Supply)	Water Supply Well
Dry (Disposal) Well	Other Hole
Elevator Shaft	Other Hole
Extraction Well	Monitoring Well
Gas Migration Hole	Geotechnical Hole
Geothermal Well	Water Supply Well
Gravel Pit	Other Hole
Heat Exchange Hole (Closed Loop)	Geotechnical Hole
Heat Exchange Hole (Open Loop)	Water Supply Well
Horizontal Drain (Slope Stability)	Geotechnical Hole
Horizontal Well (Monitoring)	Monitoring Well
Horizontal Well (Water Supply)	Water Supply Well
Inclinometer	Geotechnical Hole
Industrial Well	Water Supply Well

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

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

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

690-200-0028

Designated Special Area Standards

(4) Special Area Standards for New, Altered, Deepened or Converted Water Supply Wells in the "Mosier Area," Wasco County.

(i) A rough log that describes the kind and nature of the material in each **formation**[stratum] penetrated, with at least one entry for each change of formation, the thickness of aquifers and available static water level measurements; and

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 200
WELL CONSTRUCTION AND MAINTENANCE

690-200-0048

[Label]Well Identification **Label**

(1) Within 30 days of completion of well construction, conversion, or alteration, the constructor shall permanently affix a well identification label to the wellhead **in an accessible and visible location in the following manner:**[as described in **Appendix 200-2.**]

(a) Labels shall be at least six inches above ground surface and shall be permanently attached to the outside of the casing using a stainless steel band, stainless steel rivets, or screws; and

(b) Labels shall be attached in such a manner as to be easily readable upon inspection.

(2) Identification labels may not be attached to pumps, pump equipment, water delivery lines, or well caps.

(3) The identification **label** number shall be recorded on the well report **at the time the report is submitted**. [The well identification label shall be attached in such a manner as to be easily readable upon inspection. Identification labels shall be furnished by the Department.]

(4) Identification labels shall be furnished by the Department.

([2]**5**) If a well identification label is already affixed to an existing well that is being altered, converted, or abandoned, the constructor shall record the identification **label** number on the well report.

([3]**6**) When a well that has a well identification label [(tag)]on it is permanently abandoned, the well identification **label**[tag] shall be destroyed. The well identification **label**[tag] shall not be reused.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 200
WELL CONSTRUCTION AND MAINTENANCE

690-200-0050

Definitions

(17) "Casing Seal" means the water tight seal established in the well bore between the well casing and the drillhole wall to prevent the inflow and movement of surface water or shallow ground water in the well annulus, or to prevent the outflow or movement of water under artesian or hydrostatic pressures. **This term is synonymous with "annular seal" or "surface seal".**

(25) "Confining **Interval**[Formation]" means **a low permeability material such as clay or solid, unfractured, consolidated rock**[the "impermeable" stratum] immediately overlying an artesian (confined) aquifer (see Figure 200-2).

[(60) "Impermeable Sealing Material" means cement, concrete, or bentonite which is used to fill the open annulus between the lower and upper sealing intervals.]

(6[1]**0**) "Inspection Port" means an orifice or other viewing device from which the low-pressure drain and check valve may be observed.

(6[2]**1**) "Jetted Well" means a well in which the drillhole excavation is made by the use of a high velocity jet of water.

(6[3]**2**) "Leakage" means movement of surface and/ or subsurface water around the well casing or seal.

(6[4]**3**) "Liner Pipe" means the inner tubing, pipe, or conduit installed inside the well casing or lower well bore. The liner pipe is used to protect against caving formations and is not permanently affixed to the drillhole wall or casing.

(6[5]**4**) "Lower Drillhole" means that part of the well bore extending below the **casing**[surface] seal interval in a well.

(6[6]**5**) "Mineralized Water" means any naturally occurring ground[ ]water containing an amount of dissolved chemical constituents limiting the beneficial uses to which the water may be applied.

(6[7]**6**) "Monitoring Well" means a well designed and constructed to determine the physical (including water level), chemical, biological, or radiological properties of ground[ ]water.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

(6[8]**7**) "Monitoring Well Constructor" means any person who has a current water well constructor's license with a monitoring well endorsement issued in accordance with ORS 537.747(3).

(6[9]**8**) "Monitoring Well Constructor's License" means a Water Well Constructor's License with a monitoring well endorsement issued in accordance with ORS 537.747(3).

([70]**69**) "Municipal or Quasi-Municipal Well" means a water supply well owned by a municipality or nonprofit corporation that may be used as a community or public water supply.

(7[1]**0**) "Order" means any action satisfying the definition given in ORS Chapter 183 or any other action so designated in ORS 537.505 to 537.795.

(7[2]**1**) "Other Hole" means a hole other than a water supply well, a monitoring well, or geotechnical hole, however constructed, in naturally occurring or artificially emplaced earth materials, through which ground[ ]water can become contaminated. Holes constructed under ORS Chapters 517, 520, and 522 are not subject to these rules. Other holes are regulated under OAR 690-240. Examples of other holes are listed in 690-240-0030.

(7[3]**2**) "Perched Ground[W]**w**ater" means ground[ ]water held above the regional or main water table by a less permeable underlying earth or rock material (see Figure 200-2).

(7[4]**3**) "Permeability" means the ability of material to transmit fluid, usually described in units of gallons per day per square foot of cross-section area. It is related to the effectiveness with which pore spaces transmit fluids.

(7[5]**4**) "Person" includes individuals, corporations, associations, firms, partnerships, joint stock companies, public and municipal corporations, political subdivisions, the state and any agencies thereof, and the Federal Government and any agencies thereof.

(7[6]**5**) "Petcock Valve" is a valve used to contain pressure which when opened will drain the line or pipe.

(76) "Petroleum" means gasoline, crude oil, fuel oil, diesel oil, lubricating oil, oil sludge, oil refuse, and crude oil fractions and refined petroleum fractions, including gasoline, kerosene, heating oils, diesel fuels, and any other petroleum-related product or waste or fraction thereof that is liquid at a temperature of 60 degrees Fahrenheit and a pressure of 14.7 pounds per square inch absolute. "Petroleum" does not include any substance identified as a hazardous waste under 40 CFR Part 261.

[(103) "Stratum" means a bed or layer of a formation that consists throughout of approximately the same type of consolidated or unconsolidated material.]

(10[4]**3**) "Sump" means a hole dug to a depth of ten feet or less with a diameter greater than ten feet in which ground water is sought or encountered.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

(10[5]**4**) "Suspension" means the temporary removal of the privilege to construct wells under an existing license for a period of time not to exceed one year.

(10[6]**5**) "System Interlock" means an interlocking mechanism used to link irrigation pumps and chemical injection units, other pumps, or supply tanks so designed that in the event of irrigation pump malfunction or failure, shutdown of the chemical injection units will occur. (Back-siphon prevention)

(10[7]**6**) "Unconsolidated Formation" means naturally occurring, loosely cemented, or poorly indurated materials including clay, sand, silt, and gravel.

(10[8]**7**) "Underground Injection" means the emplacement or discharge of fluids to the subsurface.

(10[9]**8**) "Underground Injection System" means a well, improved sump, sewage drain hole, subsurface fluid distribution system, or other system or ground water point source used for the emplacement or discharge of fluids.

(1[10]**09**) "Upper Oversize Drillhole" means that part of the well bore extending from land surface to the bottom of the surface seal interval.

(11[1]**0**) "Violation" means an infraction of any statute, rule, standard, order, license, compliance schedule, or any part thereof and includes both acts and omissions.

(11[2]1) "Water Supply Well" means a well, other than a monitoring well, that is used to beneficially withdraw or beneficially inject ground or surface water. Water supply wells include, but are not limited to, community, dewatering, domestic, irrigation, industrial, municipal, and aquifer storage and recovery wells.

(11[3]2) "Water Supply Well Constructor" means any person who has a current water well constructor's license with a water supply well endorsement issued in accordance with ORS 537.747(3).

(11[4]3) "Water Supply Well Constructor's License" means a Water Well Constructor's License with a water supply well endorsement issued in accordance with ORS 537.747(3).

(11[5]4) "Water Supply Well Drilling Machine" means any power-driven driving, jetting, percussion, rotary, boring, digging, augering machine, or other equipment used in the construction or alteration of water supply wells.

(11[6]5) "Water Table" means the upper surface of an unconfined water body, the surface of which is at atmospheric pressure and fluctuates seasonally. The water table is defined by the levels at which water stands in wells that penetrate the water body (see Figure 200-2).

(11[7]6) "Water Well Constructor's License" means a license to construct, alter, deepen, abandon or convert wells issued in accordance with ORS 537.747(3). Endorsements are issued to the

license and are specific to the type of well a constructor is qualified to construct, alter, deepen, abandon or convert.

(11[8]7) "Well" means any artificial opening or artificially altered natural opening, however made, by which ground water is sought or through which ground water flows under natural pressure, or is artificially withdrawn or injected. This definition shall not include a natural spring, or wells drilled for the purpose of exploration or production of oil or gas. Prospecting or exploration for geothermal resources as defined in ORS 522.005 or production of geothermal resources derived from a depth greater than 2,000 feet as defined in 522.055 is regulated by the Department of Geology and Mineral Industries.

(118) "Wet Soil Monitoring Hole" means a shallow geotechnical hole set vertically in the ground and constructed to a depth of three and one-half feet or less for studying and/or monitoring the upper portion of the shallowest water-bearing unit within and immediately below the surface soil horizon.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

690-205-0210

Well Report Required (Water Supply Well Log)

(1) A water well report (water well log) shall be prepared for each water supply well constructed, altered, converted, or abandoned. This requirement includes unsuccessful wells and wells exempt from appropriation permit requirements under ORS 537.545. The log shall be certified as correct by signature of the Water Supply Well Constructor constructing the water supply well. The completed log shall also be certified by the bonded Water Supply Well Constructor responsible for construction of the well. A water well report must be submitted by each bonded constructor (if drilling responsibility is shifted to a different bonded constructor), showing the work performed by each bonded constructor.

(2) The log 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 Water Supply Well Constructor, and the second copy shall be given to the customer who contracted for the construction of the water supply well.

(3) The bonded Water Supply Well Constructor shall file the water well log with the Director within 30 days after the completion of the construction, alteration, conversion or abandonment of the water supply well.

(4) The trainee or Water Supply Well Constructor operating the water supply well drilling machine shall maintain a rough log of all geologic strata encountered and all materials used in the construction of the water supply well. This log shall be available for inspection by the Watermaster, or other authorized agent of the Water Resources Department at any time before the water well report is received by the Department. The rough drilling log shall be in handwritten or electronic form, or a voice recording.

(5) In the event a constructor leaves any drilling equipment or other tools in a water supply well, this fact shall be entered on the water well report.

(6) A copy of any special authorizations or special standards issued by the Director shall be attached to the water supply well report.

(7) The report of water well construction required in section (1) of this rule shall be recorded on a form provided or previously approved in writing by the Department. The form shall include, as a minimum, the following:

(a) Name and Address of Landowner;

(b) Started/Completed date;

(c) Location of the well 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) Start card number;

(e) Well identification label number (well tag number);

(f) Use of well;

(g) Type of work;

(h) Temperature of water; [and]

(i) **Total dissolved solids (TDS); and**

([i]**j**) Such additional information as required by the Department.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 210
WATER SUPPLY WELL CONSTRUCTION STANDARDS

APPENDIX **210-**3

I. Recommended Methods of Placement of Cement Grout (OAR 690-210-0320)

Method A - The well bore shall be plugged with a drillable plug or bridge at the lowest point to be sealed. A well casing with a float shoe at its lower end shall be placed in the well and suspended slightly above the point of bearing. A grout pipe shall be run inside the casing to the check valve. The grout pipe shall be connected to a suitable pump and water or drilling fluid shall first be circulated to clear the annular space. Grout shall be pumped through the grout pipe until clean grout completely fills the interval to be sealed. The grout pipe shall then be removed and the cement allowed to set. (See Figure 210-**1**[5])

Method B - Grout shall be placed by pumping or air pressure injection through a grout pipe installed inside the casing from the casing head to a point five (5) feet above the bottom of the casing. The grout pipe shall extend through an airtight sealed cap on the head of the well casing. The casing head shall be equipped with a relief valve and the grout pipe shall be equipped at the top with a valve permitting injection. The lower end of the grout pipe and the casing shall be open. Clean water shall be injected down the grout pipe until it returns through the casing head's relief valve. The relief valve is then closed and injection of water is continued to clean the hole until it flows from the bore hole outside the casing that is to be grouted in place. Without significant interruption, grout shall be substituted to water and, in a continuous manner, injected down the grout pipe until it returns to the surface outside of the casing. A small amount of water may be used to flush the grout pipe, but the pressure should remain constant on the inside of the grout pipe and the inside of the casing until the grout has set. Pressure shall be maintained for at least twenty-four (24) hours, or until such time as a sample of the grout indicates a satisfactory set. Cement grout shall be used for this procedure with a minimum annular space of one (1) inch completely surrounding the casing. (See Figure 210-**1**[5])

Method C - The well bore shall be plugged with a drillable **plug**[packer] or bridge at the lowest point to be sealed. The well casing shall be firmly seated at the bottom of the drillhole. A grout pipe shall be run to the bottom of the hole through the annular space between the casing and the well bore. After water or any other drilling fluid has been circulated in the annular space sufficiently to clear obstructions, the grout pipe shall be connected to a suitable pump and grout shall be pumped through the grout pipe until clean grout is circulated to land surface, or until grout completely fills the interval to be sealed. The lower end of the grout pipe shall remain submerged in grout while grout is being placed. The grout pipe shall be withdrawn before the initial set of the grout. (See Figure 210-**1**[5])

Method D - The well bore shall be plugged with a drillable **plug**[packer] or bridge at the lowest point to be sealed. After the casing is run and landed, a casing plug, having a length greater **than**[that] the diameter of the casing, shall be placed in the casing. If the drillhole is free of mud or water, this lower separation plug may be eliminated. A measured amount of cement grout necessary to completely fill the annular space of the interval to be grouted is pumped or placed by bailer in the casing. A second casing plug, having a length greater that the diameter of

the casing, shall be placed in the casing above the grout. The casing shall then be capped with a pressure cap and shut-off valve, and shall be connected to a suitable pump. The casing shall then be raised far enough above the point of bearing to clear the first separation plug. Water or drilling mud shall then be pumped under pressure into the casing forcing the grout and upper casing plug down the casing. The position of the plug must be known at all times. A small amount of grout may remain in the lower end of the casing. When the plug reaches the point desired above the bottom of the casing, the pump shall be stopped and the casing seated. (See Figure 210-**1**[5])

Method E - The well bore shall be plugged with a drillable **plug**[packer] or bridge at the lowest point to be sealed. A sufficient amount of cement grout to completely fill the interval of the well to be sealed shall be placed at the bottom of the drillhole by pump bailer or grout pipe. The well casing shall have centering guides attached at appropriate intervals to keep the casing centered in the bore hole. The bottom of the well casing shall be fitted with a tight drillable plug and shall be lowered into the drillhole forcing the grout upward into the annular space. Gravity installation without the aid of a grout pipe shall not be used. In no instance shall this method be used deeper than thirty (30) feet and in no case for a municipal, community, or public water supply well. (See Figure 210-**1**[5])

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 210
WATER SUPPLY WELL CONSTRUCTION STANDARDS

OAR 690-210-0030

(1)(h) Within 500 feet of a hazardous waste storage, disposal or treatment facility without written permission of the Director[.]**; or**

OAR 690-210-0030(1)(i) Within 25 feet of an underground or aboveground petroleum storage tank that is used for residential purposes; or

OAR 690-210-0030(1)(j) Within 50 feet of an underground or aboveground petroleum storage tank that is used for commercial purposes.

(5) To enable drilling equipment future access to the water supply well for alteration, repair, or abandonment, the property owner should maintain a minimum twenty-foot separation distance between the well and any power pole.

([5]**6**) Additional **Oregon Health Authority** setback standards [may]apply to wells used for public water systems. See OAR 333-061-0050(2) or contact the Oregon Health Authority for more information.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 210
WATER SUPPLY WELL CONSTRUCTION STANDARDS

690-210-0140

Sealing of Water Supply Wells in Unconsolidated Formations with Significant Clay Beds

Water supply wells drilled into water-bearing [strata]**intervals** overlain by unconsolidated deposits of clay, or sand and gravel in which significant interbeds of clay are present, shall have a watertight, nonperforated, permanent well casing extending at least five feet into [a]**the** clay **interval**[or other impermeable stratum] overlying the water-bearing zone. In all cases, an upper oversize drillhole, at least four inches greater in diameter than the nominal diameter of the permanent well casing shall be constructed to this same depth. In the event that the subsurface materials penetrated by the upper drillhole cave, or tend to cave, an outer, temporary surface casing shall be used to case out caving materials throughout the construction of the oversize drillhole. If the clay **interval**[or other impermeable stratum] is 13 feet or less below land surface, the watertight, nonperforated well casing and the upper, oversize drillhole shall extend to a minimum depth of 18 feet below land surface. If necessary to complete the well, the single, permanent well casing may be extended below the required sealing depth prior to sealing the well with grout. If preferred, a smaller diameter casing, liner, or well screen may be installed. The annular space between the permanent well casing and the upper, oversize drillhole shall be completely **filled with**[full of] grout in accordance with OAR 690-210-0310 through 690-210-0360 after the permanent well casing is set into final position. The temporary surface casing shall be removed from the well as the annular space is filled. (See Figure 210-3).

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 210
WATER SUPPLY WELL CONSTRUCTION STANDARDS

690-210-0150

Sealing of Water Supply Wells in Consolidated Formations

(1) Water supply wells drilled into a water-bearing rock formation overlain by clay, silt, sand, gravel, **cobbles**, or similar materials, shall be constructed in accordance with one of the following methods:

(a) Method 1 (Continuous Seal):

(A) An upper **oversize** drillhole, **at least** four inches greater in diameter than the nominal diameter of the permanent well casing to be installed, shall extend from land surface to at least five feet into solid, [uncreviced]**unfractured**, consolidated rock overlying the water-bearing rock formation below a depth of 13 feet. Unperforated permanent well casing shall extend to this same depth.

(B) The annular space between the **permanent well** casing and the drillhole wall within the **consolidated** rock formation shall be filled with grout **using an approved grout placement method**.

(C) The upper annular space between the **permanent well** casing and the drillhole wall shall be filled **with grout using an approved grout placement method** from land surface to at least five feet into a[n impermeable] clay **interval**[stratum] below a depth of 13 feet.

(D) The annular space between the upper and lower sealing intervals shall be filled with[an impermeable sealing material] **grout using an approved grout placement method**.

(E) [If necessary to complete the well, a]**A** smaller diameter [well casing,]liner pipe[.] or well screen may be installed **to complete the well**.

(F) If cement grout is placed by a suitable method from the bottom of the **permanent well** casing to land surface (Methods A, B, D, Appendix 210-3), the upper drillhole shall be at least two inches larger than the nominal diameter of the **permanent well** casing. (See Figure 210-4);

(b) Method 2 (Step-Down Casing**/Inner Casing**):

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

(A) An upper **oversize** drillhole, **at least** four inches greater in diameter than the **upper** permanent well casing to be installed, shall extend from land surface to at least five feet into a[n impermeable] clay **interval**[stratum] below a depth of 13 feet.

(B) Unperforated, permanent well casing shall extend to, and be driven into, solid, [uncreviced]**unfractured**, consolidated rock overlying the water-[ ]bearing rock formation.

(C) A lower drillhole, [equal in diameter to the]**at least as large as the** inside diameter of the upper permanent well casing, shall be constructed at least five feet into solid [uncreviced]**unfractured consolidated** rock overlying the water-bearing **rock** formation.

(D) A smaller diameter **steel well** casing, at least two inches smaller in diameter than the diameter of the upper permanent well casing, shall extend at least five feet into[the] **solid unfractured consolidated rock overlying the water-bearing rock formation** [lower drillhole] and at least eight feet into the upper permanent well casing.

(E) The annular space between the upper oversize drillhole and the **upper** permanent well casing, and the annular space between the smaller diameter lower **permanent well** casing and the lower drillhole, shall be completely filled with grout **using an approved grout placement method**[in accordance with OAR 690-210-0310 through 690-210-0360] after the **upper** permanent well casing and the lower **permanent well** casing are set into final position. (See Figure 210-5);

(c) Method 3 (Under-Reaming):

(A) An upper **oversize** drillhole, **at least** four inches greater in diameter than the permanent well casing to be installed, shall extend from land surface to at least five feet into a[n impermeable] clay **interval** [stratum]below a depth of 13 feet.

(B) A lower drillhole, at least two inches greater in diameter than the diameter of the permanent well casing **to be installed**, shall be constructed at least **fifteen**[five] feet into solid, [uncreviced]**unfractured**, consolidated rock **overlying the water-bearing rock formation** by under-reaming methods.

(C) Unperforated, permanent well casing shall extend to and be driven into solid, [uncreviced]**unfractured**, consolidated rock **overlying the water-bearing rock formation** at the bottom of the under-reamed section following placement of the [sealing]**casing seal** material.

(D) The annular space between the upper oversize drillhole and the [upper]permanent well casing shall be filled with cement grout using Method C or **unhydrated** bentonite. The annular space between the lower under- reamed drillhole [wall]and the permanent well casing shall be completely filled with grout applied under pressure in accordance with **grout placement**[the appropriate] Method A, B, or D, in Appendix 210-3.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

(E) Casing seals may not be placed in unconsolidated formation materials using the under-reaming method.

(2) In all cases, (Methods 1, 2, or 3, above), if materials penetrated by the upper oversize drillhole cave, or tend to cave, an outer temporary surface casing shall be used to case out all caving material throughout construction of the oversize drillhole. The temporary surface casing shall be withdrawn as the annular space is filled with grout.

690-210-0155

Additional Standards for Artesian Water Supply Wells

(1) Water supply wells penetrating into an artesian aquifer shall have an upper oversize drillhole **at least** four inches greater in diameter than the nominal diameter of the permanent well casing **to be installed**. Watertight unperforated casing shall extend and be sealed at least five feet into the confining **interval**[formation] immediately overlying the artesian water-bearing zone. In all cases, a minimum of 18 feet of casing and casing seal will be required. If cement grout is placed by a suitable method from the bottom of the casing (Methods A, B, [and]**or** D, in Appendix 210-3 and Figure 210-1), the diameter of the upper **oversize** drillhole shall be at least two inches larger than the nominal diameter of the **permanent well** casing.

(2) To complete the well, [smaller diameter]**inner** casing, [perforated]liner, or a well screen may be installed. When artesian pressures are encountered in the absence of a confining **interval**[formation], casing and casing seal requirements shall be determined by the Director upon written application. In the alternative, the person constructing the well may construct the well in conformance with the minimum standards for artesian wells with a confining **interval**[formation], set forth in section (1) of this rule.

(3) If an artesian water supply well flows at land surface, the well shall be equipped with a control valve and a watertight mechanical cap, threaded or welded, so that all flow of water from the well can be completely stopped.

(4) All flowing artesian wells shall be equipped with a pressure gauge placed on a dead- end line. A petcock valve shall be placed between the gauge and well casing. (See Figure 210-7).

(5) All flowing artesian water supply wells shall be tested for artesian shut-in pressure in pounds per square inch and rate of flow in cubic feet per second, or gallons per minute, under free discharge conditions. This data shall be reported on the well report.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 210
WATER SUPPLY WELL CONSTRUCTION STANDARDS

690-210-0280

Access Ports**, Dedicated Measuring Tubes** and Airlines

(1) All water supply wells[ ]**, including wells that have been temporarily removed from service, temporarily abandoned due to a recess in construction, or temporarily abandoned before commencing service, shall be properly covered and** shall be equipped with a usable access port with a minimum diameter of 1/2-[ ]inch for the purpose of determining the water level in the well at any time.

(2) Access ports shall be installed prior to the Water Supply Well Constructor removing the well drilling machine from the well site.

(3) Dedicated measuring tubes **that meet the requirements of OAR 690-215-0060** are recommended to be installed on all **water supply** wells at the time of pump installation**, pump repair, or pump replacement**. Where required, dedicated measuring tubes shall be a minimum of 3/4-inch **diameter** schedule 40 PVC extending to the top of the pump (See [Dedicated Measuring Tube Diagram and Specifications in] Figure 200-5). **The 3/4-inch diameter dedicated measuring tube may be reduced in size to 1/2-inch where it goes through the watertight well cap, but shall not be reduced in size over the length of the pipe.**

(4) An airline is not a substitute for a required dedicated measuring tube and, if installed, must enter the well in a location other than the access port.

(5) Access ports, dedicated measuring tubes or airlines **on all water supply wells** shall be capped and be a minimum of twelve inches above finished ground surface or pumphouse floor (See Figure 210-12) (See Figure 200-5).

(6) [The a]**A**ccess port**s**, airlines and dedicated measuring tube**s** on all water supply wells [required by OAR 690-210-0280]shall be maintained **by the landowner** in a condition that will prevent contamination of the ground[ ]water **resource**, and shall remain **free from wire or other obstruction**[unobstructed and be maintained by the landowner so that the water level can be determined at any time].

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 215
ALTERATION, DEEPENING, MAINTENANCE, AND REPAIR OF WATER SUPPLY WELLS

690-215-0055

Well Identification Label Maintenance

The well **identification** label shall not be removed from the wellhead and shall be maintained by the landowner in an accessible location and in a readable condition. See OAR 690-200-**0048**[. Appendix 200-2] for well identification label placement **methods and** instructions.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 215
ALTERATION, DEEPENING, MAINTENANCE, AND REPAIR OF WATER SUPPLY WELLS

690-215-0060

Access Ports, Dedicated Measuring Tubes [or]**and** Airlines

(1) All water supply wells[ ]**, including wells that have been temporarily removed from service, temporarily abandoned due to a recess in construction, or temporarily abandoned before commencing service, shall be properly covered and** shall be equipped with [an unobstructed] **a usable** access port with a minimum diameter of 1/2-[ ]inch for the purpose of determining the water level in the well at any time.

(2) Dedicated measuring tubes are recommended to be installed on all **water supply** wells at the time of pump installation**, pump repair, or pump replacement.** Where required, dedicated measuring tubes shall be a minimum of 3/4-inch diameter schedule 40 PVC [and shall]extend**ing** to the top of the pump. **The 3/4-inch diameter dedicated measuring tube may be reduced in size to 1/2-inch where it goes through the watertight well cap ,but shall not be reduced in size over the length of the pipe.** [The d]**D**edicated measuring tube**s** shall be vented above and below the well cap and shall be attached to the pump column at 10 foot intervals with 10 mil plastic tape. The lower five feet of the dedicated measuring tube shall be either 0.020 inch machine slotted well screen or the lower 20 feet of the dedicated measuring tube shall be extensively perforated with 1/8 inch holes. [The d]**D**edicated measuring tube**s** shall be plugged or capped at the bottom (**See** Figure 200-5)[.] **and**[The dedicated measuring tube] shall [not be reduced in size over the length of the pipe and shall]remain free from wire or other obstruction.

(3) An airline is not a substitute for a required dedicated measuring tube and, if installed, must enter the well in a location other than the access port.

(4) Access ports, dedicated measuring tubes or airlines **on all water supply wells** shall be capped and a minimum of twelve inches above finished ground surface or pumphouse floor. If the well has a pitless adaptor then the dedicated measuring tube shall terminate within six inches of the top of the well casing.

(5) [The a]**A**ccess port**s**, airline**s** and dedicated measuring tube**s** on all water supply wells [required by OAR 690-210-0280] shall be maintained **by the landowner** in a condition that will prevent contamination of the ground[ ]water **resource**[. and shall remain unobstructed and be maintained by the landowner so that the water level can be determined at any time].

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

[APPENDIX 240-1

METHODS FOR ATTACHING WELL IDENTIFICATION TAG

MONITORING WELLS

Tags should be placed in an accessible and visible location.

For above ground completion wells:

Place tags at least 6 inches above ground level. Attach the tag to the outside of the protective casing.

The following methods are recommended by the Oregon Water Resources Department:

A. Strap the tag to the well casing or access port. Stainless steel bands or large hose clamps designed for exterior use are recommended. Straps may be available at electrical, auto supply or construction supply stores. Ultra violet resistant nylon straps are also acceptable. Any band used should be designed for exterior applications.
B. Rivet or bolt the tag to the well casing. Stainless steel rivets may be used.

For flush grade completion wells:

B. Rivet or bolt the tag to the inside of the monument skirting.
B. Band or strap the tag to the well casing.
C. Insert the strap or band into the concrete in the bottom of the vault.

Regardless of which method is used, the identification label must be easily readable.

Other options may be used provided the installation is permanent and visible. Please contact the Water Resources Department for other options.]

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

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

TABLE 240-1

WHICH[CONSTRUCTIONS] STANDARDS [THAT]APPLY?

The Department regulates the construction of borings through which ground[ ]water may become contaminated. The type of boring (and its purpose) will determine [the construction standards that]**which set of regulations** apply. **Questions often arise as to how a certain boring is to be regulated. In general, if the purpose of a boring is to seek water then it is considered a well.** 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 **general**[construction] standards and the**ir** Oregon Administrative Rule **reference** [that apply]are[as follows]:

Water Supply Wells	OAR 690-200 through 690-235
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]**Description** of Boring	[Construction]Standards that Apply
Air Sparging Well	Monitoring Wells
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 **Well**(Water Sampling)	Monitoring Wells
Drive Point **Well**(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 **Exchange Hole** [Pump Borings] (Closed Loop)	Geotechnical Holes
[Ground Source]Heat **Exchange Hole** [Pump Borings](Open Loop)	Water Supply Wells
Horizontal Drain (Slope Stability)	Geotechnical Holes
Horizontal Well (Monitoring)	Monitoring Wells
Horizontal Well (Water Supply)	Water Supply Wells

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

Inclinometer	Geotechnical Holes
Industrial Well	Water Supply Wells
Injection Well (Water)	Water Supply Wells
Injection Well (Remediation) (>72 Hours)	Monitoring Wells
Injection Well (Remediation) (<72 Hours)	Geotechnical Holes
Irrigation Well	Water Supply Wells
Monitoring Well	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 Well	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
Temporary Monitoring Well (>72 Hours)	Monitoring Wells
Trench	Other Holes
Underground Storage Tank (UST) Pit	Other Holes
Vapor Extraction Hole	Geotechnical Holes
Wetland Delineation Hole	Other Holes
Wet Soil Monitoring Hole	**Geotechnical Holes**

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 240
WELL CONSTRUCTION STANDARDS

690-240-0010

Definitions

(11) "Casing Seal" means the water tight seal established in the well bore between the well casing and the drillhole wall, above the filter pack seal, to prevent the inflow and movement of surface water or shallow ground water in the well annulus, or to prevent the outflow or movement of water under artesian or hydrostatic pressures. **This term is synonymous with "annular seal" or "surface seal".**

(17) "Confining **Interval**[Formation]" means **a low permeability material such as clay or solid, unfractured, consolidated rock**[the "impermeable" stratum] immediately overlying an artesian (confined) aquifer. (Figure 240-1)

[(46) "Impermeable Sealing Material" means cement or bentonite which is used to fill the open annulus.]

(4[7]**6**) "Jetted Well" means a well in which the drillhole excavation is made by the use of a high velocity jet of water.

(4[8]**7**) "Leakage" means movement of surface and/ or subsurface water around the well casing or seal.

(4[9]**8**) "Monitoring Well" means a well designed and constructed to determine the physical (including water level), chemical, biological, or radiological properties of ground[ ]water.

([50]**49**) "Monitoring Well Constructor" means any person who has a current water well constructor's license with a monitoring well endorsement issued in accordance with ORS 537.747(3).

(5[1]**0**) "Monitoring Well Constructor's License" means a Water Well Constructor's License with a monitoring well endorsement issued in accordance with ORS 537.747(3).

(5[2]**1**) "Monitoring Well Drilling Machine" means any driving, jetting, percussion, rotary, boring, auguring, or other equipment used in the construction, alteration, or abandonment of monitoring wells.

(5[3]**2**) "Order" means any action satisfying the definition given in ORS Chapter 183 or any other action so designated in ORS 537.505 to 537.795.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

(5[4]**3**) "Other Hole" means a hole other than a water supply well, monitoring well, or geotechnical hole, however constructed, in naturally occurring or artificially emplaced earth materials through which ground[ ]water can become contaminated. Holes constructed under ORS Chapters 517, 520, and 522 are not subject to these rules. Examples of other holes are listed in OAR 690-240-0030.

(5[5]**4**) "Perched Ground[W]**w**ater" means ground[ ]water held above the regional or main water table by a less permeable underlying earth or rock material. (Figure 240-1)

(5[6]**5**) "Permeability" means the ability of material to transmit fluid, usually described in units of gallons per day per square foot of cross-section area. It is related to the effectiveness with which pore spaces transmit fluids.

(5[7]**6**) "Person" includes individuals, corporations, associations, firms, partnerships, joint stock companies, public and municipal corporations, political subdivisions, the state and any agencies thereof, and the Federal Government and any agencies thereof.

(5[8]**7**) "Petcock Valve" is a valve used to contain pressure which when opened will drain the line or pipe.

(58) "Petroleum" means gasoline, crude oil, fuel oil, diesel oil, lubricating oil, oil sludge, oil refuse, and crude oil fractions and refined petroleum fractions, including gasoline, kerosene, heating oils, diesel fuels, and any other petroleum-related product or waste or fraction thereof that is liquid at a temperature of 60 degrees Fahrenheit and a pressure of 14.7 pounds per square inch absolute. "Petroleum" does not include any substance identified as a hazardous waste under 40 CFR Part 261.

[(77) "Stratum" means a bed or layer of a formation that consists throughout of approximately the same type of consolidated or unconsolidated material.]

(7[8]**7**) "Sump" means a hole dug to a depth of ten feet or less with a diameter greater than ten feet in which ground water is sought or encountered.

(7[9]**8**) "Suspension" means the temporary removal of the privilege to construct wells under an existing license for a period of time not to exceed one year.

([80]**79**) "Unconsolidated Formation" means naturally occurring, loosely cemented, or poorly indurated materials including clay, sand, silt, and gravel.

(8[1]**0**) "Underground Injection" means the emplacement or discharge of fluids to the subsurface.

(8[2]**1**) "Underground Injection System" means a well, improved sump, sewage drain hole, subsurface fluid distribution system, or other system or ground water point source used for the emplacement or discharge of fluids.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

(8[3]**2**) "Upper Oversize Drillhole" means that part of the well bore extending from land surface to the bottom of the surface seal interval.

(8[4]**3**) "Violation" means an infraction of any statute, rule, standard, order, license, compliance schedule, or any part thereof and includes both acts and omissions.

(8[5]**4**) "Water Supply Well" means a well, other than a monitoring well, that is used to beneficially withdraw or beneficially inject ground water. Water supply wells include, but are not limited to, community, dewatering, domestic, irrigation, industrial, municipal, and aquifer storage and recovery wells.

(8[6]**5**) "Water Supply Well Constructor" means any person who has a current water well constructor's license with a water supply well endorsement issued in accordance with ORS 537.747(3).

(8[7]**6**) "Water Supply Well Constructor's License" means a Water Well Constructor's License with a water supply well endorsement issued in accordance with ORS 537.747(3).

(8[8]**7**) "Water Table" means the upper surface of an unconfined water body, the surface of which is at atmospheric pressure and fluctuates seasonally. The water table is defined by the levels at which water stands in wells that penetrate the water body. (See Figure 240-1)

(8[9]**8**) "Water Well Constructor's License" means a license to construct, alter, deepen, abandon or convert wells issued in accordance with ORS 537.747(3). Endorsements are issued to the license and are specific to the type of well a constructor is qualified to construct, alter, deepen, abandon or convert.

([90]**89**) "Well" means any artificial opening or artificially altered natural opening, however made, by which ground water is sought or through which ground water flows under natural pressure, or is artificially withdrawn or injected. This definition shall not include a natural spring, or wells drilled for the purpose of exploration or production of oil or gas. Prospecting or exploration for geothermal resources as defined in ORS 522.005 or production of geothermal resources derived from a depth greater than 2,000 feet as defined in ORS 522.055 is regulated by the Department of Geology and Mineral Industries.

(90) "Wet Soil Monitoring Hole" means a shallow geotechnical hole set vertically in the ground and constructed to a depth of three and one-half feet or less for studying and/or monitoring the upper portion of the shallowest water-bearing unit within and immediately below the surface soil horizon.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 240
WELL CONSTRUCTION STANDARDS

690-240-0024

Well Identification Label

(1) Within 30 days of completion of well construction, conversion, or alteration, the constructor shall permanently affix a well identification label to the wellhead **in an accessible and visible location in the following manner:** [as described in Appendix 240-1.]

(a) For above ground completions:

(A) Labels shall be at least six inches above ground surface and shall be permanently attached to the outside of the protective casing using a stainless steel band, stainless steel rivets, or screws.

(b) For flush grade completions:

(A) Rivet or bolt the label to the inside of the monument skirting; or

(B) Band or strap the label to the well casing; or

(C) Insert the strap or band into the concrete in the bottom of the vault.

(2) Identification labels may not be attached to pumps, pump equipment, water delivery lines, or well caps.

(3) The identification **label** number shall be recorded on the well report **at the time the report is submitted**.

(4) The well identification label shall be attached in such a manner as to be easily readable upon inspection.

(5) Identification labels shall be furnished by the Department.

([2]**6**) If a well identification label is already affixed to an existing well that is being altered, converted, or abandoned, the constructor shall record the identification **label** number on the well report.

([3]**7**) When a well that has a well identification label [(tag)]on it is permanently abandoned, the well identification **label**[tag] shall be destroyed. The well identification **label**[tag] shall not be reused.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 240
WELL CONSTRUCTION STANDARDS

OAR 690-240-0035(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 690-240-0035(4)(c) be responsible for the construction and abandonment of the geotechnical hole.

OAR 690-240-0035(4)(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.

OAR 690-240-0035(7) Cased permanent geotechnical holes

(a) Cased permanent geotechnical holes include but are not limited to: gas migration holes, cathodic protection holes**, wet soil monitoring holes,** and vapor extraction holes;

(b) [If p]**P**ermanent 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].

(c) The borehole diameter for cased permanent geotechnical holes shall be at least four inches larger than the nominal casing diameter. If the cased permanent geotechnical hole is constructed using a hollow stem auger drilling machine, the inside diameter of the auger must be at least four inches larger than the nominal diameter of the casing to be installed. Cased permanent geotechnical holes installed using direct push technology shall meet the annular space requirements in OAR 690-240-0540.

(d) Cased permanent geotechnical holes, except wet soil monitoring holes, shall be sealed in accordance with the filter pack seal requirements in OAR 690-240-0460, and the casing seal requirements in OAR 690-240-0475.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

(e) Wet soil monitoring holes shall have a casing seal that extends to a minimum depth of one-foot. The casing seal shall be placed in accordance with OAR 690-240-0475.

(f) Wet soil monitoring holes shall not exceed three and one-half feet in depth.

OAR 690-240-0035(10) Geotechnical Holes abandonment:

(a) Geotechnical holes shall be abandoned **in the following manner**[so that they do not]:

(A) [Connect water bearing zones or aquifers]**If it can be verified that the geotechnical hole was constructed in accordance with these rules, it shall be abandoned by filling the well from the bottom up with an approved grout as described in OAR 690-240-0475. The casing shall then be removed below grade, as compatible with local site conditions and land practices. The following are acceptable methods of original geotechnical hole construction verification:**

(1) A geotechnical hole report previously submitted to the Water Resources Department;

(2) Geotechnical hole information submitted to the Oregon Department of Environmental Quality;

(3) Other information as approved by the Water Resources Department;

(B) [Allow water to move vertically with any greater facility than in the undisturbed condition prior to construction of the geotechnical hole]**If the geotechnical hole construction cannot be verified by means listed in section (A) of this rule, or if the geotechnical hole was not constructed in accordance with these rules, the geotechnical hole shall be abandoned by completely redrilling the hole to a minimum of the original diameter. All casing, screen, annular sealing material, drill cuttings, debris, and filter pack material shall be removed prior to sealing.**[: or]

[(C) Allow surface water to enter the hole.]

(b) [Temporary g]**G**eotechnical holes constructed to collect a water quality sample shall be abandoned in accordance with OAR 690-240-0510.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

690-240-0043

Construction Standards

(1) If permanent casing is needed in a ground source heat pump boring, it shall meet the standards set out in OAR 690-210-0190 through 690-210-0220 for steel and plastic.

(2) Site specific conditions shall be assessed to determine the best method and materials to be used for sealing the boring annulus to protect the groundwater resource and that method shall meet the standards set out in OAR 690-210-0300 through 690-210-0360 for sealing wells.

(3) The diameter of the borehole for cased and uncased ground source heat pump borings shall allow placement of the heat exchange loop and grout pipe to the bottom of the boring as follows:

(a) For installation of a 3/4 inch loop, the diameter of the borehole shall be a minimum of 4 inches;

(b) For installation of a 1 inch loop, the diameter of the borehole shall be a minimum of 4 1/2 inches; and

(c) For installation of a 1 1/4 inch loop, the diameter of the borehole shall be a minimum of 5 inches.

(4) The type of sealing material used shall be compatible with the heat exchange loop material and permanent casing material used in the construction of the boring.

690-240-0395

Monitoring Well Report Required (Monitoring Well Log)

(1) A monitoring well report shall be prepared for each monitoring well constructed, altered, converted, or abandoned including unsuccessful monitoring wells. The log shall be certified as correct by signature of the Monitoring Well Constructor constructing the monitoring well. The completed log shall also be certified by the bonded Monitoring Well Constructor responsible for construction of the monitoring well. A monitoring well report must be submitted by each bonded constructor (if drilling responsibility is shifted to a different bonded constructor), showing the work performed by each bonded constructor.

(2) The log 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 Monitoring Well Constructor, and the second copy shall be given to the customer who contracted for the construction of the monitoring well.

(3) The bonded Monitoring Well Constructor shall file the monitoring well log with the Director within 30 days after the completion of the construction, alteration, conversion, or abandonment of the monitoring well.

(4) The trainee or Monitoring Well Constructor operating the monitoring well drilling machine shall maintain a rough log of all geologic strata encountered and all materials used in the construction of the monitoring well. This log shall be available for inspection by the Watermaster or other authorized agent of the Water Resources Department or other delegated agency representative at any time before the monitoring well report is received by the Department. The rough drilling log shall be in handwritten or electronic form, or a voice recording.

(5) In the event a constructor leaves any drilling equipment or other tools in a monitoring well this fact shall be entered on the monitoring well report.

(6) A copy of any special authorizations or special standards issued by the Director shall be attached to the monitoring well report.

(7) The report of monitoring well construction required in section (1) of this rule shall be recorded on a form provided or previously approved in writing by the Department. The form shall include, as a minimum, the following:

(a) Name and Address of Landowner;

(b) Started/Completed date;

(c) Location of the well 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) Start card number;

(e) Well identification label number (well tag number);

(f) Use of well;

(g) Type of work;

(h) Type and amount of sealant used and measured weight of the grout slurry as required in OAR 690-240-0475(2)(g);

(i) Temperature of water;

(j) Total dissolved solids (TDS);

([j]**k**) Map showing location of monitoring well on site, must be attached and shall include an approximate scale and a north arrow; **and**

([k]**l**) Such additional information as required by the Department.

690-240-0440

Additional Standards for Artesian Monitoring Wells

(1) Monitoring wells penetrating into an artesian aquifer shall have an upper oversize drillhole at least four inches greater in diameter than the nominal diameter of the permanent well casing except as noted in OAR 690-240-0525 concerning piezometers. Watertight unperforated casing shall extend and be sealed, according to OAR 690-240-0475, at least five feet into the confining **interval**[formation] immediately overlying the artesian water-bearing zone.

(2) If an artesian monitoring well flows at land surface, the well shall be equipped with a control valve and a watertight mechanical cap, threaded or welded, so that all flow of water from the well can be completely stopped.

(3) All flowing artesian monitoring wells shall be equipped with a pressure gauge placed on a dead-end line. A petcock valve shall be placed between the gauge and well casing.

(4) All flowing artesian monitoring wells shall be tested for artesian shut-in pressure in pounds per square inch and rate of flow in cubic feet per second, or gallons per minute, under free discharge conditions. This data shall be reported on the well report.

690-240-0510

Abandonment of Monitoring Wells

(7) When abandoning artesian monitoring wells, in addition to sections (1)-(6) of this rule, the flow shall be confined or restricted by cement grout applied under pressure, or by the use of a suitable well packer, or a wooden plug placed at the bottom of the confining **interval**[formation] immediately above the artesian water bearing zone. An approved **grout**[sealant] shall be used to fill the well to land surface as specified in OAR 690-240-0475.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 240
WELL CONSTRUCTION STANDARDS

OAR 690-240-0525 Piezometers

(2) Piezometer well abandonment:

(a) Piezometer wells shall be abandoned as described in OAR 690-240-0510 concerning monitoring wells.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.

OREGON ADMINISTRATIVE RULES
WATER RESOURCES DEPARTMENT
CHAPTER 690 DIVISION 240
WELL CONSTRUCTION STANDARDS

690-240-0540

Direct Push Monitoring Wells and Piezometers

(1) Monitoring wells and piezometers that are installed using direct push technology shall comply with the applicable standards in these rules[for reporting, casing, screening, filter pack, filter pack placement, filter pack seal, development, surface seal, cleaning, protection, marking, and completion].

(2) Monitoring wells and piezometers that are installed using direct push technology shall also comply with the following standards:

(a) Only prepacked screens shall be used; and

(b) The outside diameter of the borehole shall be a minimum of **two**[one] inch**es** greater than the outside diameter of the well casing; and

(c) Granular bentonite shall not be used in the **casing** seal[ed] interval below the static water level; and,

(d) **Monitoring** [W]**w**ells and piezometers shall not be constructed through more than one water bearing formation and shall not be greater than 50 feet in depth[unless a special standard is obtained.]**; and**

(e) Monitoring wells and piezometers that extend deeper than 30 feet shall be equipped with centering guides to insure proper centering of casing. Guides shall be spaced at minimum ten foot intervals and attached to the casing.

(3) Monitoring wells and piezometers larger than two inches in diameter shall not be installed using direct push technology without prior Department approval.

[Text to be deleted is bracketed]
Language to be added is bolded and underlined.