

NR5/150.6/R86/1972

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**STATE OF COLORADO
DIVISION OF WATER RESOURCES**

**STATE BOARD OF EXAMINERS
WATER WELL AND
PUMP INSTALLATION CONTRACTORS**



**RULES AND REGULATIONS
AND
WATER WELL AND
PUMP INSTALLATION CONTRACTORS LAW**

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**STATE BOARD OF EXAMINERS
OF WATER WELL AND
PUMP INSTALLATION CONTRACTORS**

**1313 Sherman Street
Denver, Colorado 80203**

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RALPH LEIDHOLDT, State Health Dept.
KENNETH RUTT, Water Well Contractor
WILLARD OWENS, Engineer

STAFF

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Water Section

Well Drilling Inspectors —

Howard C. Bainbridge
Sam Graeb
Jack Waddell

**BEFORE THE BOARD OF EXAMINERS
OF WATER WELL AND
PUMP INSTALLATION CONTRACTORS**

**DIVISION OF WATER RESOURCES
STATE OF COLORADO**

MR 5/150
IN THE MATTER OF EX-
ISTING GENERAL RULES
AND REGULATIONS AND
THE FIRST REVISIONS
AND AMENDMENTS
THERE TO

} FINDINGS AND
ORDER OF
THE BOARD

FINDINGS

The existing general rules and regulations for the location, construction, modification or abandonment of water wells and for the installation, modification or repair of pumping equipment were adopted effective October 15, 1968 by the State Board of Examiners of Water Well and Pump Installation Contractors. Said existing general rules and regulations were held to be constitutional, legal and within the Board's authority in an opinion rendered by the Attorney General.

It became evident with the passage of time that certain revisions and amendments to the existing general rules and regulations were necessary and proper.

Pursuant to Sections 148-20-4(1) (d) and 148-20-10(2), Colorado Revised Statutes 1963, as amended, the Board has jurisdiction to promulgate the hereinafter described revised and amended rules and regulations.

Notice of a public hearing was published as required by the State Administrative Procedure

Act and the public hearing was held on July 11, 1972 in Denver, Colorado. At said hearing the Board submitted its views as to the reasons for the revisions and amendments. All interested persons were afforded an opportunity to submit written and oral data, views and arguments.

The Board has considered all submissions made to it at the public hearing and has adopted revisions and amendments to the existing general rules and regulations.

The revisions and amendments to the existing general rules and regulations were submitted to the Attorney General. His opinion, in a letter dated October 3, 1972, is "that the revisions and amendments of the rules and regulations are constitutional, legal and within the authority granted to the State Board of Examiners of Water Well and Pump Installation Contractors by the Legislature".

The revisions and amendments to the existing general rules and regulations were published on or about November 9, 1972, as required by the State Administrative Procedure Act.

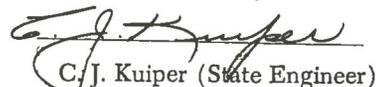
The following revised and amended rules and regulations, together with the Attorney General's opinion, were filed in duplicate in the Office of the Secretary of the State on or about November 29, 1972.

ORDER

IT IS THEREFORE ORDERED that the following revised and amended rules and regulations

become effective on the 15th day of December, 1972.

Ordered this 29th day of November, 1972.


C. J. Kuiper (State Engineer)
Secretary of the Board of
Examiners of Water Well and
Pump Installation Contractors,
acting under authority
granted by members of the
Board

**REVISED AND AMENDED
RULES AND REGULATIONS
FOR WATER WELL AND
PUMP INSTALLATION CONTRACTORS**

**Section 1. COLORADO CODE FOR WATER
WELL CONSTRUCTION AND PUMP
INSTALLATION**

- (1) These rules and regulations provide minimum standards for location, construction, modification or abandonment of water wells and installation, modification or repair of pumping equipment. After the effective date of adopting of these rules and regulations, no water well shall be constructed, repaired, or modified or any pump be installed, repaired, or modified contrary to the provisions of these rules and regulations.

Section 2. DEFINITIONS

- (1) "License" means a document issued by the State Board of Examiners of Water Well and Pump Installation Contractors, to qualified persons making application therefore, authorizing such persons to engage in the business of water well drilling or the business of pump installing, or both.
- (2) "Construction of water wells" means all acts necessary to obtain ground water by any method, for human consumption or other use, including, without limitation, the location of and the excavation for the wells, but not including prospecting, sur-

veying, or other acts preparatory thereto, nor the installation of pumps and pumping equipment.

- (3) "Board" means the State Board of Examiners of Water Well and Pump Installation Contractors created by Section 148-20-3 CRS 1963, as amended.
- (4) "Installation of pumps and pumping equipment" means the selection of and procedure employed in the placement and preparation for operation of pumps and pumping equipment, including all construction involved in making entrance to the well and establishing seals and safeguards to protect such water from contamination.
- (5) "Pumps" and "pumping equipment" means any equipment or materials utilized or intended for use in withdrawing or obtaining ground water.
- (6) "Pump installation contractor" means any individual, corporation, partnership, association, political subdivision, or public agency in the business of installing or repairing pumps and pumping equipment for compensation.
- (7) "Repair or modification" means any change, replacement or other alteration of any water well, pump, or pumping equipment which requires a breaking or opening of the well seal or any water line to the discharge of the pressure tank.
- (8) "Well seal" means an approved arrangement or device used to seal a well water tight to establish and maintain a junction

between the casing or curbing of a well and the piping or equipment installed therein, the purpose or function of which is to prevent contaminated water or other material from entering the well at/or near the upper terminal.

- (9) "Well" means any excavation that is drilled, cored, bored, washed, driven, dug, jetted, or otherwise constructed when the intended use of such excavation is for the location, diversion, artificial recharge, or acquisition of ground water.
- (10) "Water well contractor" means any individual, corporation, partnership, association, political subdivision, or public agency in immediate supervision of and responsible for the construction, test pumping or equipping, or development of an individual well or wells, either by contract or for hire or for any consideration whatsoever.
- (11) "Private driller" means any individual, corporation, partnership, association, political subdivision, or public agency which shall construct a well or wells entirely for his or their own use on property owned or controlled, with equipment owned and operated by him or them.
- (12) "Irrigation, industrial, or commercial well" means any well constructed for the purpose of obtaining water to be used beneficially but not for human consumption.
- (13) "Artesian well" means a well in which the water in the aquifer raises when the

formation is penetrated in the drilling of the well.

- (14) "Drainage well" means a well constructed for the purpose of lowering the water table.
- (15) "Aquifer" means a formation that contains and transmits ground water.
- (16) "Domestic well" means a well used to provide water for household purposes, farm livestock, poultry, and domestic animals, and irrigation of home gardens and lawns.
- (17) "Municipal well" means a well used by a municipal corporation and the inhabitants thereof.
- (18) "Ground water" means any water not visible on the surface of the ground under natural conditions.
- (19) "Artificial recharge" means the intentional introduction of water into any underground formation.
- (20) "Grout" means a permanent water tight joint or connection made by filling with concrete, neat cement or other approved impervious material between the casing and the undisturbed formation surrounding the well or between two strings of casing.
- (21) "Pitless well adapter" means an assembly of parts which will permit water to pass through the wall of the well casing or extension thereof and prevent entrance of contaminants.

(3) Bonding Requirements:

- (22) "Test hole" means any excavation that is constructed for the purpose of determining the location or physical characteristics of underground formations or for evaluating or monitoring the characteristics or behaviour of the formations or the water contained therein.
- (23) All other words used herein shall be given their usual customary and accepted meaning and all words of a technical nature or peculiar to the water well and pump installation industry shall be given that meaning which is generally accepted in said industry.

Section 3. GENERAL RULES

(1) Permit Required:

A permit shall be obtained from the Office of the State Engineer before construction, deepening, enlarging or increasing the yield of a water well and before initial pump installation or installation of a pump with a yield in excess of the registered yield of that well.

(2) Authorized Water Well or Pump Installation Contractor:

Water well or test hole construction, repair, modification or abandonment; or pump installation, repair, or modification shall be performed only by or under supervision of a person having a valid license issued by the State Board of Examiners of Water Well and Pump Installation Contractors unless exempt under provisions of Section 148-20-6(3), CRS 1963, as amended.

(a) Each licensed resident water well drilling or pump installation contractor, unless exempted under sub-paragraph C hereof, shall file with the Board a performance and compliance bond in the amount of \$5,000 with a corporate surety authorized to do business in the State of Colorado, conditioned that such licensee will comply with the laws of the State of Colorado in engaging in the business for which he receives a license and the rules of the Board promulgated for the regulation of such business.

(b) Each licensed non-resident water well drilling or pump installation contractor, unless exempted under sub-paragraph C hereof, shall file with the Board a performance and compliance bond in the amount of \$10,000 with a corporate surety authorized to do business in the State of Colorado, conditioned that such licensee will comply with the laws of the State of Colorado in engaging in the business for which he receives a license and the rules of the Board promulgated for the regulation of such business.

(c) No licensee shall be required to be bonded under Paragraph a or b above, provided that he works for a corporation, partnership, association, political subdivision or public agency which has filed the required

bond with the State of Colorado together with the statement that such corporation, partnership, association, political subdivision or public agency assume liability for all actions of said licensee. Such letter to remain in effect and force until specifically cancelled by said corporation, partnership, association, political subdivision or public agency in writing.

No such bonded corporation, partnership, association, political subdivision or public agency shall operate without a licensed driller or pump installer in supervision unless exempt under provisions in Section 148-20-6(3) CRS 1963, as amended. And further, no licensed driller or pump installer shall operate without a bond as provided in Section a or b above unless secured by letter of liability from the agency for which he is employed as provided above.

(4) Work Reports:

Within sixty (60) days after construction, deepening, enlarging, abandoning or increasing the yield of a well and installation of pumping equipment; or within seven (7) days after the expiration date of the permit, whichever is sooner, the contractor shall submit the necessary reports of such work to the Office of the State Engineer on a form or forms provided by the State Engineer and shall re-

port any unsanitary or non-compliant conditions which he was unable to correct.

(5) Emergency Clause:

Any licensed well drilling contractor or pump installation contractor may, if he can justify his emergency actions to the State Engineer and Board of Examiners, proceed without a permit, providing he, within three days, executes the Basic Ground Water Law requirements and files, in writing, an explanation of the emergency conditions.

(6) Scientific Investigations:

With the consent of the owner, scientific investigation in stock and irrigation wells may be performed by authorized personnel.

(7) Artificial Recharge:

Prior to any artificial recharge through a well, written application must be made to the Board and approval obtained. Such application shall contain all pertinent facts both with regard to the well and quality of the water to be injected.

(8) License Number:

Any well drilling rig or pump installation rig owned, leased or operated by any licensed contractor shall have prominently displayed thereon his license number in letters at least two inches in height and other comparable dimension; for example: "LIC. 1234".

(9) Well Tests:

The well yield test data, as required by the State Engineer, must be obtained or supervised by the water well contractor or the pump installation contractor or a person authorized by the State Engineer, and must be obtained through the use of a flow meter, a bailer on wells defined under C.R.S. 148-21-45 and small capacity wells under C.R.S. 148-18-4, or other device approved by the State Engineer and operated according to the specifications of both the manufacturer and the State Engineer. The test must be conducted so that it represents stabilized pumping conditions of the well and so that the yield does not change by more than 10% during the last hour of the test.

Section 4. CONSTRUCTION REGULATIONS

- (1) The location of wells or pumping equipment shall include utilization of every reasonable protection available to promote sanitary conditions; i.e. topography, drainage, sewage disposal, etc.
- (2) All wells shall be constructed and all pump installation shall be made in such a manner as to maintain existing natural protection against pollution of water bearing formations by ingress through the drill hole.
 - (a) The well casing shall have a grout seal in accordance with provisions of Table 1 attached hereto. For approved pitless adapter installa-

tion, the well casing must be grouted from a point one (1) foot below where the subsurface connection is made to ten (10) feet below that point. On wells approved under C.R.S. 148-21-45 and 148-18-4, the grouting must be completed before the drilling rig is removed from the well site.

- (b) The well casing shall terminate not less than one foot above ground surface and shall be sealed so as to prevent pollution of the aquifer.
 - (c) Well vents when used on domestic and municipal water wells shall terminate not less than 12 inches above ground surface and shall be so designed as to prevent the entrance of liquids or solids and the entrance shall be screened and turned downward.
 - (d) Prior to removal of the drilling rig, the well must be cleaned of mud, drill cuttings and other foreign matter so as to make it suitable for pump installation.
- (3) The well casing shall be adequate in size to accept a pump capable of delivering the quantity of water requested in the application to the State Engineer but in no case shall the inside diameter be less than four inches.
 - (4) All wells producing water for human consumption or food processing shall have water tight casing from the surface of the ground to the top of the producing zone

of the aquifer unless otherwise authorized by Table 1. In no event shall said water tight casing be less than 10 feet below the ground level. The casing shall be new and of a type to guarantee reasonable life so as to insure adequate protection against failure.

- (5) All wells when unattended during construction or repair, or used as observation wells, shall be securely covered.
- (6) Prior to initiation of use, all wells, except irrigation wells must be disinfected according to the recommendations and provisions of Table 2 contained herein.
- (7) Prior to initiation of use on all pump installations the well must be sealed water tight between pump and casing.
- (8) Centralizers shall be used on casing when hole diameter is in excess of 3 inches of the diameter of the the casing with one centralizer for each 50 feet of depth.
- (9) Confined waters shall be separated from each other and from unconfined waters encountered in the same hole by grouting with cement, concrete or other approved materials.
- (10) All water bearing zones that are known or suspected to contain polluted water shall be adequately cased or sealed off to prevent pollution of either overlying or underlying ground water zones.
- (11) No toxic materials shall be used in the construction, repair, or operation of any well unless such materials are flushed from the well prior to use.

- (12) The Office of the State Engineer must be notified, prior to drilling, of the general location, diameter, date of drilling, purpose, and estimated depth of any proposed test holes. The State Engineer may require a log of any test holes drilled in the state. The testing and/or pumping of any test hole must not exceed (7) seven days and must be completed within (60) sixty days after the initial drilling unless prior approval of a longer testing period is obtained from the Office of the State Engineer.

Section 5. ABANDONMENT REGULATIONS

(1) General:

The sealing of abandoned wells is intended to prevent contamination of ground water aquifers.

(2) Unconfined Water Wells:

- (a) Small diameter wells formerly producing from unconfined material shall be abandoned by filling with sand or gravel to the static water level, then with inert materials to within 10 feet of the surface. The top 10 feet shall be filled with concrete, neat cement, or other approved material.
- (b) Large diameter wells formerly producing from unconfined material shall be abandoned by filling with sand or gravel to the top of the water level, with inert material to the surface and by installing a permanent cover of adequate strength

water tight at the top of the casing. On farm lands the top 5 feet of casing shall be removed, the hole filled with sand or gravel to the top of the water level, with inert materials to within 5 feet of the surface, and shall be capped with concrete or steel 5 feet below the surface.

(3) **Confined-Water Wells:**

Wells formerly completed in confined and unconfined formations or in confined formations only shall be abandoned by plugging with concrete, neat cement or other approved material at the first impervious strata above each zone and cement grouted from the surface to a depth of 10 feet. No plug shall be less than 5 feet in length.

- (4) Test holes shall be plugged by the water well contractor or driller within three (3) days after the completion of and testing thereof with clay, neat cement or concrete from bottom to top; provided, however, that test holes penetrating two or more aquifers shall be cement grouted from bottom to top or plugged in accordance with Subsection (3) of this section. The State Engineer must approve any exception to this rule.

Section 6. POLLUTION SOURCES

- (1) The Board recognizes that permeability, horizontal and vertical distances from contaminants, drawdown characteristics, and other conditions of the aquifer are all factors to be considered in locating a

well. Municipal governments or county governments shall be consulted when locating a well and their regulations shall be complied with; provided however, in no event shall the location of a well, with respect to contamination, be less than the following minimum standards:

Wells producing water for human consumption and/or food processing shall be located no closer than 100 feet from the nearest potential sources of contamination, such distance being measured from the nearest potential source of contamination to a point of juncture with the well casing and the top of the aquifer.

Provided further, that the horizontal distances between the well casing and the potential source of contamination shall be 25 feet or more and the casing be grouted from that point to the top of the aquifer.

- (2) Wherever possible, owners and drillers of wells should control all sources of contamination capable of adversely affecting the aquifer from which water for human consumption or food processing is obtained.

Section 7. APPEALS

- (1) Requests for exception to any of the foregoing rules must be submitted to the Board in writing and contain all information relevant to the request. Such re-

quests must specifically set forth why such exception should be considered.

The Board may make exceptions after due consideration of such appeals.

TABLE 1
CONSTRUCTION AND GROUTING TABULATION

WATER BEARING FORMATION	OVERBURDEN	GROUTING MINIMUM	MINIMUM CASING DEPTH (WATER TIGHT)
SAND, GRAVEL, OR DECOMPOSED IGNEOUS ROCK	UNCONSOLIDATED MATERIAL, CLAY, SHALE, SAND, ETC.	10 FEET TO SURFACE	5 FEET BELOW PUMPING WATER LEVEL
CONFINED AQUIFERS (DAKOTA, MORRISON, FOX HILL, DAWSON, ETC.)	MIXED DEPOSITS OF CLAY, SHALE, SAND, GRAVEL	10 FEET TO SURFACE AND GROUTED 10 FEET INTO AN IMPERVIOUS FORMATION (SEE SUB-SECTION 4 (9))	TOP OF PRODUCTION ZONE
CREVICED, SHATTERED OR FRACTURED HARD ROCK	UNCONSOLIDATED	10 FEET TO SURFACE	TOP OF PRODUCTION ZONE
CREVICED, SHATTERED OR FRACTURED HARD ROCK	CONSOLIDATED ROCK	20 FEET TO SURFACE	20 FEET

NOTE: REVISIONS AND DELETIONS ARE NOT INDICATED

TABLE 1 (CONTINUED)

MINIMUM WALL THICKNESS OF STEEL WELL CASING												
DEPTH OF CASING IN FEET	NOMINAL DIAMETER IN INCHES											
	4	6	8	10	12	12	14	16	18	24	30	
	MINIMUM WALL THICKNESS											
0-100	12	12	12	12	12	12	12	12	12	10	10	
100-200	12	10	10	10	10	10	10	10	10	3/16	3/16	
200-400	1/8	10	10	3/16	3/16	3/16	3/16	3/16	1/4	1/4	1/4	
400-600	3/16	3/16	3/16	3/16	3/16	1/4	1/4	1/4	1/4	5/16	5/16	
OVER 600	3/16	1/4	1/4	5/16	5/16	5/16	3/8	3/8	3/8	3/8	3/8	

MINIMUM THICKNESS FOR ALL DOMESTIC WELLS IS .188 INCHES UNLESS INDICATED THICKER IN ABOVE CHART. THE MINIMUM THICKNESS OF ANY PLASTIC CASING SHALL BE .175 INCHES. ALL CASING SHALL BE IN NEW CONDITION AND OF SUFFICIENT STRENGTH TO WITHSTAND THE EXTERNAL PRESSURES EXPECTED IN THE WELL. FRACTIONAL NUMBERS INDICATE THICKNESS IN INCHES, AND WHOLE NUMBERS INDICATE THE UNITED STATES STANDARD GAGE. 12 GAGE = .109 INCHES 10 GAGE = .141 INCHES

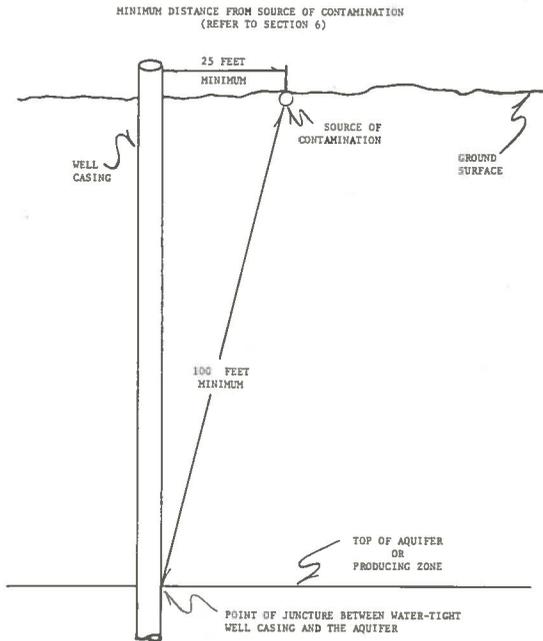


TABLE 2.

RECOMMENDATIONS FOR WATER WELL SUPPLY SYSTEM DISINFECTION:

A newly constructed, repaired, or modified water well supply system must be assumed to be contaminated by microorganisms. It is necessary to eliminate this contamination prior to placing the system into normal use. Disinfection of the completed system is the most practical way to eliminate this type of contamination.

The disinfection of a water well system must be carefully and thoroughly done. Contamination can exist in the well water, on the casing, on the piping, the pumping equipment, on the screen, in the gravel pack, and the storage tank. All of these need to be touched by a water solution containing the disinfectant if contamination is to be eliminated.

Disinfection of the completed water well system is best handled by:

1. Have the complete system assembled in the condition in which it will be normally used.
2. Operate the system long enough to flush out all turbid water.
3. Introduce the disinfectant directly into the well. Remove plug in well seal or cap from top of casing.
4. Circulate the water in the entire system. Return part of the flow to the well. Make sure that water containing disinfectant is present in all of the system, including pipelines, storage tank and discharge taps.

5. Allow the water containing the disinfectant to remain in the system as long as possible, several hours is desirable.
6. After the disinfectant has been allowed to remain a reasonable length of time in the entire system, it can be flushed to waste. A water sample may then be collected in a sterile container, examined in a laboratory for the purpose of judging effectiveness of the disinfection.

One ounce of dry HTH or equal powder (70% available chlorine), dissolved in 52.5 gallons of water, makes a 100 ppm strength disinfectant solution. Various proportions can be worked out using the approximate quantities shown in the following table:

Diameter of the Well Casing	Water Standing In Well	Amount of dry powder (HTH or equivalent) to make at least 100 ppm chlorine solution
4 inches	100 feet (65.5 gallons)	3 tablespoonsfull or 1/4 cup
6 inches	100 feet (147 gallons)	7 tablespoonsfull or 1/2 cup
8 inches	100 feet (261 gallons)	12 tablespoonsfull or 3/4 cup
10 inches	100 feet (408 gallons)	1 - 1/4 cups
12 inches	100 feet (587 gallons)	1 - 3/4 cups

WATER WELL AND PUMP INSTALLATION CONTRACTORS LAW

(As amended through 1972)

148-20-1. Declaration of policy.— It has been established by scientific evidence that improperly constructed water wells and improperly installed pumps and pumping equipment can adversely affect the public health. Consistent with its duty to safeguard the public health of this state, the general assembly therefore declares that the proper location, construction, repair, and abandonment of water wells, and the proper installation and repair of pumps and pumping equipment, as well as the licensing and regulation of persons engaging in the business of contracting either for the construction of water wells or for the installation of pumps or pumping equipment, is essential for the protection of the public health.

148-20-2. Definitions.—(1) As used in this article, unless the context otherwise requires:

(2) "License" means the granting of a license by the state board of examiners of water well and pump installation contractors, to qualified persons making application therefor, authorizing such persons to engage in the business of water well drilling or the business of pump installing, or both.

(3) "Construction of water wells" means all acts necessary to obtaining ground water by any method for human consumption or other use, including, without limitation, the location of and the excavation for the well, but not including prospecting, surveying, or other acts preparatory thereto, nor the installation of pumps and pumping equipment.

(4) "Board" means the state board of examiners of water well and pump installation contractors created by section 148-20-3.

(5) "Installation of pumps and pumping equipment" means the selection of and procedure employed in the placement and preparation for operation of pumps and pumping equipment, including all construction involved in making entrance to the well and establishing seals and safeguards to protect such water from contamination.

(6) "Pumps" and "Pumping equipment" means any equipment or materials, including, without limitation, seals and other safeguards to protect the water from contamination, utilized or intended for use in withdrawing or obtaining ground water for human consumption or other use.

(7) "Pump installation contractor" means any person, firm, or corporation engaged in the business of installing or repairing pumps and pumping equipment for compensation.

(8) "Repair" means any change, replacement, or other alteration of any water well, pump, or pumping equipment which requires a breaking or opening of the well seal.

(9) "Well seal" means an approved arrangement or device used to cap a well or to establish and maintain a junction between the casing or curbing of a well and the piping or equipment installed therein, the purpose or function of which is to prevent contaminated water or other material from entering the well at the upper terminal.

(10) "Well" means any excavation that is drilled, cored, bored, washed, driven, dug, jetted, or otherwise constructed, when the intended use of such excavation is for the location, diversion, arti-

ficial recharge, or acquisition of ground water, but such term does not include an excavation made for the purpose of obtaining or for prospecting for oil, natural gas, minerals, or products of mining or quarrying, or for inserting media to repressure oil or natural gas-bearing formation or for storing petroleum, natural gas, or other products.

(11) "Water well contractor" means any individual, corporation, partnership, association, political subdivision, or public agency in immediate supervision of and responsible for the construction, test pumping or equipping, or development of an individual well or wells, either by contract or for hire or for any consideration whatsoever.

(12) "Private driller" means any individual, corporation, partnership, association, political subdivision, or public agency which shall construct a well or wells entirely for his or their own use on property owned or controlled, with equipment owned and operated, by him or them.

(13) "Irrigation, industrial, or commercial well" means any well construction for the purpose of obtaining water to be used beneficially but not for human consumption.

(14) "Artesian well" means a well obtaining water from an aquifer under hydrostatic pressure.

(15) "Drainage well" means a well construction for the purpose of lowering the water table.

(16) "Aquifer" means a geological formation that contains or transmits ground water.

(17) "Domestic well" means a well used for ordinary household purposes, the watering of farm livestock, poultry, and domestic animals, and the irrigation of home gardens and lawns.

(18) "Municipal well" means a well used by a municipal corporation and the inhabitants thereof, primarily to promote the life, safety, health, comfort, and business pursuits of the inhabitants, but does not include the irrigation of crops, although within the corporate boundaries.

(19) "Ground water" means any water not visible on the surface of the ground under natural conditions.

148-20-3. State board of examiners of water well and pump installation contractors.—

(1) There is hereby created, under the division of water resources in the department of natural resources, a state board of examiners of water well and pump installation contractors, of five members, comprised of the following persons: The state engineer or a representative designated by him; a representative of the department of health designated by the executive director of the department; and three members appointed by the governor, two of whom shall be water well contractors, each with a minimum of ten years experience in the water well contracting business preceding his appointment; and one of whom shall be an engineer or geologist with a minimum of ten years experience in water supply and water well construction preceding his appointment.

(2) The governor shall make his first three appointments within thirty days after July 1, 1967, to serve the following terms: One for a term expiring June 30, 1969, one for a term expiring June 30, 1970, and one for a term expiring June 30, 1971. Thereafter all members shall be appointed for four-year terms, but no member shall be reappointed to serve more than two consecutive four-year terms. Each member shall hold office until the expiration of his term or until a successor is appointed. Any

vacancy occurring in the board membership of the governor's appointees, other than by expiration, shall be filled by the governor by appointment for the unexpired term. Members shall serve without compensation but shall be reimbursed for actual expenses necessarily incurred in their official business.

(3) The board shall meet within sixty days after July 1, 1967 and not less than once every three months thereafter, and at such other times as it deems necessary or advisable. Special meetings of the board may be called at any time on order of the chairman or vice-chairman or any three members of the board. The time and place of all meetings shall be determined by the board, but one meeting within three months after the first appointment of the board shall be held in Denver, at which time a chairman, vice-chairman, and a secretary shall be selected. Three members of the board shall constitute a quorum, and the affirmative vote of three members shall be required to pass any action or motion of the board. The board may adopt bylaws to govern its own procedure.

148-20-4. Duties of the board.—

(1) (a) The board shall:

(b) Be responsible for the administration of this article, and with respect to such administration shall enforce the provisions of this article and any rules adopted pursuant thereto, and shall take such other actions as may be reasonably necessary to carry out the provisions of this article;

(c) Have general supervision and authority over the construction and abandonment of water wells and the installation of pumps and pumping equipment, as provided by sections 148-20-9 and 148-20-10;

(d) Adopt, and from time to time revise, such rules not inconsistent with law, as may be necessary to effectuate the provisions of this article, all such rules to be adopted in accordance with article 16 of chapter 3, C.R.S. 1963;

(e) Employ, within funds available, personnel necessary for the proper performance of its work under this article;

(f) Examine for, deny, approve, revoke, suspend, and renew the licenses of applicants and licensees as provided in this article;

(g) Conduct hearings upon complaints with respect to any licensee under this article, and with respect to the denial, revocation, or suspension of a license, all such hearings to be conducted in conformity with article 16 of chapter 3, C.R.S. 1963;

(h) Prepare and transmit annually, in the form and manner prescribed by the controller pursuant to the provisions of section 3-3-17, C.R.S. 1963, a report accounting to the governor and the general assembly for the efficient discharge of all responsibilities assigned by law or directive to the board. Publications of the board intended for circulation in quantity outside the board shall be issued in accordance with fiscal rules promulgated by the controller pursuant to the provisions of section 3-3-17, C.R.S. 1963;

(i) Cause the prosecution and enjoinder of all persons violating this article and incur necessary expenses therefor.

148-20-5. Licensing—registration of rigs.
—(1) Every person, before engaging in the business of contracting either for the construction of water wells or for the installation of pumps or

pumping equipment, shall obtain a license from the board, and in the case of any water well contractor, shall secure a registration from the board for each well drilling rig to be operated by him.

(2) (a) The board shall issue a license to each applicant who shall file an application upon a form and in such manner as the board prescribes, accompanied by such fees and bond as required by section 148-20-7; and who furnishes evidence satisfactory to the board that he:

(b) Is at least twenty-one years of age;

(c) Is a citizen of the United States or has declared his intention to become a citizen;

(d) Is of good moral character;

(e) Has had not less than two years experience in the work for which he is applying for a license; and

(f) Demonstrates professional competence by passing a written and oral examination prescribed by the board.

(3) Upon investigation of the application and other evidence submitted, the board shall, not less than thirty days prior to the examination, notify each applicant that the application and evidence submitted for licensing is satisfactory and accepted, or unsatisfactory and rejected; if rejected, said notice shall state the reasons for such rejection.

(4) The place of examination shall be designated in advance by the board, and shall be given annually, and at such other times as, in the opinion of the board, the number of applicants warrants. The board may, if the applicant meets all other re-

quirements issue a temporary license, not to exceed 90 days, until the next examination by the board.

(5) The examination shall consist of an oral and written examination, and shall fairly test the applicant's knowledge and application thereof in the following subjects: Basics of drilling methods and basics of construction; state laws and local ordinances concerning the construction of water wells or installation of pumps and pumping equipment, or both, and rules promulgated in connection therewith.

(6) In the event an applicant fails to receive a passing grade on the examination, he may reapply for examination within ninety days.

148-20-6. Persons previously licensed—exemptions.—(1) Any person possessing the qualifications prescribed in subsections (2) (a) through (2) (e) of section 148-20-5 and who has been licensed in the business of a water well contractor immediately prior to July 1, 1967, shall upon application made within one year of said date, accompanied by satisfactory proof to the board that he was so licensed, and accompanied by payment of the required fee and the furnishing of the required bond, be granted a license as a water well contractor without fulfilling the requirements that he pass the examination prescribed by subsection (2) (f) of section 148-20-5.

(2) A license shall not be required of any person who performs labor or services at the direction and under the personal supervision of a licensed water well contractor or pump installation contractor.

(3) A private driller shall be exempt from all license requirements under this article, except that

he shall be a resident of the state of Colorado, and shall comply with minimum construction standards as required by section 148-20-10.

148-20-7. Fees and bonds.—(1) All fees from applicants seeking a license under this article, and all renewal fees, shall be credited to the general fund of the state. No fees shall be refunded. A license shall be nontransferable and unassignable.

(2) The board shall charge an application fee of ten dollars to accompany each application from a resident of the state of Colorado, and a further fee of twenty-five dollars upon successful completion of examination before issuance of a license. In addition each successful resident applicant shall file with the board a performance and compliance bond in the amount of five thousand dollars with a corporate surety authorized to do business in the state of Colorado, conditioned that such licensee will comply with the laws of the state of Colorado in engaging in the business for which he receives a license, and the rules of the board promulgated in the regulation of such business.

(3) The board shall charge an application fee of twenty-five dollars to accompany each application from a nonresident of the state of Colorado, and a further nonresident fee of two hundred dollars upon successful completion of examination before issuance of a license. In addition each successful nonresident applicant shall file with the board a performance and compliance bond in the amount of ten thousand dollars with a corporate surety authorized to do business in the state of Colorado, conditioned that such licensee will comply with the laws of the state in engaging in the business for which he receives a license, and the rules of the board promulgated in compliance therewith.

(4) Every water well contractor or pump installation contractor in this state shall annually pay to the board during the month of January of each year, beginning in the year immediately subsequent to his initial licensing, a fee of twenty-five dollars, and shall annually file a new performance and compliance bond in the amount required upon initial licensing, and the secretary shall thereupon issue a renewal license for one year. The license of any water well or pump installation contractor who shall fail to have his license renewed during the month of January in each and every year shall lapse. Any lapsed license may be renewed within a period of two years after such lapse, upon payment of all fees in arrears, or thereafter, upon payment of a renewal fee of twenty-five dollars.

(5) The board shall charge an annual registration fee of five dollars for each well drilling rig to be operated by a water well contractor.

148-20-8. Denial—revocation or suspension of license.—(1) (a) The board, by an affirmative vote of three of its five members, may withhold, deny, revoke, or suspend any license issued or applied for in accordance with the provisions of this article, upon proof that the licensee or applicant:

(b) Has used fraud or deception in applying for a license or in taking an examination provided for in this article;

(c) Has willfully or negligently violated any of the provisions of this article or of the "Colorado Ground Water Management Act";

(d) Has failed, in engaging in the business of water well or pump installation contractor, to comply with minimum standards prescribed by section

148-20-10 and the rules of the board promulgated with respect thereto.

(2) No license shall be withheld, denied, revoked, or suspended except in conformity with article 16 of chapter 3, C.R.S. 1963.

148-20-9. Further scope of article.—

In addition to the licensing of water well and pump installation contractors as required by this article, no water well shall be located, constructed, repaired, or abandoned and no pump or pumping equipment shall be installed or repaired, contrary to the provisions of this article and applicable rules of the board promulgated to effectuate the purposes of this article. The provisions of this article shall apply to any water well, pump, or pumping equipment not otherwise subject to regulation under the laws of this state, and to any distribution of water therefrom; but this article shall not apply to any distribution of water beyond the point of discharge from the pressure tank, or beyond the point of discharge from the pump if no pressure tank or an overhead pressure tank is employed.

148-20-10. Basic principles and minimum standards.—(1) (a) The following basic principles, general in scope and fundamental in character, shall govern the construction, repair, or abandonment of any water well, and the installation or repair of any pump or pumping equipment:

(b) (i) Water wells shall be:

(ii) Located in such manner that the well and its surroundings can be kept in a sanitary condition;

(iii) Adequate in size to permit the installation of a pump to pump the volume of water sought to be obtained;

(iv) Constructed in such a manner as to maintain natural protection against pollution of water-bearing formations and to exclude known sources of contamination.

(c) (i) The pumping equipment shall be:

(ii) Located in such a manner that the pump and its surroundings can be kept in a sanitary condition;

(iii) Selected, constructed, and installed: To meet the water yield and drawdown characteristic of the well; to be durable and reliable in character; of such material that no toxic or otherwise objectionable condition will be created in the water; in such a manner that continued operation without priming is assured at the time of installation; to provide adequate protection against pollution of any character from any surface or subsurface source.

(2) The board shall adopt, and may from time to time amend, rules reasonably necessary to effectuate the basic principles and minimum standards prescribed by subsection (1) of this section. The board shall have authority to require such information relating to any such construction or installation as it may deem necessary.

148-20-11. Violation and penalties.—

(1) (a) It shall be a misdemeanor after six months from July 1, 1967:

(b) For any person to represent himself as a water well contractor or a pump installation contractor who is not licensed under this article, or to so represent himself after his license has been suspended, revoked, or lapsed; or

(c) For any person not licensed under this article to advertise or issue any sign, card, or other

device which would indicate that he is a licensed water well contractor or a pump installation contractor; or

(d) For any person to otherwise violate any of the provisions of this article.

(2) Such misdemeanor shall be punishable upon conviction by a fine of not more than three hundred dollars, or by imprisonment in the county jail for not more than ninety days, or by both such fine and imprisonment.

148-20-12. Injunctive proceedings.—

(1) The board may, through the attorney general of the state of Colorado, apply for an injunction in any court of competent jurisdiction to enjoin any person from committing any act declared to be a misdemeanor by this article.

(2) Such injunctive proceedings shall be in addition to and not in lieu of any other penalty or remedy in this article provided.

148-20-13. Effective date.— This article shall take effect July 1, 1967.