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JUN 29 1988
BARBARA ROBERTS
SECRETARY OF STATE

CERTIFICATE AND ORDER FOR FILING PERMANENT ADMINISTRATIVE RULES WITH THE SECRETARY OF STATE

I HEREBY CERTIFY that the attached copy is a true, full and correct copy of PERMANENT rule(s) adopted on June 24, 1988 (Date)

by the Water Resources Commission (Department) (Division)

to become effective June 29, 1988 (Date)

The within matter having come before the Water Resources Commission (Department) (Division) after

all procedures having been in the required form and conducted in accordance with applicable statutes and rules and being fully advised in the premises:

Notice of Intended Action published in Secretary of State's Bulletin: NO ☐ YES ☒ Date Published: April 15, 1988

NOW THEREFORE, IT IS HEREBY ORDERED THAT the following action be taken: (List Rule Number(s) or Rule Title(s) on Appropriate Lines Below)

Adopted:
(New Total Rules)

RECEIVED
JUN 29 1988
LEG. COUNSEL'S OFF.

Amended:
(Existing Rules) See attachment

Repealed:
(Total Rules Only)

Administrative Rules of the Water Resources Commission (Department) (Division)

DATED this 29th day of June, 19 88

By: John E. Borden, Jr. (Authorized Signer)

Title: Deputy Director

Statutory Authority: ORS _____ or

Chapter(s) 183, 536, 537 and 540, Oregon Laws 19 87 or

House Bill(s) _____, 19____ Legislature; or Senate Bill(s) 132, 19 87 Legislature

Subject Matter:

Amendments to the Well Construction and Maintenance Rules
OAR 690-200-005 through 690-235-020.

For Further Information Contact: Tom Paul (Rule Coordinator) Phone: 378-8455

OREGON ADMINISTRATIVE RULES

for

CONSTRUCTION and MAINTENANCE of WELLS

prescribed by the
WATER RESOURCES DEPARTMENT
adopted by the
WATER RESOURCES COMMISSION
on June 24, 1988

(effective June 29, 1988)

OREGON ADMINISTRATIVE RULES
FOR
WELL CONSTRUCTION AND MAINTENANCE
Water Resources Department
Chapter 690
Administrative Rule
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WELL CONSTRUCTION AND MAINTENANCE

DIVISION 200

INTRODUCTION

Basis For Regulatory Authority

690-200-005 (1) The right to reasonable control of the ground waters of the State of Oregon has been declared to belong to the public. Through the provisions of the Ground Water Act of 1955, ORS 537.505 to 537.795, the Water Resources Commission has been charged with the administration of the rights of appropriation and use of the ground water resources of the state and the prevention of waste and contamination of all underground waters. This is primarily accomplished by the licensing of well constructors and the promulgation of rules governing well construction, alteration, abandonment, maintenance and use. Ultimately the landowner of the property where the well is constructed is responsible for the condition of the well.

(2) The following rules apply to all wells which are constructed for the purpose of locating or obtaining water as defined in ORS 537.515(7). Holes which are drilled for elevator shafts, fence posts, power poles, cathode protection, storm water disposal, pits created by removal of rock for construction and sumps are exempt from these rules. When natural flow of water occurs in holes not regulated under these rules, the Water Resources Commission may regulate under separate rules or statutes to protect the ground water from contamination or waste.

(3) In addition to regulating new well construction, alteration, abandonment and maintenance actions, the Water Resources Commission may impose conditions upon the use of any existing well as may be necessary to prevent waste, undue interference with other wells or contamination. Where necessary, the Commission may order discontinuance of use and proper abandonment of any well to accomplish the same objectives.

(4) Except for the Commission's power to adopt rules, the Commission may delegate to the Water Resources Director the exercise or discharge in the Commission's name of any power duty or function of whatever character, vested in or imposed by law upon the Commission. The official act of the Director acting in the Commission's name and by the Commission's authority shall be considered to be an official act of the Commission. In these rules where it says Director, the Commission hereby delegates to the Director full authority to act in the Commission's name.

(5) Under the provisions of ORS 537.780, the Commission is authorized to adopt such procedural rules and regulations as deemed necessary to carry out its function in compliance with the Ground Water Law. In fulfillment of these responsibilities and to ensure the preservation of the public welfare, safety, and health, the Commission has established these rules and regulations as the minimum standards for the construction, alteration, abandonment and maintenance of wells in Oregon.

(6) The rules and regulations set forth herein shall become effective November 1, 1986.

NOTE: If a well is to be constructed to supply a public or community water system, refer to Table II of these rules for information regarding regulations pertaining to municipal, public, community, and public utility water supply systems.

Stat. Auth.: ORS Ch. 183, 536, 537 & 540
Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79, Amended & Renumbered from 690-60-005 by WRD 13-1986, f. 10-7-86, ef. 11-1-86

General Statement About the Standards

690-200-020 (1) The rules and regulations set forth herein provide the minimum standards for the construction, maintenance, and abandonment of wells. After the effective date of adoption of these rules and regulations, no well shall be constructed, altered, or abandoned contrary to the provision of these rules and regulations. Violation of these standards may result in enforcement under OAR Chapter 690, Division 225, including suspension or revocation of a constructor's license, imposition of civil penalties on the landowner or constructor, action on a bond, or other sanctions authorized by law.

(2) Every well shall be designed and constructed to adapt to the existing local geologic and ground water conditions at the well site and shall fully utilize every natural protection to the ground water supply. If prior to or during construction the well constructor becomes aware that adherence to the following minimum well standards will not prevent or eliminate ground water contamination, waste, or loss of artesian pressure, the constructor shall request and obtain written approval from the Director to use construction methods, materials or standards to prevent or eliminate the contamination, waste, or loss. The request shall be in writing and submitted to the Director. Written approval from the Director must be obtained prior to completion of the well.

Stat. Auth.: ORS Ch. 183, 536, 537 & 540
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; Amended & Renumbered from 690-60-008 and 690-60-040 by WRD 13-1986, f. 10-7-86, ef. 11-1-86

Special Area Standards

690-200-025 If at any time, the Commission finds that different or supplemental standards are required for the safe development of ground water from any particular ground water aquifer or area, special area standards for the construction and maintenenace of wells within such areas may be adopted as rules by the Commission. In the absence of such special area standards, these rules constitute the sole administrative standards of the Water Resources Department governing construction, alteration, and abandonment of wells.

Stat. Auth.: ORS Ch. 183, 536, 537, & 540
Hist.: WRD 9-1978, ef. 12-12-78, f. 1-1-79; Amended & Renumbered from 690-60-045 by WRD 13-1986, f. 10-7-86, ef. 11-1-86

Public Safety

690-200-030 No well shall be constructed, maintained, or abandoned in such a manner as to constitute a public health hazard or a menace to public safety.

Stat. Auth.: ORS Ch. 183, 536, 537 & 540
Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79; Renumbered from 690-60-010 by WRD 13-1986, f. 10-7-86, ef. 11-1-86

Wells Cannot be Used For Disposal of Contaminants

690-200-040 No well shall be used as a disposal pit for sewage, industrial waste, or other materials that could contaminate the ground water supply.

Stat. Auth.: ORS Ch. 183, 536, 537 & 540
Hist.: WRD 9-1978, f. 12-12-78, ef. 1-1-79; Amended & Renumbered from 690-62-025 by WRD 13-19863, f. 10-7-86, ef. 11-1-86

Definitions

690-200-050 The following list of definitions apply to these rules for well construction and maintenance. Other rules of the Department may have different meanings for the same words.

(1) "Abandonment, permanent": means to remove a well from service by completely filling it in such a manner that vertical movement of water within the well bore and within the annular space surrounding the well casing, is effectively and permanently prevented.

(2) "Abandonment, temporary": means to remove a drilling machine from a well site prior to putting the well into service or returning it to service or subsequent to completing or altering a well, or to remove a well from service with the intent of using it in the future.

(3) "Access Port": means a minimum 3/4-inch tapped hole and plug or a 3/4-inch capped pipe welded onto the casing in the upper portion of a well casing to permit entry of water-level measuring devices into the well.

(4) "Airline": means a water level measuring device consisting of a pressure gauge attached to an airtight line or pipe within the well bore extending from land surface to below the pumping level to allow the water level to be computed by measuring the stable air pressure remaining in the line after completely purging water from within the line.

(5) "Altering a well" means the deepening, reaming, casing, re-casing, perforating, re-perforating, installation of liner pipe, packers, seals, and any other material change in the design or construction of a well.

(6) "Annular Space": means the cylindrical space between the drillhole wall and the outer well casing.

(7) "Aquifer": means a geologic formation, group of formations, or part of a formation that contains saturated and permeable material capable of transmitting water in sufficient quantity to supply wells or springs; the terms water-bearing zone or water-bearing stratum are synonymous with the term aquifer.

(8) "Artesian Aquifer": means an aquifer in which ground water is under sufficient head to rise above the level at which it was first encountered whether or not the water flows at land surface. If the water level stands above land surface the well is a flowing artesian well.

(9) "Bored Well": means a well constructed with the use of earth augers turned either by hand or by power equipment.

(10) "Buried Slab Type Well": means a dug well in which well casing is used to case the upper hole. A slab, sealed with cement grout, is placed between the upper hole and lower drill hole, and the remainder of the annulus is filled with concrete.

(11) "Casing": means the outer tubing, pipe, or conduit, welded or screw coupled, and installed in the borehole during or after drilling to support the sides of the well and prevent caving, to shut off water, gas, or contaminated fluids from entering the hole, and to prevent waste of ground water. The term "Casing" does not include slotted or preforated pipe, well screens, or liner pipe.

(12) "Casing Seal": means the watertight 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.

(13) "Clay": means a fine-grained, inorganic material having plastic properties and with a predominant grain size of less than 0.005 mm.

(14) "Commission": means the Water Resources Commission.

(15) "Committee": means the Ground Water Advisory Committee created by ORS 536.090.

(16) "Community Well": means a well, whether publicly or privately owned, which serves or is intended to serve more than three connections for residences or other connections for the purpose of supplying water for drinking, culinary, or household uses.

(17) "Confining Formation": means the "impermeable" stratum immediately overlying an artesian (confined) aquifer.

(18) "Consolidated Formation": means materials that have become firm through natural rock-forming processes. It includes such materials as basalt, sandstone, hard claystone, conglomerate, and granite.

(19) "Contamination": means an impairment of water quality by chemicals, radionuclides, biologic organisms or other extraneous matter whether or not it affects the potential or intended beneficial use of water.

(20) "Department": means the Water Resources Department.

(21) "Director": means the Director of the Department or the Director's authorized deputies or officers.

(22) "Domestic Well": means a well used to serve no more than three residences for the purpose of supplying water for drinking, culinary, or household uses, and which is not used as a public water supply.

(23) "Drawdown": means the difference in vertical distance between the pumping level and the static water level in a well.

(24) "Drive Point Well": means a well constructed by driving into the ground a well-point fitted to the end of a pipe section or series of pipe sections.

(25) "Dug Well": means a well in which the excavation is made by the use of picks, shovels, spades or digging equipment such as backhoes, clam shell buckets, or sand buckets.

(26) "Figure": when used herein refers to an illustration and is made a part of the primary article and section by reference.

(27) "Filter Pack Well": means a well in which the area immediately surrounding the well screen or perforated pipe within the water-producing zone is filled with graded coarser material.

(28) "Ground Water Geologist": means an individual licensed by the state to practice geology.

(29) "Grout": means either approved cement or bentonite sealing material used to fill an annular space of a well.

(30) "Grout Pipe": means a pipe which is used to place grout at the bottom of the sealing interval of a well.

(31) "Hydrologist": means an individual who studies the properties, distribution, and circulation of water and is licensed by the state to practice engineering.

(32) "Jetted Well": means a well in which the drillhole excavation is made by the use of a high velocity jet of water.

(33) " Leakage": means leakage of surface and/or subsurface water around the well casing.

(34) "Liner Pipe": means the inner tubing, pipe, or conduit installed inside the well casing or lower well bore, and used to protect against caving formations and is not permanently affixed to the drillhole wall or casing.

(35) "Lower Drillhole": means that part of the well bore extending below the surface seal interval in a well.

(36) "Mineralized Water": means any naturally occurring ground water containing an amount of dissolved chemical constitutents limiting the beneficial uses to which the water may be applied.

(37) "Municipal or Quasi-Municipal Well": means a well owned by a municipality or nonprofit corporation that may be used as a community or public water supply.

(38) "Order": means any action satisfying the definition given in ORS Chapter 183 or any other action so designated in ORS Chapter 537.505 to 537.795.

(39) "Perched Ground Water": means ground water held above the regional or main water table by a less permeable underlying earth or rock material.

(40) "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.

(41) "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.

(42) "Petcock Valve": is a valve used to contain pressure and when opened to drain the line or pipe.

(43) "Pitless Adaptor": means a commercially manufactured unit or device designed for attachment to one or more openings through a well casing, which will permit water service pipes to pass through the wall of a well casing or extension thereof and prevent entrance of contaminants into the well or water supply.

(44) "Pitless Unit": means a commercially manufactured unit extending the upper terminal of the well casing to above land surface, constructed and installed so as to prevent the entrance of contaminants into the well and to protect the ground water supply, conduct water from the well, and provide full access to the well and water system parts therein.

(45) "Porosity": means the ratio of the volume of voids in the geologic formation being drilled to the overall volume of the material without regard to size, shape, inter-connection, or arrangement of openings.

(46) "Potable Water": means water which is sufficiently free from biological, chemical, physical, or radiological impurities so that users thereof will not be exposed to or threatened with exposure to disease or harmful physiological effects and which has no taste or odor properties that would make it unpalatable to humans for drinking purposes.

(47) "Potentiometric Surface": means the level to which water will rise in tightly cased wells.

(48) "Pressure Grouting": means a process by which a cement grout is confined within the drillhole or casing by the use of retaining plugs in packers and by which sufficient pressure is applied to drive the grout slurry into the annular space or zone to be grouted.

(49) "Public-At-Large": means a person not actively engaged in the well industry.

(50) "Public Health Hazard": means a condition whereby there are sufficient types and amounts of biological, chemical, or physical, including radiological, agents relating to water which are likely to cause human illness, disorders, or disability. These include, but are not limited to pathogenic viruses, bacteria, parasites, toxic chemicals, and radioactive isotopes.

(51) "Public Well": means a well, whether publicly or privately owned other than a municipal well, where water is provided for or is available through the single user for public consumption including, but not limited to, a school, a farm labor camp, an industrial establishment, a recreational facility, a restaurant, a motel, or a group care home.

(52) "Pumping Level": means the level of the water surface in a well while it is being pumped or bailed.

(53) "Pump Test": means the procedure involving pumping water for a specified period of time to determine the yield characteristics of a well.

(54) "Refusal to Renew": means a provision in an order that prohibits renewal of a well constructor's license, for a specified term not to exceed one year from the expiration date of the current license.

(55) "Respondent": means the person against whom an enforcement action is taken.

(56) "Revoke": means termination of a well constructor's license.

(57) "Rough Drilling Log": means a record kept on the well site of the information needed to complete the well report for the well being constructed.

(58) "Sand": means a detrital material having a prevalent grain size ranging from 2 millimeters to 0.06 millimeters.

(59) "Silt": means an unconsolidated clastic sediment composed predominantly of particles between 0.06 and 0.005 mm in diameter.

(60) "Static Water Level": means the stabilized level or elevation of water surface in a well not being pumped.

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

(62) "Sump": means a hole dug to a depth of ten feet or less with a diameter greater than ten feet in which water is sought or encountered.

(63) "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.

(64) "Tremie Pipe": See Grout Pipe.

(65) "Unconsolidated Formation": means naturally occurring, loosely cemented, or poorly indurated materials including clay, sand, silt, and gravel.

(66) "Upper Drillhole": means that part of the well bore extending from land surface to the bottom of the surface seal interval.

(67) "Violation": means an infraction of any statute, rule, standard, order, license, compliance schedule, or any part thereof and includes both acts and omissions.

(68) "Water Level": See Static Water Level.

(69)"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.

(70) "Water Well": See Well.

(71) "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 artifically 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.

(72) "Well Constructor": means any person who has a current, effective well constructor license issued in accordance with ORS 537.747(3).

(73) "Well Drilling Machine": means any power-driven percussion, rotary, boring, digging, or augering machine used in the construction or alteration of wells.

Stat. Auth.: ORS Ch. 183, 536, 537 & 540

Hist.: WRD 9, f. & ef. 12-9-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 12-1982, f. & ef. 12-14-82; Amended & Renumbered from 690-60-050 & 690-64-000 by WRD 13-1986, f. 10-7-86, ef. 11-1-86

STANDARDS AND PROCEDURES FOR LOW-TEMPERATURE GEOTHERMAL WELLS AND EFFLUENT DISPOSAL SYSTEMS

Policy and Purpose

690-230-005(1) All Low-Temperature Geothermal Fluids are part of the ground water resources of the State of Oregon and shall be administered by the Water Resources Commission (Commission) under the provisions of ORS 537.010 to 537.795. The Commission recognizes that these fluids are developed primarily because of their thermal characteristics and that special management is necessary. Reservoir assessment of Low-Temperature Geothermal Fluids shall be conducted by the Commission in the same manner as ground water investigations outlined in ORS 537.665 and ORS 537.685.

(2) The purpose of the following rules is to provide standards and procedures for the development, use and management of Low-Temperature Geothermal Fluids, while insuring proper management of all ground water resources so maximum beneficial use of the resource will be most effectively attained.

(3) These rules supplement OAR 690-200-005 to 690-220-140. Rules 690-60-050, paragraph 47 and 690-61-181 are hereby rescinded.

Definitions[:]

690-230-020(1) "Bottom Hole Temperature": means t[T]he maximum temperature measured in the well or borehole. It is normally attained directly adjacent to the producing zone, commonly at or near the bottom of the borehole, and will in all cases be greater than or equal to the temperature of fluid produced from the borehole.

(2) "Low-Temperature Geothermal Effluent": means t[T]he outflow, discharge [of]or waste fluid, with its associated dissolved or suspended constitu[t]ents (being original or introduced), that is produced by a Low-Temperature Geothermal Well and its utilization system.

(3) "Low-Temperature Geothermal Fluid": means:

(a) Any ground water produced from a Low-Temperature Geothermal Well which is used for its thermal characteristics; or

(b) Any other fluids, approved by the Director, that circulate, with or without withdrawal, within a Low-Temperature Geothermal Well, where in all cases of Subsections (a) and (b) of this section, the fluid is circulated because of its thermal characteristics, and is used for various heating and/or cooling purposes including, but not limited to, residential, commercial, industrial, electrical, agricultural and aquacultural applications.

(4) "Low-Temperature Geothermal Reinjection Well": means

a[A]ny well as defined under ORS 537.515(7) that is constructed or used for returning Low-Temperature Geothermal Effluent to a ground water reservoir.

(5) "Low-Temperature Geothermal Well": means a[A]ny well as defined under ORS 537.515(7) with a bottom hole temperature less than 250 F that is constructed or used for the thermal properties of the fluid contained within.

(6) "Nonstandard Low-Temperature Geothermal Effluent Disposal System": means a[A]ny Low-Temperature Geothermal Effluent Disposal System in which one or more of the following conditions are met:

(a) Any portion of the effluent is disposed of in a manner considered non-beneficial by the Director. This includes, but is not limited to, disposal via storm sewer, drainage hole or direct discharge to land surface or a surface water body.

(b) The effluent contains contaminants, other than heat, that have been added to the Low-Temperature Geothermal Fluid.

(c) The effluent is reinjected to a ground water reservoir that is not considered suitable by the Director. Factors which may render a ground water reservoir unsuitable include, but are not limited to, chemical or physical incompatibility of the fluids involved or adverse hydraulic characteristics of the receiving reservoir.

(d) There are existing or potential problems or special conditions as determined by the Director. Problems or special conditions resulting from the effluent disposal system which may warrant a nonstandard designation include, but are not limited to, instability of near-surface earth materials, undue alteration of thermal characteristics of ground water, unreasonable head changes or leakage of effluent back to the surface.

(7) "Secondary Use": means the c[C]onsumption of Low-Temperature Geothermal Effluent for beneficial use including, but not limited to, domestic, irrigation, stock watering, commercial and industrial uses.

(8) "Standard Low-Temperature Geothermal Effluent Disposal System": means a[A]ny Low-Temperature Geothermal Effluent Disposal System in which one of the following conditions are met:

(a) No contaminants except heat have been added to the Low-Temperature Geothermal Fluid and the effluent is put to a Secondary Use.

(b) No contaminants except heat have been added to the Low-Temperature Geothermal Fluid and the effluent is returned to the producing or other suitable ground water reservoir and there are no other existing or potential problems or special conditions as determined by the Director including, but not limited to, those factors, problems and conditions listed in Subsections (6)(c) and (d) of this rule.

Low-Temperature Geothermal Well and Reinjection Well Construction

690-230-030(1) Low-Temperature Geothermal Wells and Reinjection Wells shall be constructed in conformance with applicable rules (OAR 690-200-005 to 690-220-140) with specific additions and modifications as described in OAR 690-230-005 to 690-230-140.

(2) Construction of a low-temperature geothermal well shall protect the ground water from contamination, waste and loss of artesian pressure. If utilization of the well causes heating or cooling of the casing resulting in thermal expansion or contraction of the casing to the point that adherence to the minimum well construction standards will not prevent or eliminate contamination, waste or loss of artesian pressure, the constructor shall request and obtain written approval from the Director to use construction methods, materials or standards to prevent the contamination, waste or loss. The request shall be in writing and submitted to the Director. Written approval from the Director must be obtained prior to completion of the well.

Low-Temperature Geothermal Reinjection Well Location

690-230-040(1) For appropriations not exceeding 15,000 gallons per day no Low-Temperature Geothermal Reinjection Well shall be located within 75 feet of any existing Low-Temperature Geothermal Well utilizing the same ground water reservoir without authorization from the Director, unless both the withdrawal and reinjection wells are on the same parcel of land and are used by the same ground water appropriator. [A variance from the 75-foot setback requirement may be issued by the Director, following a written request for special standards (described by OAR 690-200-020) by the [water] well constructor or landowner, who under the provisions of 537.753, is constructing the well, if] A request to place a reinjection well within 75 feet of a Low-Temperature Geothermal Well shall be in writing. The request shall be submitted to the Director listing the name and address of the property owners, street addresses of the wells and stating the reasons for placing the reinjection well closer than 75 feet.

The Director may approve placement of a Low-Temperature Geothermal Reinjection Well closer than 75 feet of an existing Low-Temperature Geothermal Well only upon determination by the Director that the hydrologic and thermal conditions [permit] allow closer spacing.

(2) For appropriations exceeding 15,000 gallons per day, the appropriator shall submit plans for review to the Director or his authorized representative, indicating separation distances between production and reinjection wells on the parcel of land on

which the production well is located, on the parcel of land on which the reinjection well is located, and on all adjoining parcels of land. In addition, the plans shall indicate the anticipated hourly production and reinjection rates, the maximum anticipated daily production, and any planned safeguards against undue thermal and hydrologic interference with existing rights to appropriate ground water and surface water.

Description of Proposed Use

690-230-050 For any Low-Temperature Geothermal Well or Low-Temperature Geothermal Reinjection Well, the report required under ORS 537.762 prior to commencing construction shall identify the intended use of the well, the appropriator's name and the appropriator's mailing address.

Identification of Intended Well Use

690-230-060 Any Low-Temperature Geothermal Well or Low-Temperature Geothermal Reinjection Well shall be clearly identified as such on the [water] well report filed with the Water Resources Department.

Well-Head Protection Equipment

690-230-070 Adequate well-head equipment to insure public safety and the protection of the ground water resource shall be immediately installed on any Low-Temperature Geothermal Well or Low-Temperature Geothermal Reinjection Well when fluid temperatures of 65 C (150 F) or greater are encountered during drilling. Low-Temperature Geothermal Fluids produced during drilling or testing of such a well shall be disposed of in such a manner as to minimize health hazards. A variance from the requirement for well-head protection equipment may be granted if a written request demonstrates that the equipment is not necessary to safely complete the well.

Pump Testing of Low-Temperature Geothermal Reinjection Wells

690-230-080 All Low-Temperature Geothermal Reinjection Wells shall be pump tested for a period of at least one hour; results must be recorded on the [water] well report. This minimum test shall be conducted as follows:

(1) Prior to testing, the static water level in the well shall be measured and recorded.

(2) Water shall be pumped into or from the well at a measured and steady rate; the rate shall approximate the maximum

anticipated injection rate of the operating well.

(3) For tests that withdraw water, only bailing or pumping the well is acceptable.

(4) The water level in the well shall be measured and recorded both at the end of pumping and after one hour of recovery.

(5) For proposed disposal exceeding 15,000 gallons per day the Director may prescribe a more detailed test that could include, but is not limited to, increased frequency of water level measurement, increased test duration and monitoring of observation wells. Such modifications will be required when possible impacts resulting from the development include, but are not limited to, thermal or hydrologic interference with existing water rights, water quality degradation or physical or mechanical failure of the well structure.

Water Temperature Measurement

690-230-090 For any Low-Temperature Geothermal Well that withdraws ground water, the [water] well report shall include the temperature of the fluid as measured at the discharge point at the beginning and conclusion of a timed production test (i.e. pump or bailer test-air test unacceptable), as well as the maximum fluid temperature attained during the test. The maximum temperature in the borehole and its corresponding depth is required on the [water] well report for a Low-Temperature Geothermal Reinjection Well if a test that does not withdraw ground water as described in OAR 690-230-080 is performed.

Additional Standards for Low-Temperature Geothermal Reinjection Wells

690-230-100 Procedures required to reinject effluent into a Low-Temperature Geothermal Reinjection Well must not cause failure of casing and seal material or other components of the well structure.

LOW-TEMPERATURE GEOTHERMAL EFFLUENT DISPOSAL

Effluent Disposal by Reinjection / [Fluid Quality] Assessment <u>of fluid Quality</u>

690-230-110<u>(1) No Low-Temperature Geothermal Reinjection Well shall be used for reijection without approval of the Director in accordance with OAR 690-210-070. Requests for approval of the use of a Low-Temperature Geothermal Reinjection Well shall be submitted in writing to the Director. Requests</u>

shall include:

a. Water quality information for the Low-Temperature Geothermal production well;

b. Water quality information for ground water in the receiving zone of the reinjection well; and

c. A description of the proposed installation, including anticipated flow rates and discharge temperatures.

(2) Well Reports indicating water bearing zones and water temperatures for both the production and injection wells must be on file with the Water Resources Department to obtain approval. Water quality information required for approval shall include analysis for the following parameters by a certified laboratory: [Prior to reinjection, users required to file for water rights shall supply the Director fluid quality information concerning the Low-Temperature Geothermal Fluid, the Low-Temperature Geothermal Effluent, and the ground water in the receiving zone of any Low-Temperature Geothermal Reinjection Well for systems that withdraw and reinject ground water in order that the Low-Temperature Geothermal Effluent Disposal System be classified as Standard or Nonstandard. The required information shall include a certified chemical analysis for the following parameters: Temperature,] pH, Suspended Solids, Specific Conductance, Total Dissolved Solids, Total Coliform Bacteria, Arsenic, Boron, Calcium, Carbonate or Bicarbonate, Chloride, Iron, Magnesium, Manganese, Potassium, Silica, Sodium and Sul[f]fate. [If poor water quality or water quality incompatible with the reinjection zone fluids is suspected, the Director may require additional specific data.]

(3) If the Low-Temperature Geothermal Effluent is suspected to be of poor water quality or to be otherwise incompatible with the water in the receiving zone in the reinjection well, the Director may require additional specific water quality data. If the information on the Well Reports for the wells involved is not sufficient to determine the effects of reinjection, the Director may require additional geologic or hydrologic information including but not limited to temperature/ depth logs of the wells. The Director may waive the requirement for specific portions or all of the chemical analysis if the fluid quality is known to be suitable [from] for the intended withdrawal and reinjection.

WATER RIGHTS PROCEDURE

Processing of Applications

690-230-120 The appropriator shall make application for a water right to appropriate Low-Temperature Geothermal Fluid unless an exemption is provided for under ORS 537.545.

Exemption From Water Right Permit Application / Use of Low-Temperature Geothermal Fluid

690-230-130 Low-Temperature Geothermal Fluid appropriation for single industrial or commercial use including, but not limited to, electrical, agricultural, aquacultural, heating and/or cooling in an amount not exceeding 5,000 gallons per day shall be exempt from application for a water right as provided for under ORS 537.545. This exemption applies to the use of ground water for any such purpose to the extent that it is beneficial and constitutes a right to appropriate ground water equal to that established by a ground water right certificate.

Water Right Limitation for Nonstandard Effluent Disposal Systems

690-230-140 If the Low-Temperature Geothermal Effluent is disposed of by way of a Nonstandard Low-Temperature Geothermal Effluent Disposal System, the right to appropriate the Low-Temperature Geothermal Fluid shall be inferior to all subsequent rights for beneficial consumptive use and/or to the rights of those appropriators who make use of a Standard Low-Temperature Geothermal Effluent Disposal System. If a Nonstandard Low-Temperature Geothermal Effluent Disposal System is upgraded to a Standard Low-Temperature Geothermal Effluent Disposal System the associated water right retains the priority date established upon initial filing.

DIVISION 235

GROUND WATER ADVISORY COMMITTEE

Ground Water Advisory Committee: Appointments, Terms, and Qualifications

690-235-005(1) There is created the Ground Water Advisory Committee consisting of five members appointed by the Director: two of whom shall be individuals from the [water] well industry, two of whom shall be ground water geologists or hydrologists, and one of whom shall represent the public-at-large. Members shall be citizens of the United States and residents of Oregon.

(2) Each member shall be appointed for a term of four years from the date of the expiration of the term for which the predecessor was appointed, except when a vacancy occurs before the expiration of a term shall be filled by appointment for the remainder of the unexpired term only.

(3) Members shall be appointed from different geographical