Title 785. OKLAHOMA WATER RESOURCES BOARD
Chapter 35. WELL DRILLER AND PUMP INSTALLER LICENSING

SUBCHAPTER 1. GENERAL PROVISIONS

785:35-1-2. Definitions [AMENDED]

The following words and terms, when used in this Chapter, shall have the following meaning, unless the context clearly indicates otherwise:

"Abandoned well" means a well that has been permanently taken out of use, or is in such a state of disrepair that using it is impracticable or threatens to contaminate the groundwaters of the State.

"APA" means and refers to the Oklahoma Administrative Procedures Act set forth in 75 O.S. 1981, §§250 et seq., as amended.

"Application" means a formal request to the Board and the first step required by law to acquire the right to perform or engage in activities regulated by the Board.

"Board" means the Oklahoma Water Resources Board authorized by law to make final adjudications, execute contracts, adopt rules and carry out other powers and duties set forth by law or, for duties authorized by law to be delegated to the Executive Director, the Executive Director or any employee or agent or staff member thereof as assigned by the Executive Director.

"Cathodic protection" means a technique used to reduce the corrosion of a metal surface by making that surface the cathode of an electrochemical cell.

"Commercial drilling" means drilling and installation as a business, trade, or occupation for compensation. [82:1010.1]

"Commercial installation" means installation as a business, trade or occupation for compensation. [82:1020.1]

"Commercial plugging" means plugging wells or borings as a business, trade or occupation for compensation. [82:1020.1]

"Deep anode groundbed" means one or more anodes installed vertically at a depth of fifty (50) feet or more below the earth's surface in a drilled hole for the purpose of providing cathodic protection.

"Direct push geological boring" means a geological boring in which tools and sensors are pushed into the ground using static weight combined with percussion as the energy to remove soil or make a path for the tool to obtain geotechnical, soil, water, and/or vapor information.

"Direct push monitoring well" means a well installed by direct push technology and used to obtain a representative groundwater sample for determining groundwater chemistry or quality; for detecting, recovering, or remediation of actual or potential contamination; or for monitoring the unsaturated zone above a water table or confined aquifer, and includes site assessment observation wells and unsaturated zone monitoring wells.

"Drilling water" means water that is used in the drilling of a well which is of a quality suitable for drinking or is uncontaminated water with a residual chlorine content equal to or greater than one hundred (100) milligrams per liter.

"Domestic use" means the use of water by a natural individual or by a family or household for household purposes, for farm and domestic animals up to the normal grazing capacity of the land whether or not the animals are actually owned by such natural individual or family, and for the irrigation of land not exceeding a total of three (3) acres in area for the

growing of gardens, orchards, and lawns [82:1020.1(2)]. Domestic use also includes:(1) the use of water for agriculture purposes by natural individuals, (2) use of water for fire protection, and (3) the use of water by non-household entities for drinking water purposes, restroom use, and the watering of lawns, provided that the amount of groundwater used for any such purposes does not exceed five acre-feet per year.

"Firm" means an individual or any kind of legal entity, such as a sole proprietorship, partnership or corporation that holds a license to conduct any well drilling or pump installation activity.

"Fresh water" means water which has less than five thousand (5000) parts per million total dissolved solids. All other water is salt water. [82:1020.1(7)]

"Groundwater" means fresh water and marginal water under the surface of the earth regardless of the geologic structure in which it is standing or moving outside the cut bank of any definite stream. [82:1020.1(1)]

"Fresh water observation well" means any well used to measure the depth to the water table or parameters of fresh water aquifer performance.

"Geotechnical boring" means any excavation deeper than four feet (4'), that is drilled, augured, bored, cored, washed, driven, jetted or otherwise constructed and which is used or capable of being used to obtain soil or geological formation samples or information, or for the determination of groundwater quality or remediation.

"Geothermal well" means heat pump well.

"Groundwater well" means any excavation that is drilled, cored, bored, washed, driven, dug, jetted or otherwise constructed which is used or is capable of being used for the production of groundwater.

"Heat exchange well" means the same as, and includes, the terms "geothermal well", "heat pump well", and "heat sink well".

"Heat pump well" means a boring or cased hole that uses or is capable of using the thermal characteristics of the geologic formations or groundwater if encountered, and includes but is not limited to an open or closed loop groundwater heat pump system.

"Heat sink well" means a well utilized for heat exchange purposes, including but not limited to, a heat pump well and a geothermal well.

"License" means a certification issued by the Board to qualified persons making application therefor authorizing such persons to engage in weather modification and control operations or the business of drilling or plugging wells or borings and installing water well pumps.

"Marginal water" means water which has at least five thousand (5000) and less than ten thousand (10,000) parts per million total dissolved solids.

"Monitoring well" means a well used to obtain a representative groundwater sample for determining groundwater chemistry or quality; for detecting, recovering, or remediation of actual or potential contamination; or for monitoring the unsaturated zone above a water table or confined aquifer, and includes site assessment observation wells and unsaturated zone monitoring wells.

"Open-loop heat pump water supply well" means a well drilled to supply water for the purpose of heat transfer.

"Operator" means the individual person engaging in the actual operation and use of the well drilling equipment and facilities and who performs and supervises the actual on-site

construction, completion and handling of wells or well test holes, and conducts tests, and obtains and records well or well test hole data.

"Piezometer" means cased holes that monitor or are capable of monitoring water pressures or soil moisture tensions, primarily located at dam sites or other man-made water retention structures.

"Pump" means mechanical equipment or device used to remove water from wells and shall include, but is not limited to pumps, seals, tanks, fittings, pipes from wells to pressure tanks, pressure switches, shut off valves for pressure tanks, related equipment and controls.

"Pump installer" means a person who is qualified to engage in the installation, removal, alteration, or repair of water well pumps and pumping equipment used in connection with a water well and breaking of the water well seal.

"Sand point well" means a groundwater well with a borehole constructed by means of driving a small diameter pipe having perforations downward into a loose sandy soil or by means of forcing uncontaminated groundwater through a small diameter pipe having perforations with sufficient pressure to displace loose sandy soil with the pipe.

"Site assessment observation well" means a well used to measure the depth to the water when used for evaluation, classification or determination of the groundwater flow direction at a site that is or might be contaminated.

"Sleeve" means well casing that is installed at the surface surrounding the production casing and used solely for the purpose of attaching a pitless adapter unit and is separate from surface casing and conductor pipe.

"Soil boring" means geotechnical boring.

"Total dissolved solids" (TDS) means a measure, in parts per million, of dissolved combined organic or inorganic substances suspended in water. Total dissolved solids is used as an aggregate indicator of water quality.

"Unsaturated zone monitoring well" means any well used for the characterization, evaluation or monitoring of the unsaturated area above the water table or zone.

"Vertical closed-loop heat pump well" means the borehole perpendicular to the natural grade of the earth surface drilled deeper than ten (10) feet into which a closed-loop pipe is placed for the purpose of heat transfer.

"Water return well" means a well constructed for the purpose of returning water that has passed through the heat pump system to the same aquifer from which the water was produced by the open-loop water supply well.

"Water well test hole" means any excavation that is drilled, cored, bored, washed, driven, dug, jetted or otherwise constructed which is used or is capable of being used to determine the location of fresh groundwater and/or the capacity of the geologic formation to yield groundwater.

"Well" means any type of excavation for the purpose of obtaining groundwater, to monitor, to remediate, or observe conditions under the surface of the earth, but does not include oil and gas wells.

"Well driller" means and refers to the individual owner-proprietor or partnership, firm or corporation engaged in the business of the commercial drilling, plugging or reconstruction and the test drilling of wells in the State of Oklahoma.

785:35-1-5. Indemnity Fund [AMENDED]

(a**)** **Purpose of the Indemnity Fund.** *Monies in the Indemnity Fund shall only be expended for remedial actions necessary without notice and hearing to protect groundwater from pollution or potential pollution from wells or boreholes that do not meet the minimum standards for construction or that have been abandoned.* [82:1020.16(B)(2)] *Expenditures from the indemnity fund...shall not exceed ~~Fifteen~~Ten Thousand Dollars ($1~~5~~0,000.00) for each well, borehole, or pump for which action is taken.* [82:1020.16(B)(4)] Monies from the Indemnity Fund shall be expended solely for the repair or plugging of improperly constructed wells. Unless otherwise determined by the Board, a finding that a well has been improperly constructed shall be based on the rules and statutes in place at the time the well was constructed.

(b**)** **Reimbursement.** The establishment of the Indemnity Fund in no way relieves the driller or pump installer from liability incurred or responsibility for wells or boreholes drilled or plugged or pumps installed which are not in compliance with the Board's rules and regulations. If the Board makes an expenditure from the Indemnity Fund to remedy a deficient condition, then any driller or pump installer responsible therefor shall, within a reasonable time specified in a written notification by the Board, reimburse the Indemnity Fund for the full amount of the expenditure. If the driller or pump installer does not make such reimbursement, then the Board shall not renew the license or certification of the driller or pump installer and may pursue other available remedies. *The Board shall seek reimbursement as recommended by the Well Drillers and Pump Installers Advisory Council for any remedial action taken or required by the Board*. Any monies received as reimbursement shall be deposited in the Well Drillers and Pump Installers Remedial Action Indemnity Fund except as otherwise provided in 785:35-1-5(c). [82:1020.16(B)(5)]

(c) **Well Drillers and Pump Installers Regulation Account.** When the Well Drillers and Pump Installers Remedial Action Indemnity Fund reaches Fifty Thousand Dollars ($50,000.00), the annual fees received from well drillers and pump installers, *monies received as reimbursement, and administrative penalties recovered under* 785:35-1-4(b) [82:1020.16(C)] shall be deposited in a separate account in the *Water Resources Board Revolving Fund designated as the Well Drillers and Pump Installers Regulation Account. Monies in said account shall be used by the Board for inspections, licensing, enforcement, and education, reimbursing per diem and travel costs for members of the Well Drillers and Pump Installers Advisory Council pursuant to the State Travel Reimbursement Act, and as otherwise determined to be necessary to implement the provisions of this section* [82:1020.16(C)], including but not limited to the payment for damage or destruction of property caused by activities related to inspections and enforcement by the Board.

785:35-1-6. Well Drillers and Pump installers Advisory Council [AMENDED]

(a) **Creation of Council.** The Well Drillers and Pump Installers Advisory Council is hereby created. The Council shall consist of eight (8) members appointed by and serving at the pleasure of the Oklahoma Water Resources Board. The Board shall seek nominations from each of the Congressional districts and the remaining members shall be appointed at large. The Executive Director of the Board shall be a member ex officio. At least one member shall represent each licensed activity. ~~Three members shall be appointed for a term of one (1) year; three members shall be appointed for a term of two (2) years; and two members shall be appointed for a term of three (3) years. Upon the expiration of said terms, their successors shall be appointed for terms of three (3) years.~~The term for a member on the advisory council shall be two (2) years. Upon the expiration of said terms, their successors shall be appointed for terms of two (2) years. Any

vacancy occurring on the Council shall be filled within 60 days of such vacancy. Council members may be removed by the Board without cause.

(b) **Qualifications for Council membership.** Each Council member shall have been licensed as a well driller or pump installer by the Board for at least five (5) years prior to appointment to the Council, and must be in good standing with the Board at the time of appointment and during the term of Council membership.

(c) **Organization of Council.** The Council shall meet at least once each twelve months and otherwise at the call of the Board or Executive Director of the Board. The Executive Director or his or her designee shall chair the first Council meeting, at which the Council members may elect a chair for a term of one year from among their membership. In the event of a vacancy on the Council, the remaining Council members may make nominations or recommendations, subject to approval and appointment by the Board. The Executive Director or his or her designee will consult with an elected chair concerning meeting agendas.

(d) **Duties of the Council.** The Council shall have the following duties:

(1) Recommend new rules and rules amendments to the Board, provided such recommendations must be in writing and must be concurred in by a majority of the membership of the Council;

(2) Review and recommend approval or denial of use of monies in the Well Drillers and Pump Installers Remedial Action Indemnity Fund for:

(A) Remedial actions to protect groundwater from pollution or potential pollution from wells or boreholes under the jurisdiction of the Board which do not meet minimum standards for construction or that have been abandoned, and

(B) Inspections, licensing, enforcement and education by the Board; and

(3) Recommend seeking reimbursement for any remedial action taken or required by the Board.

(e) **Effect of rule.** Nothing in this section shall be construed to limit or restrict the Board's authority regarding water well and pump installer licensing or use of the Well Drillers and Pump Installers Remedial Action Indemnity Fund.

SUBCHAPTER 3. LICENSING AND CERTIFICATIONS

785:35-3-1. Licensing procedures [AMENDED]

(a) **Who must file and types of certifications.**

(1) All persons engaged in the following categories of activities in this state shall make application for and obtain a license from the Board:

(A) Category 1: commercial drilling or plugging of groundwater wells including test drilling for groundwater, and commercial drilling or plugging of fresh water observation wells;

(B) Category 2: commercial drilling or plugging of monitoring wells and site assessment wells, and drilling or plugging of geotechnical borings;

(C) Category 3: commercial installation of water well pumps;

(D) Category 4: commercial drilling or plugging of wells utilized for heat exchange purposes including but not limited to the following:

(i) heat exchange wells; and

(ii) geothermal wells.

(E) Category 5: commercial drilling or plugging of marginal water wells.

(2) The license issued by the Board shall indicate on its face each category and specific activity or activities as described in (a)(1) of this section for which the licensee is certified to perform and conduct.

(3) Each licensed firm shall have at least one operator who may also be the licensee. Each operator shall be required to obtain a certification from the Board. An operator shall not conduct types of activities not authorized for the licensee under whom the operator works.

(4) To engage in activities for which certification is required, operators shall also have a valid license or shall be certified as an operator for a person having a valid license. An operator's certification by itself shall not constitute proper authority to engage in activities for which licensing is required.

(5) Reconditioning of wells as a trade, business or occupation for compensation shall be considered commercial drilling.

(6) No license shall be required for any person who installs vapor observation wells within the excavation of newly installed underground tank systems, provided that the bottom of the vapor observation well does not intercept the groundwater table and is above the historic high water table level in the area, and provided further that such vapor wells shall be constructed to meet or exceed the minimum standards for the construction of monitoring wells which are located in the unsaturated zone of aquifer.

(b) **Application requirements for license.**

(1) Any person who intends to conduct any of the activities listed in 785:35-3-1(a)(1) must complete and file a verified application for license and activity certification on forms provided by the Board.

(2) The license applicant shall submit the following with the application:

(A) verification of at least two (2) years qualified experience in the activity or activities for which certification under the license is sought, provided that education related to the activity may be substituted for up to one (1) year of the required qualified experience;

(B) a list of all well rigs and equipment used or to be used in conducting the activities for which certification under license is sought;

(C) the license fee for each activity for which certification under the license is sought;

(D) the indemnity fund fee for each category of activity for which certification under the license is sought;

(E) the examination fee.

<u>(F) applicants for category 5 must also holds a category 1 certification for a minimum of 2 years.</u>

(3) Applicants who are partnerships, corporations or other entities that are not individuals shall additionally provide the following with the application:

(A) designation of one contact person who shall be an official properly authorized to act for the partnership, corporation or other entity;

(B) authorized signature of the contact person who shall execute and verify the application;

(C) a list of all persons employed who intend to become duly certified operators for the partnership, corporation or other entity.

(c) **Application requirements for operator certification.**

(1) Any individual who intends to conduct any of the activities listed in 785:35-3-1(a)(1) for any person who obtains a license pursuant to these rules must complete and file an application for an operator certification on forms supplied by the Board, provided however, one operator certification shall be issued with the license to the licensee.

(2) The applicant for an operator certification shall submit the following with the application:

(A) verification of at least one (1) year of qualified experience in the activity or activities for which the operator certification is sought, provided that education related to the activity may be substituted for up to six (6) months of the required qualified experience;

(B) the operator certification fee;

(C) the examination fee.

(d) **Completion of application and notification.**

(1) Any application for license or operator certification not completed within six (6) months from the date of receipt shall be cancelled and fees submitted therewith forfeited.

(2) Upon receipt of a properly completed application and all items required to be submitted, the Board shall inform said applicant of the dates, times, and places of the examination for which he is eligible.

(e) **Administration and procedures relating to examination.**

(1) Upon notification of the dates, times, and places of examinations, the applicant shall notify the Board of the date, time, and place the applicant will be present to take the examination relating to the activities listed in 785:35-3-1(a)(1) for which the license or operator certification is sought. There shall be ~~four~~five (~~4~~5) kinds of examinations:

(A) an examination relating to groundwater wells and fresh water observation wells,

(B) an examination relating to monitoring wells, site assessment observation wells, and geotechnical boring,

(C) an examination relating to pump installation activities, including but not limited to related electrical work performed from the output side of a fused disconnect or breaker box, and

(D) an examination relating to heat exchange wells.

(E) an examination relating to marginal water wells.

(2) The applicant shall not be allowed to confer with any other person or refer to outside materials for answers to examination questions.

(3) After completion of the appropriate examination(s) within a reasonable time, the Board shall grade the examinations and pass upon qualifications of applicants for licensing and certification.

(4) An applicant, at any time within 30 days of the date he is notified of the results of an examination, may inspect his or her examination paper in the offices of the Board during the normal business hours for the purpose of challenging the propriety of the questions, the method of grading, and the accuracy of grading.

(5) Any applicant who fails an examination will be promptly notified by the Board. After a minimum time period of thirty (30) days, and if a subsequent examination is scheduled between the date of notification and the six (6) months expiration period of the application, the applicant may request to take the subsequent examination but must pay the appropriate examination fee each time the applicant requests to take the examination.

(f) **Issuance of license.**

(1) Upon acceptance of the applicant's qualifications the Board will issue the license with appropriate category and activity certifications to the applicant along with the required operator certifications.

(2) No license and no operator certificate shall be issued to any person who has not been a resident of the State of Oklahoma for at least ninety (90) days prior to the date of issuance of the license, unless the reciprocity provisions for nonresidents as set forth in (B) of this paragraph apply.

(A) The applicant for a license or operator certificate as the case may be, shall submit written verification of Oklahoma residency as required in this subsection.

(B) The Board may waive the ninety (90) day residency requirement as outlined in this subsection for any nonresident of the State of Oklahoma if the nonresident's particular state, territory, or possession of the United States extends similar privileges to the persons licensed under the provisions herein. If the applicant's state of residency has a licensing requirement, then the nonresident must be licensed and in good standing in that state. The license fees charged to a nonresident applicant shall be at least equal to the fees charged for similar nonresident license by the state, territory, or possession of the United States in which the applicant is a resident, but in no case shall the fee be less than four hundred dollars ($400.00).

(g) **Changing the designation of license or moving an operator certification.**

(1) Any individual licensee may request modification of the license designation to that of a partnership, corporation or other legal entity. The Board shall approve the request and issue a modified license after the following conditions are met:

(A) the licensee holds an active valid license;

(B) the licensee gives written notice of the request to the Board;

(C) the licensee provides the name of the contact person who is an official properly authorized to act for the partnership, corporation or other entity;

(D) a list of all persons employed by the partnership, corporation or other entity who are or intend to become duly certified operators.

(E) payment of fee(s) required for change of license and any new operator certifications.

(2) An operator who has obtained a certification to drill under the license of a partnership, firm, or corporation can transfer that certification to another partnership, firm, or corporation on the following conditions provided that an operator cannot conduct activities during any period that he is not associated with a licensee, and provided further that an operator certification will not be renewed unless the operator is associated with a licensee:

(A) the transfer fee is submitted to the Board with the transfer request, and

(B) the operator associates with the new licensee within thirty (30) days, or has provided notice to the Board of his current address within thirty (30) days after leaving the previous licensee.

(h) **Adding activities to be certified under license or operator certification.**

(1) A licensee or certified operator may request to add activities to be certified under the license or operator certification.

(2) The Board shall consider approval of request after the following conditions are met:

(A) verification of at least two (2) years qualified experience in the additional activity or activities for which the license is sought, provided that education related to the activity may be substituted for up to one (1) year of the required experience; verification of at least one (1) year qualified experience in the additional activity or activities for which certification is sought, provided that education related to the activity may be substituted for up to six (6) months of the required experience;

(B) submittal of an update of the list of rigs or other equipment to be used in the additional activity or activities;

(C) submittal of the additional license or operator certification fee;

(D) submittal of the additional indemnity fund fee;

(E) submittal of the examination fee;

(F) passing the examination.

785:35-3-2. Expiration and renewal of licenses and certifications [AMENDED]

(a**)** **Expiration.** All licenses and operator certifications issued by the Board shall expire on June 30 of the first or second year following issuance of the license or operators certification. New licenses or operator certifications shall be issued for a one or two year period, so that all odd license numbers and associated operators certifications shall expire in odd numbered years and all even numbered licenses and associated operator certifications shall expire in even numbered years.

(b**)** **Renewal**. All licenses and certifications may be renewed for a period of two years, subject to the rules in this Chapter. On or before May 31 of the year the license or certification is to be renewed, except as specified in this subsection, each licensee and certified operator shall submit the following:

(1) A completed application for renewal on forms furnished by the Board with the affidavit executed by the listed contact person for the licensee, and

(2) The license or operator certification renewal fee as provided for in these rules, provided that renewal fees shall not be due for licenses and certifications issued after January 1 of the year in which the first renewal is due, and

(3) The indemnity fund fee for those activities for which the license or operator certification is valid, and

(4) The late fee if the renewal application is submitted after May 31.

(c) **Grace period.** Any licensee or operator who allows his or her license or certification to lapse will be given until June 30 of the year in which they are scheduled to renew their license or operator certification in which to renew his or her license or certification without an examination; provided however, a late fee shall be due after May 31 as set forth in 785:5-1-11. After the grace period, the application will be treated as a new application. Provided however, any licensee or operator fulfilling a military obligation shall be granted an indefinite grace period as determined by the Board.

(d**)** **Board action.** The Board may grant the renewal application or deny the application as provided in this subchapter of these rules.

(e**)** **Continuing education requirement.**

(1) Beginning July 1, 2004, completing annual continuing education shall be required before any license or operator certification will be renewed, unless otherwise specifically determined by the Board or as set forth in paragraph (8) of this subsection. Information concerning the continuing education attended must be submitted with the application for renewal form.

(2) All licensees and all certified operators shall be required to attend at least four (4) units of approved continuing education during each year period (from July 1 through June 30) or a total of eight (8) units for each two-year period of renewal of which one unit must be comprised of an approved Oklahoma Rules and Regulations unit.

(3) Category 5 licensees shall be required to obtain at least two (2) units, of the required eight (8) units, of specialized continuing education related to the marginal water wells for each two-year period.

(~~3~~4) Continuing education shall be required during the first full year that the license or operator certification is active and during each year the license or operator certification is renewed.

(~~4~~5) One unit of continuing education shall equal fifty (50) minutes of approved instruction.

(~~5~~6) Approved trade shows and exhibitions attended shall be counted as one unit.

(~~6~~7) Continuing education instruction relating to well drilling and plugging and pump installation which are provided by or approved by another state's well drilling program are pre-approved for the Oklahoma continuing education requirement if the other state's well drilling program offers reciprocity by accepting Oklahoma's pre-approved continuing education instruction.

(~~7~~8) Other continuing education instruction and trade shows and exhibitions will be considered for approval by the Board after information concerning the continuing education or trade show and exhibition is submitted to the Board for review. Pre-approval of continuing education, trade shows and exhibitions may be requested for any licensee or certified operator.

(~~8~~9) Online continuing education that has been designated as pre-approved by the Board shall be accepted for no more than four (4) units of the required eight (8) units for the two-year renewal period.

(~~9~~10) If a licensee or certified operator fails to attend four (4) or eight (8) units as the case may be during the renewal period, the application for renewal may be approved after payment of $250.00 in penalty and double the continuing education requirements eight (8) or sixteen (16) units as the case may be).

SUBCHAPTER 7. MINIMUM STANDARDS FOR CONSTRUCTION OF WELLS

785:35-7-1. Minimum standards for construction of groundwater wells, fresh water observation wells, and water well test holes [AMENDED]

(a) **General requirements.**

(1) **Minimum standards.** The minimum standards set forth in this subchapter apply to all groundwater wells, fresh water observation wells and water well test holes whether constructed by a person having a valid license or by any other person. More stringent construction standards may be required for areas of known contamination as identified in Chapter 45, Appendix H.

(2) **Construction of wells.** Flowing and non-flowing groundwater wells, observation wells and water well test holes are to be constructed in a manner as to prevent waste and to prevent contamination of groundwater by pollution material either entering the ground around the casings or tubing, or entering the fresh groundwater from pollution sources below the ground, or by entering the fresh well water by leaking wells, casing pipe fittings, pumps, or well seals.

(3) **Proper maintenance, plugging and capping.** The well driller and/or the well owner are charged with the responsibility of taking whatever steps are reasonable in a particular situation to guard against waste and contamination of the groundwater resources, and to see that unused wells are properly capped or plugged.

(4) **Minor and small public water supply wells.** Prior to drilling a well that will be used in a minor or small public water supply system, a permit from the Oklahoma Department of Environmental Quality (ODEQ) must be obtained. Minor and small public water supply systems are defined in OAC 252:624-1-2 of the ODEQ regulations.

(b) **Minimum location standards.**

(1) Every new groundwater well, fresh water observation well and water well test hole shall be located a minimum distance from possible pollution sources as prescribed in this subsection or as otherwise authorized by a variance granted by the Executive Director. Possible pollution sources include but are not limited to existing or proposed septic tanks, sewer lines, absorption fields or beds, seepage pits, building foundations, waste pits, lagoons, oil or gas wells, and landfills. The minimum distance between the possible pollution source and the well or test hole shall be as follows, provided that other governmental agencies may require wells to be located at distances greater than the minimum distances set forth in this paragraph:

(A) 10 feet from a closed or tight sanitary sewer line, 25 feet from aerobic (above ground) sprinkler spray, and 50 feet from an aerobic sprinkler head,

(B) 300 feet from the outside perimeter of an existing or proposed waste lagoon for a feedlot or confined animal feeding operation, and

(C) 50 feet from all other pollution sources, provided however, if the well is 50 feet to 75 feet and located down-gradient or level from a possible source of pollution, a twenty foot (20') surface seal shall be installed, and

(D) 75 feet from all other pollution sources if the well is level with the pollution source and 100 feet from all other pollution sources if the well is located down-gradient from the pollution source.

(2) If not prohibited by the owner of the well or other governmental agency requirements, groundwater wells which will not be used for drinking water may be located closer to a possible pollution source than the minimum distances specified in paragraph (1) of this subsection if all of the following conditions are met:

(A) the possible pollution source is not a wastewater lagoon, and not a subsurface septic system,

(B) before the well is drilled, the well driller advises the person wanting the well drilled that the well is subject to contamination,

(C) the owner of the proposed well notifies the Board that the owner will authorize the driller to drill the well closer to the possible pollution source than the minimum location standard,

(D) the outside water-tight casing is properly cement grouted or completed with ten (10) feet bentonite in the lower one-half (1/2) portion and ten (10) feet cement grout in the upper one-half (1/2) portion at least twenty (20) feet down from the land surface or pitless adaptor connection.

(3) If a well driller or other person proposing to drill a well encounters a structure, object or other situation and is unsure whether it may be a possible source of pollution, he shall contact Board staff and obtain approval for location of the well.

(c) **Casing of groundwater and fresh water observation wells.** Except for sand point wells, requirements for casing of groundwater wells and fresh water observation wells shall be as follows:

(1) The casing shall be installed to seal off any groundwater zones containing water which does not meet the groundwater quality standards as set forth in Oklahoma's Water Quality Standards. In no case shall a well be completed in a salt <u>or marginal</u> water zone.

(2) New groundwater and fresh water observation wells shall have:

(A) Outside water-tight production casing cement grouted from land surface to a minimum depth of ten (10) feet below the land surface, and to such further depth as may be necessary, depending upon the character of the underground formations, to extend into an impervious stratum, where such stratum is found above the source aquifer.

(B) Casing seated at top of the first impervious stratum suitable for casing point. Where an impervious formation or tight confined bed does not occur at the well site, the casing shall be extended as far as practicable below the water table and wherever possible, at least ten (10) feet below the minimum seasonal stage of the water table.

(C) Casing joints threaded, welded, or glued with water well construction glue so as to be water-tight.

(D) Casing that extends at least twelve (12) inches above the natural ground level or at least eight (8) inches above the floor surface (for a total of 12 inches above natural ground level) for surface pad completions. In areas where known flooding occurs, the casing shall extend twenty-four (24) inches above the maximum level of such flooding.

(E) Casing meeting or exceeding the following:

(i) new or clean and sanitary used carbon or stainless steel, or

(ii) new PVC fresh water well casing which has a S.D.R. rating of twenty-six or stronger and which may be plain end with threaded connector, and with all joints made water-tight by cleaning and cementing, using manufacturer's recommended thinner and cement for use in fresh water wells, or

(iii) fiberglass or other material which meets or exceeds N.S.F. approval for casing which is specially designed for use in a water well.

(d) **Cement grouting and concreting.** Except for sand point wells, cement grouting and concreting requirements for groundwater wells and fresh water observation wells shall be as follows. These requirements must be met before the drilling rig is taken from the site.

(1) All new groundwater wells and fresh water observation wells shall be made water-tight around the outside of the production casing by cement grouting to such depths as may be necessary to exclude pollution, but in no case shall the cement grout seals be

less than ten (10) continuous feet in depth, provided that five (5) feet of bentonite may be installed immediately below five (5) feet of cement grout for the total 10 feet continuous seal. If surface pipe and production casing are used, the cement grouting and/or bentonite seal shall be installed outside the surface pipe casing in all instances beginning July 1, 2005, provided the following provisions apply:

(A) a variance may be issued by the Director for an alternative completion design due to site specific conditions, and

(B) if a sleeve is used at the surface for the sole purpose of attaching a pitless adapter, the sleeve shall be installed or embedded within the surface seal, extend a minimum of eight feet (8') below ground level in the borehole, and the surface seal shall be a minimum of one and one-half inch (1½") thick.

(C) If the surface casing does not extend twelve inches (12") above natural ground level and a pitless cap or sanitary seal is not installed, then a ten foot (10') cement grout/bentonite surface seal shall be installed in the area between the surface and production casings terminating within four feet (4') of land surface.

(D) When deemed necessary to utilize conductor or surface casing to control flowing material near surface, an additional cement/bentonite seal shall originate ten feet (10') below the base of the conductor/surface casing and shall terminate ten feet (10') above the base of the conductor/surface casing between the conductor/surface casing and production casing.

(2) The cement or cement/bentonite seal shall originate at a minimum ten (10) foot depth and terminate no deeper than four feet (4') from the natural land surface for a minimum total length of ten feet (10') after all settling of the cement or bentonite/cement has occured, unless a written waiver is first obtained from the Board.

(3) The cement grout shall consist of a mix ratio of one (1) 94 pound sack of cement to a maximum of six (6) U.S. gallons of water. The cement and water must be mixed to the proper consistency as recommended by the cement manufacturer before the mixture is installed around the casing. A maximum of fifty percent (50%) aggregate by dry weight may be added to the portland cement to form the cement grout, provided the aggregate is a size that will not create a potential to cause bridging in the annular space.

(4) A maximum of twenty percent (20%) percent bentonite may be added to the slurry, which bentonite shall be prehydrated to the manufacturer's recommended consistency. Prehydration requires that the bentonite be properly mixed with the recommended amount of water before the mixture is installed.

(5) The well borehole shall be a minimum diameter of at least three (3) inches greater than the outside diameter of the well casing or production tubing adjacent to the borehole utilized in the surface seal.

(6) This annular space shall be filled with cement grout or cement/bentonite to the minimum ten (10) foot depth, or such further depth as may be necessary to exclude pollution.

(7) Where a pitless well adapter or unit is being installed, the grouting shall start below the junction of the pitless well adapter or unit where it attaches to the well casing and shall continue to at least ten (10) feet below this junction.

(8) If a high solids bentonite grout is used for the bentonite seal portion below the cement grout portion of the surface seal, the grout shall contain a minimum, twenty percent (20%) solids by dry weight.

(9) It is not an acceptable installation method to install dry cement around the casing and then add water.

(e) **Well development requirements for groundwater wells except sand point wells or fresh water observation wells.** Upon completion of the groundwater well or fresh water observation wells and before conducting the yield of drawdown tests, the well driller shall clean and develop the well to remove drill cuttings and drilling mud.

(f) **Disinfection of groundwater or fresh water observation wells.** Requirements for disinfection of groundwater or fresh water observation wells shall be as follows:

(1) All water used in the drilling of the well shall be potable water or uncontaminated chlorinated water having not less than ~~100 parts per million~~ 0.5 milligrams per liter (mg/L) chlorine.

(2) A new, repaired, or modified well shall first be thoroughly cleaned and prepared for receiving pumping equipment.

(3) Thereafter, the well and pumping equipment shall be disinfected with chlorine so applied that a concentration of at least one hundred (100) parts per million of chlorine shall be obtained in all parts of the water in the well.

(4) A minimum contact period of two (2) hours shall be provided before pumping the well to flush chlorine solution from the fresh water distribution system.

(g) **Access port or water level measuring device.** Upon completion of a new groundwater or fresh water observation well and before the well is put into service, the well driller will equip the well with either an access port that will allow for the measurement of the depth to static water surface or a static water level measuring device.

(h**)** **Sand point well construction requirements.** Unless otherwise approved by variance, applicable minimum standards set forth in this section and the following minimum construction requirements apply to sand point wells:

(1) The sand point well shall be drilled to a total depth of no more than thirty feet (30'); and,

(2) A pilot hole shall be constructed first, with cement installed to a depth of three feet (3') around surface casing, then the remaining bore hole can be installed then production casing installed.

785:35-7-1.1. Minimum standards for construction of heat exchange wells [AMENDED]

(a) **General requirements.**

(1**)** **Applicability of minimum standards.** The minimum standards set forth herein apply to all heat exchange wells as defined in 785:35-1-2, whether constructed by a person having a valid license or by any other person. Minimum standards shall include regulation of the drilling of the borehole, installation of casing, installation of heat loop pipe, ~~and the filling and/or~~ grouting of the well, and installation of the heat loop pipe up to the connection of the heat loop pipe to the facility circulation equipment. ~~Manifolding of loop pipe to complete a heat exchange system is not regulated under this Section.~~

(2) **Prohibition against other uses.** Heat exchange wells ~~cannot~~shall not be used for any purpose other than heat exchange. After completion, heat exchange wells shall not be converted to any other type of well ~~except by~~ unless written approval ~~by~~ is obtained from the Board. The licensee shall ensure that the heat exchange well is constructed according to the rules.

(3) **Maximum protection of groundwater required.** Construction of ~~geothermal and~~ heat exchange wells shall provide maximum protection to the groundwater from ~~contamination~~ surface contaminants and movement and migration of water from one zone or aquifer to another.

(b) **Location of heat exchange wells.**

(1) A vertical heat ~~pump~~ exchange well shall be located on a site so that surface water will not pool or pond around or within ten (10) feet of the heat exchange well location.

(2) Placement of a heat exchange well must meet or exceed standards as set forth by section 785:35-7-1(b) relating to location requirements for groundwater wells except as set forth in paragraph 3 of this subsection.

(3) If not prohibited by the owner of the well or other federal or state agency requirements, heat exchange wells may be located closer to a possible source of pollution than the minimum distances specified in Section 785:35-7-1(b) if all of the following conditions are met:

(A) The possible pollution source is not a wastewater lagoon, septic tank, absorption field, or aerobic sprinkler system.

(B) The well annulus is completely sealed as described in paragraph 7 of subsection (c) of this section.

(c**)** **Construction standards for vertical closed-loop exchange wells.** Vertical closed-loop heat exchange wells shall be constructed in accordance with this subsection. Site specific conditions shall be assessed to determine the best method and materials to be used for ~~sealing and filling~~ grouting the well annulus to ~~protect~~ provide protection of the groundwater per paragraph 3 of subsection (a). In addition, but not as an alternative, to the requirements stated in (1) through ~~(9)~~ (8) of this subsection, methods and materials for construction of heat exchange wells that meet or exceed recommendations specified in "Grouting for Vertical Geothermal Heat Pump Systems Engineering Design and Field Procedures Manual", International Ground Source Heat Pump Association, Oklahoma State University, ~~First Ed. 2000~~2015, and in ~~"Grouting Procedures for Ground Source Heat Pump Systems", International Ground Source Heat Pump Association, Oklahoma State University, 1991~~"ANSI/CSA/IGSHPA C448 Series-16, Design and installation of ground source heat pump systems for commercial and residential buildings", American National Standards Institute, 2016, may be used for construction of vertical closed-loop heat exchange wells.

(1**)** **Casing material.** If permanent casing is needed in a vertical closed-loop heat exchange well, it must meet standards set out in Section 785:35-7-1 for steel and for plastic.

(2) **Heat exchange loop material.** ~~In a closed-loop heat exchange well, the material used to make up the heat exchange loop that is placed into the ground must be equal to or exceed PE3408, DR 11, 160 PSI high density polyethylene (HDPE) or ASTM D-3350.~~ The material used to construct the heat exchange loop must meet or exceed standards set forth by Clause 5.4 of ANSI/CSA/IGSHPA C448.0.

(3) **Connecting closed-loop pipe.** All pipe joints and fittings installed and buried shall ~~be socket, butt or thermally fused according to the pipe manufacturer's specifications~~meet or exceed standards set forth by Clause 5.4 of ANSI/CSA/IGSHPA C448.0. Glued or clamped joints shall not be used below ground unless the joint or connection serves as a service outlet and the joint or connection is not covered with earth

material. Joints must not leak after assembly. All indoor piping and fittings should meet or exceed standards set forth by Clause 5.5 of ANSI/CSA/IGSHPA C448.0.

(4) **Heat transfer fluid.** ~~The fluid used inside the closed-loop assembly must be non-toxic, food grade quality and approved for use by the U.S. Environmental Protection Agency and~~ Approved fluids for use inside the heat exchange loop include potable water, food-grade or USP-grade propylene glycol, and solutions in which remediation of leaks would occur through dissipation. ~~a~~ A release of the fluid to the groundwater must not violate Oklahoma Water Quality Standards set forth in Chapter 45, OAC 785.

(5) ~~**Borehole size.** The hole size for heat exchange wells must be of sufficient size to allow placement of the material to surround all pipe, but in no case shall the borehole diameter be less than four (4) inches.~~**Borehole specifications.**

(A) **Borehole diameter.** The borehole for vertical closed-loop heat exchange wells must have a sufficient diameter to accommodate the heat exchange loop u-bend assembly, tremie pipe, and placement of grout to surround all heat exchange loop pipe.

(B) **Exploratory borehole.** The first borehole drilled for the vertical closed-loop heat exchange system shall be considered an exploratory borehole. A subsequent borehole may also be considered an exploratory borehole if the well driller encounters subsurface conditions that include, but are not limited to, lost circulation conditions, hydrocarbons or hazardous gases, and changes in groundwater chemistry.

(C) **Lost circulation conditions.** If caves or large fractures are encountered in drilling the exploratory borehole or any subsequent borehole, grouting may not be possible and the Board must pre-approve completion of the vertical closed-loop heat exchange system in such conditions based on plans to bridge and seal zones of lost circulation.

(D) **Hydrocarbons and hazardous gases.** If hazardous gases or hydrocarbons are observed in drilling the exploratory borehole or any subsequent borehole, the Board must be notified immediately. Completion of the vertical closed-loop heat exchange system shall be prohibited without Board approval.

(E) **Groundwater chemistry.** Chemistry of groundwater encountered in drilling the exploratory borehole, or any subsequent borehole shall be used to inform grout selection. Instructions provided by the grout manufacturer must be followed to provide protection of the groundwater per paragraph 3 of subsection (c) of this section. The grout manufacturer shall be consulted as required.

(6) **Grouting of vertical heat exchange wells.** Grouting and filling the annulus of a heat exchange well must be completed immediately after the well is drilled to avoid cave-in of the uncased hole.

(7) ~~**Vertical heat exchange well sealing and filling materials and methods.** The well annulus must be completely sealed or filled the total length of the borehole with approved materials and methods as listed below.~~ **Grouting methods and materials for vertical closed-loop heat exchange wells.** Grouting methods for vertical closed-loop heat exchange wells shall meet or exceed standards provided by Clause 5.8 of ANSI/CSA/IGSHPA C448.0 and Clause 6.3 of ANSI/CSA/IGSHPA C448.3 except where standards set forth by this Section provide exceptions. The following methods and

materials are approved for grouting the annulus of vertical closed-loop heat exchange wells, provided that standards set forth by 785:35-7-1.1(c)(5)(E) shall also apply:

(A) ~~A bentonite, cementitious, or Portland cement grout seal shall be installed from a point thirty (30) feet below land surface up to the excavation trench that connects the closed loop to the heat exchange system. Spreading or expanding clips shall not be used within the top thirty (30) feet of the borehole.~~ A grout seal shall be installed from the total depth of the borehole up to the connecting trench and must be composed of one of the following materials:

(i) Portland cement;

(ii) Sand-cement mixed at a ratio of not more than 188 pounds of sand to one 94-pound sack of Portland cement and seven (7) gallons of water;

(iii) High solids bentonite grout with a minimum solids content of 20 percent by weight. Clean silica sand may be added to the slurry;

(iv) Bentonite pellets or chips; or

(v) Approved thermally enhanced grouts and non-cement grouts which meet standards set forth by Clause 5.8 of ANSI/CSA/IGSHPA C448.0 and Clause 6.3 of ANSI/CSA/IGSHPA C448.3

~~(B) Approved annulus sealing and filling materials below thirty (30) feet shall include Portland cement, high solids bentonite grout (20-30% solids by weight),bentonite pellets or chips, water well filter pack sand or gravel, or approved high efficiency or thermally enhanced grouts designed for geothermal borehole.~~

~~(C) The annulus sealing or fill material shall be installed from the bottom of the borehole to a termination point of no less than thirty (30) feet from land surface.~~

~~(D)~~(B) Bentonite chip or pellet fill material installed shall be hydrated immediately after installation if installed in the unsaturated zone.

~~(E) Fill material placed in the annulus shall be uncontaminated, provided that cuttings shall not be used as fill material.~~

~~(F)~~(C) When non-slurry sealing ~~and filling~~ materials are used, only ~~clean water well filter pack sand or gravel or~~ chipped or pelletized sodium bentonite varieties that are designed to fall through standing water are acceptable when sealing the annulus of a well that is below the water level in the saturated zone. The borehole shall be flushed clean of all drilling mud and debris left over from the drilling operation so that the bentonite products designed for this type of installation will gravity feed without obstruction. Material shall be introduced in a manner to prevent bridging of the materials in the borehole annulus. A measuring device such as a tagline shall be used to measure and document placement of the materials installed.

~~(G)~~ (D) Slurry mixes of bentonite grout or Portland cement shall be installed by pumping through a tremie pipe in a continuous operation using a positive displacement method. Polymer additives designed to retard swelling are acceptable for use with the bentonite grout or Portland cement. The tremie pipe will extend the full depth of the borehole before pumping begins. The borehole diameter shall be of adequate size to allow proper placement of materials using this method. Slurry volume used must equal the annulus volume of the borehole.

~~(H) For air drilled boreholes in which the borehole is completely dry and the normal static water level is deeper than the total depth of the heat exchange well, the bentonite slurry may be pumped from the surface without a tremie pipe.~~

(8) ~~**Multiple formations, lost circulation zones, or zones of differing water quality.** When multiple formations, lost circulation zones, or zones of differing water quality are encountered within the same borehole, the listed sealing and filling materials set forth in paragraph (7) may be used, provided, that if sand or gravel material is used as the fill material, a solid plug of Portland grout, bentonite pellets, or bentonite chips must be installed to separate the formations or zones to prevent cross contamination. The total length of the plug must be a minimum of five (5) feet and installed in a consolidated area of the borehole. If no consolidated area or formation is present to install the plug (such as loose sand or gravel), sand and /or gravel shall not be acceptable annulus fill material.~~ **Concentric tube heat exchangers.** Concentric tube heat exchangers that meet or exceed the requirements of this Section are approved.

~~(9) **Wells drilled in lost circulation conditions**. If caves or large fractures are encountered in drilling the borehole, grouting may not be possible and the Board must pre-approve completion of the heat pump well in such conditions based on plans to bridge and seal such areas. If completion is not approved, the well must be properly plugged. Chipped bentonite or clean fill (gravel, sand and other appropriate material) may be used to seal small fractures.~~

(d) **Construction standards for open-loop and return heat exchange wells.**

(1) ~~Open-loop heat exchange wells~~ Groundwater wells and water return wells used in open-loop heat exchange must meet the minimum construction standards set forth in Section 785:35-7-1 relating to groundwater.

(2) ~~Water return wells for domestic heat exchange systems must meet the minimum construction requirements set forth in Section 785:35-7-1, and the groundwater used in the system must be returned to the same aquifer from which the groundwater was withdrawn by the open-loop heat exchange well, provided that authorization from the Oklahoma Department of Environmental Quality may also be required.~~Groundwater used in the open loop heat exchange system must remain untreated and be returned to the same aquifer from which the groundwater was withdrawn.

(e) **Construction standards for horizontal closed-loop heat exchange systems.** Horizontal closed-loop heat exchange systems constructed by trenching or digging are exempt from grouting requirements, provided that no part of the horizontal loop is constructed at or below the highest anticipated groundwater level. Horizontal closed-loop heat exchange systems constructed by boring or drilling must be grouted according to standards set forth by paragraph 7 of subsection (c) of this Section. All other construction for horizontal closed-loop heat exchange systems shall meet or exceed standards set forth by subsection (c) of this Section.

785:35-7-3. ~~Variances to minimum standards for construction of wells~~Minimum standards for construction of marginal water wells [AMENDED]

~~(a) Variances from any of the minimum standards for construction of wells set forth in this subchapter may be granted by the Board when it is demonstrated that the construction proposed will protect the quantity and quality of the groundwater from contamination and waste. Requests for variances must be completed on forms provided by the Board and submitted prior to~~

~~beginning any work related to the variance, unless otherwise approved by the Executive Director of the Board as provided in this section.~~

~~(b) Requests for variances shall be accompanied by any plans, specifications or other information detailing the type of variance requested and reasons for the variance request.~~

~~(c) Requests for variances must be signed by the licensed well driller, contain a signature from the landowner of the land where the work is being done, and contain a certification signed by a licensed professional engineer that activities allowed by such variance will not cause pollution; provided however, a certification from a licensed professional engineer shall not be mandatory for a variance request to water well construction minimum standards unless otherwise required by the Executive Director.~~

~~(d) Staff shall review the plans, specifications and data for purposes of determining the potential impacts on the groundwater and, if deemed advisable, may consult with all person requesting the variance, landowner and licensed professional engineer or hydrogeologist. Staff shall then make a recommendation to the Executive Director about the request for variance.~~

~~(e) The Executive Director may approve the requested variance, deny the requested variance, or approve the requested variance subject to certain conditions being met.~~

(a) General requirements

(1) Intent to drill application and fee required.

(A) The well driller who shall desire to drill marginal water well shall submit an intent to drill application prior to construction upon printed forms which will be furnished by the Board. Marginal water wells shall not be constructed for domestic use unless a variance is granted by the Board.

(B) The well driller shall provide information on the well design and materials to be used in the well construction, including the cementing and testing procedures, and any other pertinent data required by the Board.

(C) All supporting documentations along with the required fee as provided in 785:5-1-11 shall form a part of the intent to drill application.

(D) The intent to drill application shall be signed by the well driller conducting the well drilling activities.

(E) A marginal water well construction permit must be approved by the Board before the drilling of any marginal water well.

(F) Drilling of marginal water well shall be conducted in accordance with the marginal water well construction permit as approved and conditioned by the Board.

(G) While conducting well drilling activities the well driller shall have a copy of the approved construction permit on site and available for inspection upon request.

(2) **Marginal water well construction without permit**

(A) The licensed marginal water well driller who encounters marginal water shall cease the operation, temporarily cap the well, and must take necessary measures to prevent comingling of the marginal water with fresh water.

(B) The well driller shall submit an intent to drill application to the Board as provided in subsection 1.

(C) The Board may revoke, suspended, or deny the renewal of the license or certification to any well driller who fails to comply with the rules and regulations.

(b) Minimum standards

(1) **Longevity of casing**

The well driller must provide information that supports the longevity of the selected casing in response to potentially corrosive salt concentrations.

(2) **Annular seals to prevent the contamination of fresh water**

The annular space between the casing and borehole shall be sealed to prevent the commingling of fresh water with marginal water by using enough cement under pressure to completely fill and seal the annular space between the casing and borehole. Unless an alternate casing and/or cementing procedure is authorized by the Board, the well casing shall be cemented in this manner from 50 feet below the deepest fresh groundwater zone or aquifer encountered while drilling ~~bottom of the fresh water zone to be developed~~ to land surface or immediately below the junction of the pitless adapter.

(3) **Well schematic**

The marginal water well intent to drill application must provide well schematic illustrating proposed construction depths, dimensions, materials, and methods as well as the target aquifer, stratigraphy and hydrogeology to be encountered during drilling.

(4) **Sealing off formations**

Cement must be allowed to set a minimum of forty-eight (48) hours before well drilling is resumed. Shorter set times may be requested if approved alternate sealants or accelerants are used. If shorter set times are requested, documentation shall be provided in the marginal water well intent to drill application substantiating the appropriate cement curing time to meet the compressive strengths necessary, consistent with anticipated shut-in pressures. Shorter set times shall not be permitted unless prior approval is granted by the Board. Sealing off of the formations shall be checked by a method acceptable to the Board.

(5) **Cementing service reports**

The well driller shall provide any cementing service reports with the submission of the well log within 30 days of completion. The Board may require preliminary information as it becomes available.

(6) **Cement bond logging**

The well driller shall provide any ~~conduct~~ cement bond logging results created on each well ~~and provide the results~~ with the submission of the well log within thirty (30) days of completion. The Board may require results of cement bond logging within twenty-four (24) hours of completion.

(7) **Mud logging and Geophysical logging**

The well driller shall provide any mud logging and geophysical logging reports created on each well with the submission of the well log within thirty (30) days of completion. The Board may require results of geophysical logging within twenty-four (24) hours of completion. The Board may require periodic mud logging or lithologic logging during the course of the project.

(8) **Deleterious substances**

The well driller shall contain, dispose of, or remove any deleterious substances from marginal water well activities according to the state's waste management standards.

(9) Alternate designs

In the event that an alternate design is required, the well driller shall submit written notification to the Board. The Board may approve or deny the alternate design within

48 hours provided it is demonstrated that the proposed construction will prevent comingling of fresh, marginal, and/or salt water.

785:35-7-4. Variances to minimum standards for construction of wells [NEW]

(a) Variances from any of the minimum standards for construction of wells set forth in this subchapter may be granted by the Board when it is demonstrated that the construction proposed will protect the quantity and quality of the groundwater from contamination and waste. Requests for variances must be completed on forms provided by the Board and submitted prior to beginning any work related to the variance, unless otherwise approved by the Executive Director of the Board as provided in this section.

(b) Requests for variances shall be accompanied by any plans, specifications or other information detailing the type of variance requested and reasons for the variance request.

(c) Requests for variances must be signed by the licensed well driller, contain a signature from the landowner of the land where the work is being done, and contain a certification signed by a licensed professional engineer that activities allowed by such variance will not cause pollution; provided however, a certification from a licensed professional engineer shall not be mandatory for a variance request to water well construction minimum standards unless otherwise required by the Executive Director.

(d) Staff shall review the plans, specifications and data for purposes of determining the potential impacts on the groundwater and, if deemed advisable, may consult with all person requesting the variance, landowner and licensed professional engineer or hydrogeologist. Staff shall then make a recommendation to the Executive Director about the request for variance.

(e) The Executive Director may approve the requested variance, deny the requested variance, or approve the requested variance subject to certain conditions being met.

SUBCHAPTER 11. PLUGGING AND CAPPING REQUIREMENTS FOR WELLS AND TEST HOLES

785:35-11-1. Plugging and capping requirements for groundwater wells, fresh water observation wells, heat exchange wells and water well test holes [AMENDED]

(a) **Temporary capping.** When a groundwater well or fresh water observation well is temporarily removed from service, the top of the well casing will be properly sealed with a pitless adapter cap, sanitary well seal, or well casing cap that cannot easily be removed. A new well shall be properly capped before the well driller leaves the drilling site.

(b) **Time for plugging or completing water well test holes.** Water well test holes shall be properly plugged as provided in this section by the well driller prior to removal of drilling equipment unless the test hole is completed as an observation well for aquifer testing, including the installation of surface casing and cement seals. In the alternative and prior to drilling equipment being removed from site, water well test holes may be temporarily cased with SDR 26 water well casing a minimum of 10 feet below ground and 12 inches above ground. Bentonite shall be installed from 10 feet to 2 feet below land surface and cement grout installed from 2 feet to land surface. The top of casing shall be properly sealed or capped. Permanent completion or plugging shall become the responsibility of the landowner and shall be completed within 60 days of drilling equipment being removed from the site. A written statement from the landowner acknowledging such responsibility shall be obtained and submitted to the Board with the

multipurpose completion report. The multi-purpose completion report shall be submitted to the Board within sixty (60) days after plugging or temporary completion of each water well test hole.

(c) **Permanent abandonment.** The following plugging requirements apply if a groundwater well, fresh water observation well, heat exchange well or water well test hole is permanently abandoned, was drilled by a person not holding a valid license or operator certification from the Board, or if the Board determines that the well or test hole was not drilled or completed in compliance with the applicable minimum standards set forth in this Chapter or may otherwise allow pollution to groundwater.

(1) The well driller shall be responsible for plugging the well or test hole if the well drilling equipment is on the drilling site. If a well is abandoned after the well drilling equipment has been removed from the drilling site, the owner of the land where the well or test hole is located shall be responsible for plugging.

(2) If the well or test hole is uncontaminated and unless paragraph 3 or paragraph 5 below applies, fill such well or water well test hole with uncontaminated, compacted drill cuttings and/or uncontaminated surface clay, cement, bentonite pellets or granules, or high solids (a minimum of twenty percent (20%) solids by dry weight) bentonite grout to within fourteen (14) feet of the land surface, and a minimum of ten (10) feet of the annular space and interior of the well casing shall be filled with cement grout to at least four (4) feet below the land surface.

(3) To plug uncontaminated groundwater wells, fresh water observation wells, or heat exchange wells in the alluvium and terrace deposits of the Arkansas, Cimarron, Salt Fork of the Arkansas, North Canadian, Canadian, Washita, North Fork of the Red, Salt Fork of the Red River, Red River, and other streams or rivers authorized by the Board, fill the well with clean, uncontaminated silica sand to within sixteen (16) feet of the land surface, then two (2) feet of bentonite pellets or granules shall be placed on the uncontaminated silica sand, and finally, a minimum of ten (10) feet of cement grout shall be installed in the annular space and interior of the well casing to at least four (4) feet below the land surface.

(4) Hand dug water wells shall be filled with uncontaminated surface clay or grout to within six (6) feet of land surface. The lining of the well shall be removed from the top five (5) feet and a minimum of two (2) feet of cement grout shall be installed. The top four (4) feet shall be filled with compacted uncontaminated native soil, unless otherwise directed by the Board.

(5) If the well or water well test hole is contaminated, or if the well or test hole is located at an underground tank site or within 300 feet of the outside perimeter of an existing wastewater lagoon or is located on a tract of land where a wastewater lagoon is proposed, the casing shall be removed or perforated from the bottom of the casing to twenty (20) feet below land surface. The casing shall be removed from twenty (20) feet below land surface to the surface, then the well or test hole shall be plugged with cement grout from the bottom to within four (4) feet of the land surface. If the total depth of the well is in excess of twenty feet (20') below land surface, the cement grout shall be placed by pumping from the bottom of the hole to within four (4) feet of the land surface.

<u>(6) Vertical closed loop heat exchange wells shall be plugged according to standards set forth by Clause 10.9 of ANSI/CSA/IGSHPA C448.3.</u>